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ПОСІБНИК З АНГЛІЙСЬКОЇ МОВИ

для студентів IV-го року навчання факультету
радіофізики, електроніки та комп'ютерних систем
напрям підготовки – комп'ютерна інженерія



Київ - 2018

Київський національний університет імені Тараса Шевченка

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для студентів IV-го року навчання факультету радіофізики,
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*Рекомендований як навчальний посібник для студентів IV-го року
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систем
напряму підготовки – комп'ютерна інженерія*

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Рекомендовано Вченою радою факультету радіофізики, електроніки і комп'ютерних систем Інституту філології Київського національного університету імені Тараса Шевченка (протокол № 1 від 17 вересня 2018 року)

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The textbook for the 4th year students of the Radiophysics, Electronics and Computer Systems Faculty – specialism – Computer Engineering. / Ihor A. Honta. – K., 2018. – 262 p.

The textbook is designed for students of the Radiophysics, Electronics and Computer Systems Faculty – specialism – Computer Engineering. The contents of the textbook is intended for training the 4th year students in the field of computer engineering. The textbook contains texts about computer engineering, practical exercises.

Посібник для студентів IV-го року навчання факультету радіофізики, електроніки та комп'ютерних систем – напрям підготовки – комп'ютерна інженерія / І. А. Гонта. – К., 2018. – 262 с.

Посібник призначений для студентів IV-го року навчання факультету радіофізики, електроніки та комп'ютерних систем – напрям підготовки – комп'ютерна інженерія. Матеріал посібника розраховано на підготовку студентів IV курсу в галузі комп'ютерної інженерії. Посібник містить тексти з комп'ютерної інженерії, практичні вправи.

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PREFACE

The age of international communication and global integration requires a new generation of specialists whose knowledge of foreign languages and communication skills form a part of their professional competence. The age of information demands a new level of qualified computer engineers with profound knowledge of English for specific purposes as well as fluent and preferably accurate professional speech.

The textbook is destined for the students learning English with no professional philological background. Studying the textbook the students will become more confident and fluent in specialized English necessary for professional communication in the field of computer technologies.

The book includes sixteen units with the following sections: pre-reading activities, while-reading activities, post-reading activities, focus on grammar and lexis, final tasks aimed at developing speaking skills, additional exercises containing different tasks. The textbook contains authentic texts on a variety of IT topics, key vocabulary, pronunciation drills, questions to the texts, critical thinking discussion questions, exercises on lexis and grammar etc.

The book is designed as a practical textbook for the fourth-year students of the Radiophysics, Electronics and Computer Systems Faculty, specializing in the field of computer engineering.

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CONTENTS

Preface

UNIT 1. INTERNET

UNIT 2. WORLD WIDE WEB

UNIT 3. CHATS AND CONFERENCES

UNIT 4. INTERNET SECURITY

UNIT 5. GRAPHICS AND DESIGN

UNIT 6. DESKTOP PUBLISHING

UNIT 7. MULTIMEDIA

UNIT 8. WEB DESIGN

UNIT 9. SOFTWARE DESIGN AND PROGRAMMING LANGUAGES

UNIT 10. JAVA

UNIT 11. JOBS IN INFORMATION TECHLOGIES

UNIT 12. COMMUNICATION SYSTEMS

UNIT 13. NETWORKS

UNIT 14. VIDEO GAMES

UNIT 15. NEWEST TECHNOLOGIES

UNIT 16. FUTURE COMPUTERS

Supplementary texts

Bibliography

UNIT 1. INTERNET



I. Pre-reading activities.

Task 1. Discuss the following questions.

1. What is the role of the Internet in the life of an ordinary person?
2. How do manufacturing and infrastructure depend on the I-net?
3. What are positive and negative effects of the I-net on the development of children and adolescents nowadays?

Task 2: The following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

innovation [ɪnəʊ'veɪʃən] n.

browser ['braʊzə] n.

design [dɪ'zaɪn] n., v.

complex ['kɒmpleks] n., adj.

hierarchical [haɪə'rɑ:kɪkəl]

global ['glɒb(ə)l] adj.

display [dɪs'pleɪ] n., v.

technical ['teknɪkəl] adj.

romance [rə'mæns] n.

technology [tek'nɒlədʒɪ] n.

utopian [ju'toʊpiən] adj.

function ['fʌŋkʃən] n., v.

application [æplɪ'keɪʃən] n.

centralized ['sentrəlaɪzd] adj.

hypertext ['haɪpətɛkst] n.

integral ['ɪntɪgrəl] adj.

guarantee ['gærən'ti:] n., v.

decentralization [di:sentrəlaɪ'zeɪʃən] .

Task 3. Match the English words on the left with their Ukrainian equivalents on the right.

1) application

2) design

3) hardware

4) router

5) domain

6) software

7) mainframe

8) networking

a) технічне забезпечення

b) додаток

c) модель

d) домен

e) програмне забезпечення

f) маршрутизатор

g) мережа

h) головний комп'ютер, менфрейм

Task 4. Guess from the contexts what each of the underlined words means.

A. It started out when about 10 computers running Unix operating systems serving US military were connected to each other and named ARPANET.

B. The technical design is founded on a complex, interlocking set of hierarchical tree-like structures, like Internet Protocol addresses and domain names.

C. Bridge is a piece of hardware which connects two LANs.

D. The Internet workings include a technical design and a management structure.

E. An understanding of advanced Internet use can enhance your ability to contextualize the Internet, and therefore get the most from it.

II. While-reading activities.

Task 6. Read the text and answer the questions.

1. What is the basic principle of the Internet operation?

2. What were the origins of the Internet?

3. What are the terms and components of the Internet according to the text?

The Internet is a bunch of computers connected to each other. It started out when about 10 computers running Unix operating systems serving US military were connected to each other and named ARPANET. Initially, users could only send an e-mail to each other, deploying UUCP (unix to unix copy using modems) method. Then more computers from universities were added to

ARPANET and research individuals started sharing their notes over e-mail. Later came Usenet which was more or less a discussion forum. Then after tremendous innovations in hardware (networking), in 1992 came Web, or the software called web browser which could display pictures and text. REST is history. Some terms

- HTML: is Hypertext markup language. All pages in the Internet use HTML.
- Browser is piece of software to browse internet, i.e Netscape, Internet explorer.
- Router is a piece of hardware which connects LAN to Internet.
- Bridge is a piece of hardware which connects two LANs.

The Internet has become such an integral part of our lives, with such powerful capabilities, that it is easy to forget that this technological marvel was created by the long, hard, dedicated efforts of human beings – folks who had a vision of what universal networking could become and worked to make it happen.

The Internet workings include a technical design and a management structure. The management structure consists of a generally democratic collection of loosely-coupled organizations and working groups with mostly non-overlapping responsibilities. The technical design is founded on a complex, interlocking set of hierarchical tree-like structures, like Internet Protocol addresses and domain names, mixed with networked structures like packet switching and routing protocols, all tied together with millions of lines of sophisticated software that continues to get better all the time.

So far this combination of management and technical structures has worked well, providing the reliable, powerful communication platform on which the rest of the complexity of the Internet is built.

The Internet is a complex space with a rich set of useful features and functions. Knowing how to get the most out of the Internet can help you as much as knowing how to read, maybe more.

An understanding of advanced Internet use can enhance your ability to contextualize the Internet, and therefore get the most from it.

Western Civilization has had a centuries' long romance with technology and has often worshipped it as the “savior of mankind”. Alternately, anti-utopians, ever since Shelly conjured up Frankenstein, have depicted it as the destroyer of humankind and human values.

Technology is power and, as such, can serve many purposes. Whereas an earlier vision of the computer predicted an Orwellian “big brother” utilizing a

centralized computer system to control society, the advent of the personal computer has turned this power pyramid on its head.

Increasing thousands of people have a computer on their desk with as much capability at their fingertips as once was housed in an expensive and complicated mainframe. Obviously, the decentralization of power is no guarantee that the people will make good or wise use of it.

The Internet is unlike any previous human invention in both scale and effect, and is now a global resource important to all of the people in the world. How did it become so important, so fast? This unprecedentedly rapid growth and impact is largely due to its incorporation of a number of deeply powerful features that continue to accelerate its success.

From: <http://www.livinginternet.com>

III. Post-reading activities

Task 7. Answer the questions based on the text.

1. What is the Internet?
2. How did it appear?
3. What does the text say about the Web?
4. What is the HTML?
5. What does the article say about the browser?
6. What is a router?
7. What is a bridge?
8. What does The Internet include?
9. What is the management structure of the Internet?
10. What does the text say about the technical design of the Internet?

Task 8. Read the text again and complete the following sentences using the information you need.

1. So far this combination of management and technical structures has worked well... .
2. The Internet is a complex space with... .
3. Knowing how to get the most out of the Internet... .
4. Increasing thousands of people have... .
5. The Internet is unlike any previous human invention

Task 9. Are the statements true or false? Say why:

1. The Internet is a great number of PC working without any connection.

2. The Internet was firstly used in education.
3. The first web browser appeared at the end of the 80s of the previous century.
4. Local area networks are connected by routers.
5. The management structure consists of working groups with overlapping responsibilities.
6. The advent of computers was predicted by Orwell.
7. Nowadays modern computers are less capable than previously used mainframes.
8. The Internet is a local resource valued by limited groups of people.

IV. Focus on grammar and lexis

Task 10. Match the beginnings of the sentences in the first column with their ends in the second column.

1) The Internet is a complex space		a) with technology and has often worshipped it as the “savior of mankind”.
2) The Internet workings include a technical design		b) as such, can serve many purposes.
3) Western Civilization has had a centuries’ long romance		c) with a rich set of useful features and functions.
4) Technology is power and,		d) guarantee that the people will make good or wise use of it.
5) Obviously, the decentralization of power is no		e) and a management structure.

Task 11. Put the words in the right order to make sentences.

1. in the 1960s of the Internet the origins to research commissioned by the US government date back.
2. the Net often referred to the Internet is also as.
3. many the Internet interconnected comprising is a global network networks.
4. can then the Internet from as a such places be accessed park bench.

Task 12: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>connection</i>	<i>connect</i>			<i>connecting</i>	<i>connected</i>	<i>connecting</i>
2		deploy					
3			Integral				
4	advancement						
5						incorporated	
6			central				
7			complex				

Task 13: Put the verbs in brackets in the correct grammar form.

- Internet is a bunch of computers (a) _____ (connect) to each other.
- It (b) _____ (start out) when about 10 computers running Unix operating systems serving US military (c) _____ (connect) to each other.
- The Internet (d) _____ (become) such an integral part of our lives, with such powerful capabilities, that it is easy (to forget) that this technological marvel (e) _____ (create) by the long, hard, dedicated efforts of human beings.
- So far this combination of management and technical structures (f) _____ (work) well, (g) _____ (provide) the reliable, powerful communication platform on which the rest of the complexity of the Internet (h) _____ (build).

Task 14: Fill in the gaps with suitable prepositions.

- This unprecedentedly rapid growth and impact is largely due (a) _____ its incorporation (b) _____ a number of deeply powerful features that continue to accelerate its success.
- Increasing thousands (c) _____ people have a computer (d) _____ their desk (e) _____ as much capability (f) _____ their fingertips (g) _____ once was housed (h) _____ an expensive and complicated mainframe.
- The origins (i) _____ the Internet date back (j) _____ research commissioned (k) _____ the USA (l) _____ the 1960s to build robust, fault-tolerant communication via computer networks.

4. There is no consensus (m) _____ the exact date (n) _____ the modern Internet came (o) _____ being, but sometime (p) _____ the early to mid-1980s is considered reasonable.

V. Final tasks

Task 15: Discuss the following ideas with your group-mates:

1. Some famous Russian politicians have recently announced the intention to create an independent Russian Internet Cheburashka with domestic domains etc.
2. The Internet can cause damaging psychological effect upon people, especially children.
3. In some countries people are prohibited to use the Internet (or have a very restricted access to it).
4. The Internet can be a source of enrichment for thousands of people.

VI. Additional exercises

Task 16: Explain the meaning of the words and phrases in English:

Nouns: Bunch, hardware, innovation, browser, design, set, network, complexity, impact.

Adjectives: advanced, complex, powerful, overlapping, hierarchical, reliable, complicated, global, integral, utopian, sophisticated, centralized.

Verbs: to deploy, to share, to accelerate, to display to enhance.

Task 17: Provide the opposites to the English adjectives:

Advanced, complex, powerful, overlapping, hierarchical, reliable, complicated, global, integral, sophisticated.

Task 18: Decipher the English abbreviations and explain what they mean:

HTML, LAN, UUCP.

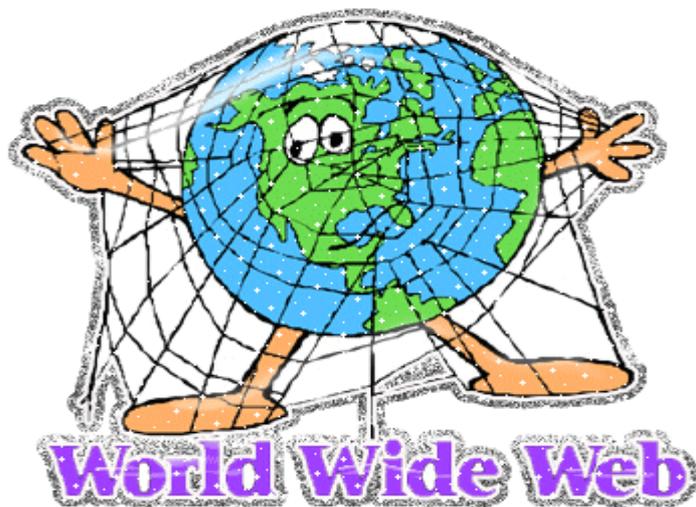
Task 19: Match the words and definitions:

1. domain		a) Hypertext Markup Language, a standardized system for tagging text files
-----------	--	--

		to achieve font, color, graphic, and hyperlink effects on World Wide Web pages
2. Internet Protocol (IP)		b) the programs and other operating information used by a computer.
3. tree-like structure		c) the principal communications protocol in the Internet protocol suite for relaying datagrams across network boundaries.
4. HTML		d) a group of personal computers and associated equipment that are linked by cable, for example in an office building, and that share a communications line.
5. LAN		e) structure resembling a tree
6. software		f) a set of addresses that shows, for example, the category or geographical area that an Internet address belongs to.
7. application		g) a mode of data transmission in which a message is broken into a number of parts which are sent independently, over whatever route is optimum for each packet, and reassembled at the destination.
8. packet switching		h) a program or piece of software designed to fulfil a particular purpose
9. mainframe		i) the set of software that controls the overall operation of a computer system, typically by performing such tasks as memory allocation, job scheduling, and input/output control
10. operating system		k) a high-speed general-purpose computer, usually with a large store capacity
11. web browser		l) the machines, wiring, and other physical components of a computer or other electronic system
12. hardware		m) a computer program, such as Netscape Navigator or Microsoft Internet Explorer, that provides an easy method of accessing and viewing information stored as HTML

Task 20: Make up your own sentences with the words and expressions from Task 19 and share them with your partner.

UNIT 2. WORLD WIDE WEB



I. Pre-reading activities.

Task 1. Discuss the following questions.

1. What do we call the World Wide Web?
2. What are the basic principles of the World Wide Web operation?
3. What are the conveniences and inconveniences of working with the WWW?

Task 2: The following English words are similar to the Ukrainian ones. Pronounce them after your teacher:

server ['sɜːvə] n.

formatted ['fɔːmætɪd] adj.

document ['dɒkjumənt] n.

audience ['ɔːdɪəns] n.

surfer ['sɜːfə] n.

uniform ['juːnɪfɔːm] n.

graphics ['græfɪks] n.

browser ['brauzə] n.

resource [rɪ'zɔːs] n.

original [ə'rɪdʒ(ə)n(ə)l]

mosaic [məu'zeɪɪk] n.

communication [kəmjunɪ'keɪʃ(ə)n]

agent ['eɪdʒ(ə)nt] n.

locator [ləu'keɪtə] n.

modem ['mɔːdem] n.

code [kəʊd] n.

designer [dɪ'zaɪnə] n.

laboratory [lə'bɔːrət(ə)rɪ] n.

experiment [ɪk'sperɪmənt] n.

potential [pə'tenʃ(ə)l] n.

Task 3. Match the English phrases and words on the left with their Ukrainian equivalents on the right.

1) markup language

2) hot spot

3) uniform Resource Locator

4) ftp site

5) web page

6) communications tool

7) footnote

8) Internet server

a) уніфікований показник

(місцезнаходження
інформаційного ресурсу)

b) комп'ютерна система з доступом
за протоколом ftp

c) засіб зв'язку

d) посилання

e) виноска внизу сторінки

f) мова маркування

g) веб-сторінка

h) Інтернет-сервер

Task 4. Guess from the contexts what each of the underlined words means.

a) The World Wide Web is a system of Internet servers that support specially formatted documents.

b) This means you can jump from one document to another simply by clicking on hot spots.

c) There are several applications called Web browsers that make it easy to access the World Wide Web.

d) Web pages can include text information, pictures, sounds, video, FTP links for downloading software, and much more.

- e) You can create living documents that are updated weekly, daily, or even hourly to give web surfers a different experience every time they visit your pages.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What is the Worldwide Web?
2. How and when did it appear?
3. What is a markup language?
4. What do we call a browser?

The World Wide Web is a system of Internet servers that support specially formatted documents. The documents are formatted in a markup language called HTML (*HyperText Markup Language*) that supports links to other documents, as well as graphics, audio, and video files. This means you can jump from one document to another simply by clicking on hot spots. Not all Internet servers are part of the World Wide Web.

There are several applications called Web browsers that make it easy to access the World Wide Web; Two of the most popular being Firefox and Microsoft's Internet Explorer.

Simply put, the World Wide Web is a way to share resources with many people at the same time, even if some of those resources are located at opposite ends of the world. If you think of it as a research paper that lets each footnote take you right to the original source, then you've got the basic idea.

What began as a research tool has blossomed into something unexpected and much more fun. With the introduction of Mosaic and other graphical web browsers, the web has become a communications tool for a much wider audience.

Web pages can include text information, pictures, sounds, video, FTP links for downloading software, and much more. You can create living documents that are updated weekly, daily, or even hourly to give web surfers a different experience every time they visit your pages. As the technology develops, even more amazing applications will be possible.

The URL, or Uniform Resource Locator, is the address on the web that you are visiting. If someone gives you the address to their web page, they may say its at www.imagescape.com. Most web browsers need you to include `http://` at the beginning of the URL so the program knows that you want to visit a web

page. Thus, you'll need to tell your web browser to open <http://www.imagescape.com> to get to the page you want. Remember, you can also connect to FTP sites and gophers with your browser, so you need to be specific (FTP sites, for example, begin with a <ftp://>.)

It's good to keep in mind that the web doesn't look the same to everyone. Some people use Netscape, Internet Explorer, Mosaic or other browsers that support graphics. Others can only make a connection through links, which supports the text and the links, but no pictures. Many members of the internet community only have access to web information through e-mail. Your modem speed and the type of connection that you have also has an effect on the way you view the WWW.

Sometimes, you'll encounter a web page that will behave oddly. It may look funny, or give you an alert message. Some pages will even crash your web browser. Don't assume that you did something wrong; it could be that the page is coded to offer features that your browser doesn't support. Many web designers use features that only work for the Netscape or Microsoft Internet Explorer browser, or for a certain operating system, etc.. There is nothing wrong with your computer. Just get your browser going again and you might want to shy away from sites that crash you!

It was Tim Berners-Lee who invented the World Wide Web in 1989, about 20 years after the first connection was established over what is today known as the Internet. At the time, Tim was a software engineer at CERN, the large particle physics laboratory near Geneva, Switzerland. Many scientists participated in experiments at CERN for extended periods of time, then returned to their laboratories around the world. These scientists were eager to exchange data and results, but had difficulties doing so. Tim understood this need, and understood the unrealized potential of millions of computers connected together through the Internet.

Most of the history of the Web is ahead of us. The Web is far from reaching its full potential as an agent of empowerment for everyone in the world. Web access through the world's 4+ billion mobile phones is an incredible opportunity. New Web technologies will enable billions of people currently excluded from the Web community to join it. We must understand the Web and improve its capabilities. We must ensure that Web technologies are free and open for all to leverage. The work of the Web Foundation aims to have a substantial, positive impact on all of these factors, and on the future history of the Web.

From http://www.webopedia.com/TERM/W/World_Wide_Web.html;
<http://webfoundation.org/about/vision/history-of-the-web/>

III. Post-reading activities

Task 6. Answer the questions based on the text.

1. Which are the most popular browsers?
2. What can be included in web pages?
3. What does the URL stand for?
4. What is the URL defined?
5. What can influence the way you view the WWW?
6. Who is considered to be an inventor of the WWW?
7. What is the aim of the Web Foundation?

Task 7: Complete the following sentences using the text:

1. The World Wide Web is a system of
2. There are several applications called Web browsers
3. What began as a research tool
4. Simply put, the World Wide Web is a way
5. Web pages can include
6. You can create living documents that are updated... .
7. Many members of the internet community only have access... .
8. Many scientists participated in experiments at CERN... .

Task 8. Are the statements true or false? Say why:

1. Many Internet servers are part of the World Wide Web.
2. The HTML is used to format the documents.
3. The World Wide Web is a way to share resources with very few people at certain time.
4. With the introduction of Mosaic and other graphical web browsers, the web has become a communications tool for a selected audience.
5. The address of the visited web is called the URL.
6. Netscape, Internet Explorer, Mosaic are the names of servers used by people.
7. Many web designers use features that only work for the Netscape or Microsoft Internet Explorer browser, or for a certain operating system, etc.
8. The World Wide Web was invented by Tim Berners-Lee in 1989 with the purpose of changing information among people working at CERN.
9. Tim Berners-Lee was a hardware engineer.
10. The WWW has reached the degree of perfection and will hardly develop anymore.

IV. Focus on grammar and lexis

Task 9. Put the words in the right order to make sentences.

- who it invented the in 1989 World Wide Web was Tim Berners-Lee.
- internet community many members of the only information access to web through e-mail have.
- of the Web most of ahead the history is of us.
- must we the Web and improve its understand capabilities.
- nothing wrong there is computer with your.

Task 10: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2			inventive				
3		download					
4	exchange						
5					operating		
6						linked	
7							empowering
8		code					
9			extensive				

Task 11: Put the verbs in brackets in the correct grammar form.

- The documents (a) _____ (to format) in a markup language (b) _____ (to call) HyperText Markup Language that (c) _____ (to support) links to other documents, as well as graphics, audio, and video files.
- What (d) _____ (to begin) as a research tool (e) _____ (to blossom) into something unexpected and much more fun.
- As the technology (f) _____ (to develop), even more amazing applications (g) _____ (to be) possible.
- It (h) _____ (to be) good to keep in mind that the web (i) _____ (not to look) the same to everyone.

5. The Web (j) _____ (to be) far from (k) _____ (to reach) its full potential as an agent of empowerment for everyone in the world.

Task 12: Fill in the gaps with suitable prepositions.

1. The Web is just one (a) _____ the ways that information can be disseminated _____ (b) the Internet.
2. The Internet, not the Web, is also used _____ (c) e-mail, which relies _____ (d) SMTP, Unset news groups, instant messaging and FTP.
3. The World Wide Web is a system _____ (e) interlinked hypertext documents that are accessed _____ (f) the Internet.
4. _____ (g) a web browser, one can view web pages that may contain text, images, videos, and other multimedia and navigate _____ (h) them _____ (i) hyperlinks.
5. The 1989 proposal was meant _____ (j) a more effective CERN communication system _____ (k) Berners-Lee eventually realized the concept could be implemented _____ (l) the world.

V. Final tasks

Task 13. Discuss the following ideas with your group-mates.

1. The WWW is an excellent opportunity for thousands of people to be employed.
2. The WWW has a great potential for further development.
3. Children should be strictly controlled or even prohibited to use the WWW.
4. Many people become addicted to surfing the WWW.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: server, browser, mosaic, communication, audience, surfer, locator, modem, designer, laboratory, experiment, markup language, link, footnote, web page, web, link, gopher, designer, feature, empowerment, operating system, capability.

Adjectives: formatted, original, specific, unrealized, potential.

Verbs: to code, to download, to update, to shy away, to crash, to enable, to ensure, to blossom.

Task 15: Provide the opposites to the English words:

Easy, unexpected, updated, basic, coded, eager, to improve, positive, substantial.

Task 16: Decipher the English abbreviations and explain what they mean:
HTML, FTP, http, www.

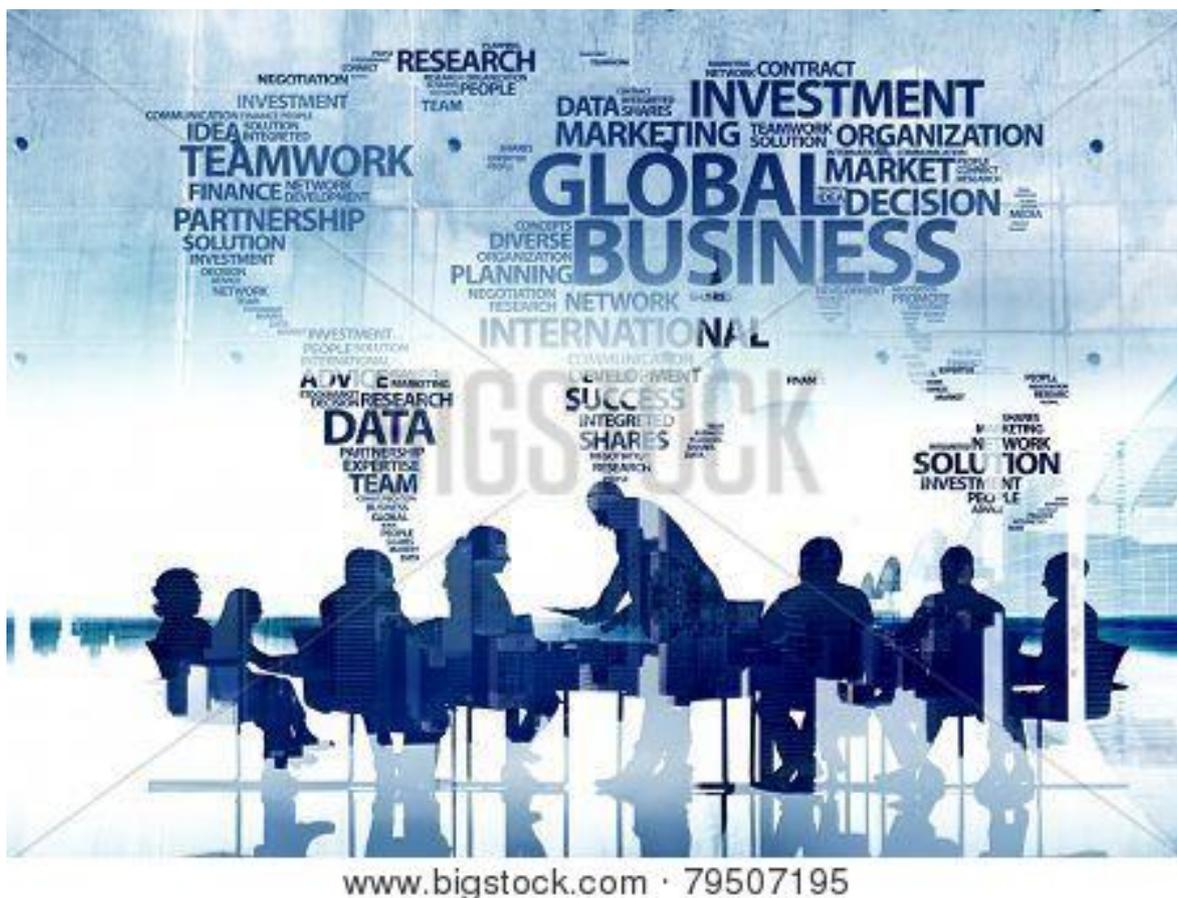
Task 17: Match the words and definitions:

1. server		a) visual images produced by computer processing
2. markup		b) to copy or transfer (data or a program) into the memory of one's own computer from another computer or the internet
3. graphics		c) a device or system for locating something, typically by means of radio signals
4. browser		d) a set of tags assigned to elements of a text to indicate their structural or logical relation to the rest of the text
5. footnote		e) a location connected to the Internet that maintains one or more web pages
6. download		f) a menu-based system which allows Internet users to search for and retrieve documents on topics of interest
7. FTP		g) a computer or computer program which manages access to a centralized resource or service in a network
8. locator		h) a person engaged in planning and creation of websites
9. site		i) file transfer protocol, a standard for the

		exchange of program and data files across a network
10. interest		k) a program with a graphical user interface for displaying HTML files, used to navigate the World Wide Web
11. gopher		l) an area on the screen which one clicks on to start an operation
12. web designer		m) an additional piece of information printed at the bottom of a page ■ a thing that is additional or less important
13. hot spot		n) a menu-based system which allows Internet users to search for and retrieve documents on topics
14. modem		o) a code or instruction which connects one part of a program or an element in a list to another
15. link		p) a combined device for modulation and demodulation, for example, between the digital data of a computer and the analogue signal of a telephone line

Task 18: Make up your own sentences with the words from Task 17 and share them with your partner.

UNIT 3. CHATS AND CONFERENCES



I. Pre-reading activities.

Task 1. Discuss the following questions.

1. How often do adolescents and teens spend time in chats? Is this kind of communication good for them?
2. How do chats operate? Give examples of a typical popular chat.
3. What is the main principle of the work of on-line conferences? Why are they important?

Task 2. Some of the following English words look or sound similar to the Ukrainian ones. Repeat them after your teacher and guess what they mean.

transmission [trænz'mɪʃ(ə)n] n.

message ['mesɪdʒ] n.

virtual ['vɜːtʃuəl] adj.

simultaneous

[sɪm(ə)'teɪnɪəs]

webcam ['webkæm] n.

application [æplɪ'keɪʃ(ə)n] n.

courtesy ['kɜːtəsɪ] n.

interactive ['ɪntər'æktɪv] adj.

workshop ['wɜːkʃɔːp] n.

whiteboard ['waɪt'bɔːd] n.

highlight ['haɪlaɪt] v.

stringent ['strɪŋ(d)ʒ(ə)nt] adj.

anonymous [ə'nɒnɪməs] adj.

manipulate [mə'nɪpjʊleɪt] v.

attendee [ətɛn'diː] n.

synchronous ['sɪŋkrənəs] adj.

Task 3. Match the English phrases on the left with their Ukrainian equivalents on the right.

1) text messages

2) Internet forums

3) group chat

4) screen sharing

5) Web conference

6) netiquette

7) interactive conferences

8) slideshow presentations

9) remote mouse pointer

10) standalone system

a) веб конференція

b) інтернет-форуми

c) мережевий етикет

d) слайдові презентації

e) дистанційний покажчик миші

f) текстові повідомлення

g) автономна система

h) спільне використання екрану

i) інтерактивні конференції

j) груповий чат

Task 4. Guess from the contexts what each of the underlined words means.

- a) Online chat may refer to communication over the Internet that offers a real-time transmission of text messages from sender to receiver.
- b) Online chat includes web-based applications that allow communication – often directly addressed, but anonymous between users in a multi-user environment.
- c) Chatiquette varies from community to community and generally describes basic courtesy.
- d) There can also be a strong sense of online identity leading to impression of subculture.
- e) The webinars and web conferences allow real-time point-to-point communications as well as multicast communications from one sender to many receivers.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What kind of communication is meant by online chatting?
2. What is chatiquette?
3. Which applications are covered by conferencing?

Chatting is becoming increasingly popular in the whole world nowadays. **Online chat** may refer to communication over the Internet that offers a real-time transmission of text messages from sender to receiver. Chat messages are generally short in order to enable other participants to respond quickly. Thereby, a feeling similar to a spoken conversation is created, which distinguishes chatting from other text-based online communication forms such as Internet forums and email. Online chat may address point-to-point communications as well as multicast communications from one sender to many receivers and voice and video chat, or may be a feature of a web conferencing service.

Online chat in a less stringent definition may be primarily any direct text-based or video-based (webcams), one-on-one chat or one-to-many group chat (formally also known as synchronous conferencing), using tools such as instant messages, Internet Relay Chat (IRC), talkers and possibly MUDs. The expression *online chat* comes from the word *chat* which means “informal conversation”. Online chat includes web-based applications that allow communication – often directly addressed, but anonymous between users in a multi-user environment. Web conferencing is a more specific online service, that is often sold as a service, hosted on a web server controlled by the vendor.

The term *chatiquette* (chat etiquette) is a variation of netiquette (Internet etiquette) and describes basic rules of online communication. These conventions or guidelines have been created to avoid misunderstandings and to simplify the communication between users. Chatiquette varies from community to community and generally describes basic courtesy. As an example, it is considered rude to write only in upper case, because it appears as if the user is shouting. The word chatiquette has been used in connection with various chat systems (e.g. Internet Relay Chat) since 1995.

Despite being virtual, chat can spill into the outside world. There can also be a strong sense of online identity leading to impression of subculture.

Chats are valuable sources of various types of information, the automatic processing of which is the object of chat/text mining technologies.

Web conferencing refers to a service that allows conferencing events to be shared with people from remote locations. These are sometimes referred to as **webinars** or, for interactive conferences, **online workshops**. In general, the service is made possible by Internet technologies, particularly on TCP/IP connections. The service allows real-time point-to-point communications as well as multicast communications from one sender to many receivers. It offers data streams of text-based messages, voice and video chat to be shared simultaneously, across geographically dispersed locations. Applications for web conferencing include meetings, training events, lectures, or short presentations from any computer

The typical features of a web conference include:

Slideshow presentations - where images are presented to the audience and markup tools and a remote mouse pointer are used to engage the audience while the presenter discusses slide content.

- Live or streaming video - where full motion webcam, digital video camera or multi-media files are pushed to the audience.
- VoIP - Real time audio communication through the computer via use of headphones and speakers.
- Web tours - where URLs, data from forms, cookies, scripts and session data can be pushed to other participants enabling them to be pushed through web based logons, clicks, etc. This type of feature works well when demonstrating websites where users themselves can also participate.
- Meeting Recording - where presentation activity is recorded on the client side or server side for later viewing and/or distribution.
- Whiteboard with annotation (allowing the presenter and/or attendees to highlight or mark items on the slide presentation. Or, simply make notes on a blank whiteboard.)
- Text chat - For live question and answer sessions, limited to the people connected to the meeting. Text chat may be public (echoed to all participants) or private (between 2 participants).
- Polls and surveys (allows the presenter to conduct questions with multiple choice answers directed to the audience)
- Screen sharing/desktop sharing/application sharing (where participants can view anything the presenter currently has shown on their screen. Some screen sharing applications allow for remote desktop control, allowing participants to manipulate the presenters' screen, although this is not widely used.)

Web conferencing is often sold as a service, hosted on a web server controlled by the vendor. Offerings vary per vendor but most hosted services

provide a cost per user per minute model, a monthly flat fee model and a seat model. Some vendors also provide a server side solution which allows the customer to host their own web conferencing service on their own servers. Examples of this include Microsoft Office Communications Server (Lync Server).

Web conferencing started with Plato, a small standalone system that supports a single class of terminals connected to a central computer.

From: http://en.wikipedia.org/wiki/Web_conferencing

III. Post-reading activities

Task 6. Answer the questions based on the text.

1. Why are only short messages included in online chatting?
2. How does chatiquette differ from netiquette?
3. What is web conferencing?
4. What are the typical features of web conferences?
5. What is the VoIP?
6. What are Web tours?
7. How is Web conferencing provided?

Task 7. Read the text again and complete the following sentences using the information you need.

1. Online chat may refer to communication over the Internet that offers
2. Online chat may address
3. Web conferencing is a more specific
4. Web conferencing refers to a service that
5. Web conferencing started with

Task 8. Are the statements true or false? Say why:

1. Chat messages are long and complicated and take long to answer them.
2. Online chat can be used only for communications from one sender to many receivers.
3. The term chatiquette is basic rules of online communication that should be followed by users.
4. Web conferencing refers to a service that allows conferencing events for many people who gather in the same place.

5. Slideshow presentations use remote mouse pointer to present certain information to the audience.
6. Screen sharing never allows participants to manipulate the presenters screen.
7. VoIP is not included in web conferences.
8. Text chats may be used only by two 2 participants.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column

1. Online chat includes web-based applications that		a) with various chat systems since 1995.
2. Web conferencing refers to a service		b) the automatic processing of which is the object of chat/text mining technologies.
3. The word chatiquette has been used in connection		c) allow communication – often directly addressed, but anonymous between users in a multi-user environment.
4. Chats are valuable sources of various types of information,		d) chat can spill into the outside world
5. Despite being virtual,		e) hosted on a web server controlled by the vendor.
6. Web conferencing is often sold as a service,		f) that allows conferencing events to be shared with people from remote locations.

Task 10. Put the words in the right order to make sentences.

- a) Plato Web conferencing standalone system with started, a small.
- b) more specific Web conferencing is a service online.
- c) to respond chat messages are to quickly enable other short participants.
- d) from to community varies chatiquette community.

e) chatiquette the used word has with been in various connection chat systems.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2		identify					
3					imagining		
4	server						
5						presented	
6		apply					
7							streaming
8		annotate					
9			multicast				

Task 12: Put the verbs in brackets in the correct grammar form.

If you _____ (a) (have) an online business, you might want _____ (b) (consider) using chat rooms to your advantage. This _____ (c) (help) you to get more visitors to your website. More and more people _____ (d) (use) chat rooms to interact with each other, and I think it is quite important that you _____ (e) (learn) how to make use of this chance to gain more traffic easily. I _____ (f) (enjoy) using chat rooms because I _____ (g) (to be) able to get the right group of people to visit my sites.

I _____ (h) (see) quite a number of people using the ‘hit and run’ technique. They usually _____ (i) (visit) a website, _____ (e) (post) their ads, and move onto the next website.

Task 13: Fill in the gaps with suitable prepositions.

1. I would prefer to use a personal touch to engage (a) _____ the right audience. First of all, choose a room (b) _____ you find the right audience. For example, you can look (c) _____ gaming chat rooms if you are promoting a gaming website. Talk (d) _____ games that you usually play online. Once the other party is comfortable (e) _____ whatever you are talking about, you can then promote your own website.

2. Online conferences greatly enhance your traditional face-to-face national conference, annual meeting or regional event (f) _____ interactive webcasts, poster sessions, and unique opportunities (g) _____ participant collaboration.
3. Online conferences don't require participants to get (h) _____ an airplane. They take less time (i) _____ from work and don't require expensive hotel room and food expenses.
4. Your online conference will foster discussion, networking and elicit conversations that go (j) _____ for months (k) _____ your event.
5. Direct Learn Services Ltd has organised a large number (l) _____ online conferences, providing conference organisation, hosting and administration services. These services, plus examples (m) _____ previous conferences, can be seen (n) _____ selecting the options above. **V. Final tasks**

Task 14. Discuss the following ideas with your group-mates.

1. Online conferences will outcompete conventional conferences in the near future and the latter will disappear.
2. Teenagers and adolescents are getting used to online chatting more and more, and that can result in their psychological isolation and will hinder their face-to-face communication in real life.
3. Online chatting and acquaintances can be dangerous.
4. Online conferences are more useful for the development of sciences than conventional conferences.

ADDITIONAL EXERCICES

Task 15: Explain the meaning of the words and phrases in English:

Nouns: webcam, application, chatiquette, courtesy, webinars, online workshops, whiteboard, attendees, logon, whiteboard, headphones, cookies.

Adjectives: point-to-point, multicast, synchronous, instant, web-based, text-based, virtual, online, simultaneous, geographically dispersed, multi-media, standalone, stringent.

Verbs: to highlight, to manipulate

Task 16: Provide the opposites to the English words:

Dispersed, to increase, to send, stringent, one-on-one, anonymous, remote, to push, upper, to simplify, vendor.

Task 17: Decipher the English acronyms and explain what they mean:

MUD, IRC, VoIP, URLs, TCP, IP

Task 18: Match the words and definitions:

1. transmission		a) directly from the sender to the receiver
2. text message		b) an area of the network where users can communicate interactively with each other
3. webcam		c) computer-based text or virtual reality game that several players play at the same time, interacting with each other as well as with characters controlled by the computer
4. application		d) a video camera connected to a computer connected to the Internet, so that its images can be seen by Internet users
5. email		e) an electronic communication sent and received by mobile phone
6. point-to-point		f) relating to, or using the World Wide Web
7. IRC		g) send (data) across a computer network to several users at the same time
8. MUD		h) a presentation supplemented by or based on a series of projected photographic slides
9. web-based		i) a person who attends a conference or other gathering
10. multicast		k) messages distributed by electronic means from one computer user to one or more recipients via a network
11. slideshow		l) a program or piece of software designed to fulfil a particular purpose
12. multimedia		m) a program or signal that is broadcast or sent out
13. TCP/IP		n) using more than one medium of expression or communication
14. attendee		a wipeable board with a white surface

		used for teaching or presentations
15. cookies		transmission control protocol/Internet protocol, used to govern the connection of computer systems to the Internet
16. web server		uniform (or universal) resource locator, the address of a World Wide Web page
17. whiteboard		a packet of data sent by an Internet server to a browser, which is returned by the browser each time it subsequently accesses the same server, used to identify the user or track their access to the server
18. URL		a computer or computer program which manages access to a centralized resource or service in a network

Task 19: Make up your own sentences with the words and expressions from Task 18 and share them with your partner.

UNIT 4. INTERNET SECURITY



I. Pre-reading activities.

Task 1. Discuss the following questions.

1. Has Internet security become an everyday necessity? Why?
2. Is Internet security a matter of concern for average computer users or only for businesses?
3. What can be the consequences of ignoring regular updating of your antivirus software?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

- | | |
|-----------------------------------|--------------------------------|
| 1) fraudulent ['frɔːdjʊlənt] adj. | a) spam [spæm] n. |
| 2) virus ['vaɪ(ə)rəs] n. | b) parental [pə'rent(ə)l] adj. |
| 3) hacker ['hækə] n. | c) utility [ju:'tɪlətɪ] n. |
| 4) version ['vɜːʃ(ə)n] n. | d) intruder [ɪn'truːdə] n. |
| 5) firewall ['faɪəwɔːl] n. | e) bug [bʌg] n. |
| 6) potential [pə'tenʃ(ə)l] adj. | f) malware ['mælwɛə] n. |

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|---------------|------------------------------------|
| 1) rescue CD | a) шифрування |
| 2) boot up | b) службова/ обслуговуюча програма |
| 3) encryption | c) заражений |
| 4) malware | d) вбудований |
| 5) bootable | e) анти-спам |
| 6) infected | f) завантажувати |
| 7) built-in | g) рятувальні CD |
| 8) anti-spam | h) інтегрована |
| 9) integrated | i) завантажувальний |
| 10) utility | e) зловмисна програма |

Task 4. Guess from the contexts what each of the underlined words means.

- a) As in any public space, you should take appropriate precautions to protect yourself against fraudulent people and processes.
- b) F-Secure's software comes with an antivirus program as well as a built-in firewall to block potential incoming and outgoing threats.

- c) This software is often pre-installed on new computers as a free trial for either 30-60 days so that users can evaluate whether they want to use it.
- d) Kaspersky Internet Security 2010 provides antivirus and anti-spam components along with a firewall and a “sandbox” mode that allows you to safely execute suspicious files without danger of harming your operating system.
- e) ESET’s Smart Security system provides antivirus, anti-spam and anti-malware components combined with a strong firewall to help keep intruders at bay.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. Why is it so important to choose the right security system nowadays?
2. What are the typical features of F-Secure?
3. What features are provided by Avast?

Ten best Internet security systems

The Internet is a large common space, accessible to everyone around the world. As in any public space, you should take appropriate precautions to protect yourself against fraudulent people and processes.

Choosing the right Internet security system for your computer can be the difference between keeping your computer and personal information safe, or having your computer infected with a virus and potentially losing your private information to hackers. With the help of a list of the 10 best Internet security systems, you’ll be able to keep your computer and your personal information safe as you surf online.

F-Secure. The 2010 version of the F-Secure Internet Security suite provides users with an updated interface that makes the software easier to use. F-Secure’s software comes with an antivirus program as well as a built-in firewall to block potential incoming and outgoing threats.

Norton Internet Security. Norton Internet Security 2010 has won Editor’s Choice awards from PC Magazine for its speed, detection ability and all-around excellence. This software is often pre-installed on new computers as a free trial for either 30-60 days so that users can evaluate whether they want to use it.

AVG. AVG Internet Security 9 provides antivirus, anti-malware and firewall components in one convenient package. This makes the software perfect for an all-around defense of your computer against online attackers.

Kaspersky. Kaspersky Internet Security 2010 provides antivirus and anti-spam components along with a firewall and a “sandbox” mode that allows you to safely execute suspicious files without danger of harming your operating system. All of these components mean that the program consumes more system resources than other top Internet security systems, but it is still an excellent choice.

Avira. While Avira has had some issues with bugs and user interface problems with their Avira Premium Security Suite 9, it still provides good virus and malware protection. Avira also features a bootable rescue CD as a free download so that you can clean your system even if you can’t boot it up.

Avast! Avast! Antivirus has earned a high rating from Consumer Reports and features real-time instant messaging scanning along with standard antivirus, anti-malware and firewall components. One feature that sets Avast! apart from other antivirus programs is that it has a special “lockbox” where you can store important files, keeping them impervious to virus infection from anywhere else on your system.

ZoneAlarm. In addition to a firewall, antivirus and anti-spam protection, ZoneAlarm Extreme also offers parental controls for your computer along with a disk encryption utility. The sheer number of features in this software means that it takes up much more RAM than other security systems, but it’s a great choice if you don’t want to purchase each of these components separately.

McAfee. McAfee Total Protection 2009 is often included pre-installed on new computers and features virus and malware protection. While it performs well in detecting threats, it can cause your system to run slowly due to how much memory it uses.

ESET. ESET’s Smart Security system provides antivirus, anti-spam and anti-malware components combined with a strong firewall to help keep intruders at bay. It also consumes very little system resources, a boon for people who run multiple programs at once or like to play high-performance games.

BitDefender. Consumer Reports and PC World have given BitDefender a high ranking thanks to the program’s high detection rate and its ease of use. While it can perform real-time and on-demand scanning in files and instant messages, it does not include an integrated firewall.

From: http://www.ehow.com/list_5795698_top-10-internet-security-systems.html

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. Which features distinguish the Norton Internet Security from other antivirus programs?
2. What does the AVG Internet Security provide for its users?
3. Why does the Kaspersky Internet Security work slower?
4. What problems did Avira have?
5. Why does ZoneAlarm take up much more RAM than other security systems?
6. Why can McAfee cause your system to run slowly?
7. What are the typical features of the ESET's Smart Security system?
8. Why did BitDefender get one of the highest ranking?

Task 7. Read the text again and complete the following sentences using the information you need.

1. All of these components mean that the program consumes more _____ than other top Internet security systems.
2. AVG Internet Security 9 provides antivirus, anti-malware and firewall components in one _____ .
3. With the help of a list of the 10 best Internet security systems, you'll be able to keep your computer and your personal information safe as you _____ .
4. While the program performs well in _____, it can cause your system to run slowly due to how much memory it uses.
5. ZoneAlarm Extreme also offers parental controls for your computer along with a _____ .

Task 8. Are the statements true or false? Say why:

1. Any Internet security system is aimed at keeping your computers from being infected with a virus and potentially losing your private information to hackers.
2. The 2010 version of the F-Secure Internet Security is regarded obsolete, that can not provide users with an updated interface.
3. Norton Internet Security has won awards because its speed, detection ability and all-around excellence.

4. AVG Internet Security 9 provides antivirus, anti-malware and firewall components in several packages and makes the software very effective for the defense of your computer.
5. Kaspersky Internet Security 2010 provides antivirus and anti-spam components along with a firewall but consumes too many system resources and is unpopular.
6. Avira system is considered less efficient comparing with other antivirus programs.
7. The unique feature of Avast is that it has a special program that can store important and prevents them from any viruses.
8. ZoneAlarm means that it takes up more RAM than other security systems because of the sheer number of features in this software.
9. McAfee is not only very efficient because of its virus and malware protection, but it is very fast.
10. ESET's Smart Security system is especially useful for those who are fond of high-performance games.
11. BitDefender is rarely used nowadays because it does not include an integrated firewall.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. McAfee Total Protection 2009 is often included pre-installed on new computers		A. accessible to everyone around the world.
2. The Internet is a large common space,		B. where you can store important files.
3. In addition to a firewall, antivirus and anti-spam protection,		C. and features virus and malware protection.
4. One feature that sets Avast! apart from other antivirus programs is that it has a special "lockbox"		D. on new computers and features virus and malware protection.
5. McAfee Total Protection 2009 is often included pre-installed		E. ZoneAlarm Extreme also offers parental controls for your computer along with a

		disk encryption utility.
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Task 10. Put the words in the right order to make sentences.

1. provides Avira malware virus still good and protection.
2. performs the program threats in detecting well.
3. Avira with you can clean your even boot it if you can't up system.
4. consumer reports high Avast has a rating from earned.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

№	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2		operate					
3	harm						
4			integrative				
5		inform					
6			bootable				
7					detecting		
8						protected	
9							ranking

Task 12: Fill in the gaps with suitable prepositions.

1. Trend Micro Internet Security software provides advanced protection and privacy _____ (a) your digital life. It's designed _____ (b) safeguard you _____ (c) social networks like Facebook, Google, Twitter, and LinkedIn.
2. The Internet has drastically changed the way that children interact _____ (d) the world. They have access _____ (f) in-depth knowledge, tools to express their creativity, and people _____ (g) all over the world. Yet along _____ (h) offering a fascinating, new way to connect _____ (i) the world, the Internet also offers new risks:
 - Cyberbullying
 - Exposure _____ (j) inappropriate material
 - Online predators
 - Revealing too much personal information
3. Internet safety _____ (k) online safety, is the knowledge _____ (l) maximizing the user's personal safety _____ (m) security risks _____ (n)

private information and property associated _____ (o) using the internet, and the self-protection _____ (p) computer crime _____ (q) general.

V. Final tasks

Task 14. Discuss the following ideas with your group-mates.

1. Describe the best security program.
2. All anti-virus should be available without any charge.
3. Children and teenagers are the most vulnerable computer users and special computer programs should be designed for them.

VI. Additional exercises.

Task 15: Explain the meaning of the words and phrases in English:

Nouns: virus, hacker, interface, software, firewall, award, malware, security systems, bug, boon, detection .

Adjectives: fraudulent, infected, safe, updated, personal, built-in, incoming, outgoing, pre-installed, all-around, anti-spam, bootable, instant, impervious, parental, integrated.

Verbs: to surf, to block, to evaluate, to execute, consume, to boot up, to feature, to download, to scan, to purchase.

Idiom: to keep smb. at bay.

Task 16: Provide the opposites to the English words:

Fraudulent, boon, safe, updated, incoming, integrated, to block, to purchase.

Task 17: Decipher the English abbreviations and explain what they mean:

AVG, RAM, PC, ESET.

Task 18: Match the words and definitions:

1. hacker		a) forming an integral part of a structure
2. surf		b) converting (information or data) into a code, especially to prevent unauthorized access
3. online		c) a part of a computer system or network which is designed to block unauthorized

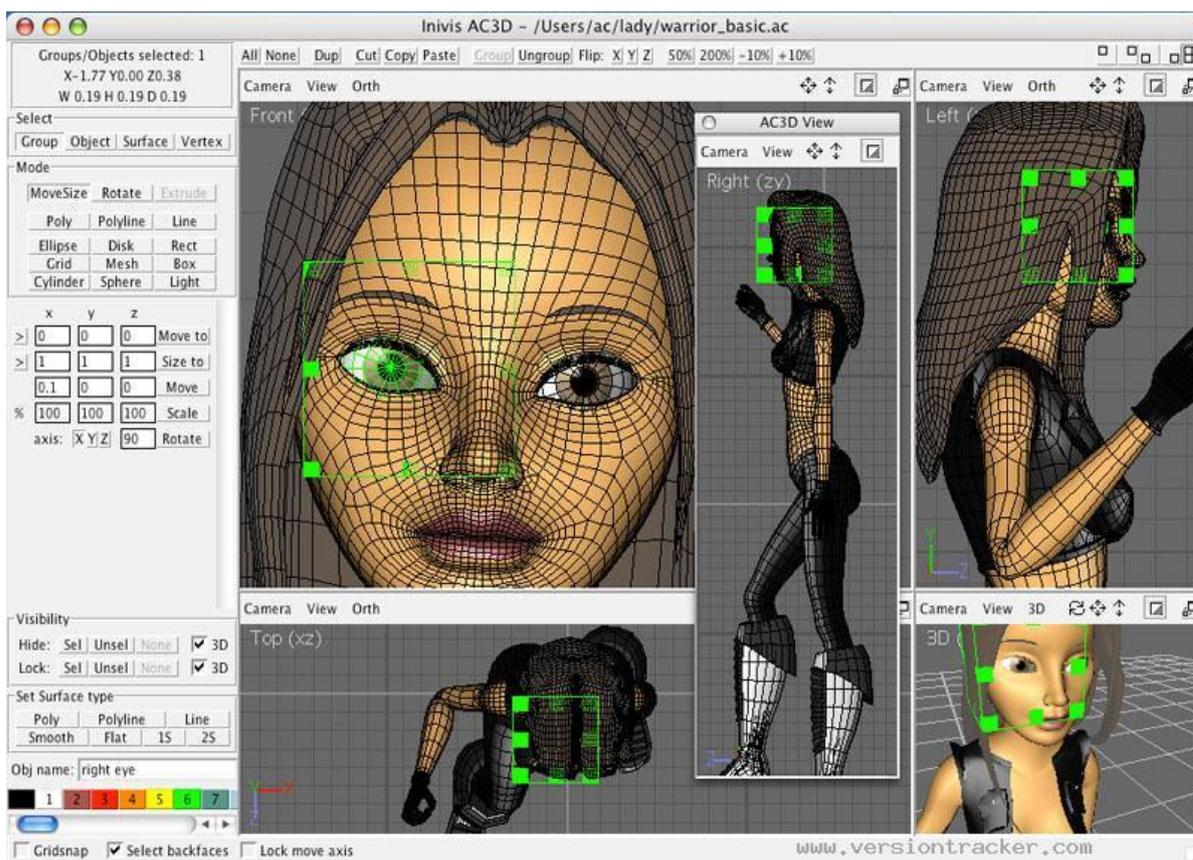
		access while permitting outward communication
4. update		d) malicious software, such as a virus, which is specifically designed to disrupt or damage a computer system
5. interface		e) controlled by or connected to a computer (of an activity or service) available on or performed using the Internet or other computer network
6. built-in		f) the action or process of identifying the presence of something concealed
7. firewall		g) an error in a computer program or system
8. pre-install		h) a program for carrying out a routine function
9. detection		i) a person who uses computers to gain unauthorized access to data
10. malware		k) make (something) more modern or up to date
11. virus		l) semiconductor memory in which all storage locations can be rapidly accessed in the same amount of time.
12. bug		m) convert (a document or picture) into digital form for storage or processing on a computer
13. encryption		n) a thing that is helpful or beneficial
14. utility program		o) a device or program enabling a user to communicate with a computer
15. boon		p) give (a mechanical component) an internal load independent of any working load, typically in order to reduce distortion or noise in operation
16. RAM		q) a piece of code which is capable of copying itself and typically has a detrimental effect, such as corrupting the system or destroying it.
17. scan		s) move from site to site on (the Internet)

Task 19: Make up your own sentences with the words and expressions from the text and share them with your partner.

Task 20: Put questions to the following sentences:

1. The main advantage of the networked anonymizer design is that it makes traffic analysis.
2. Anonymizer sites access the Internet on your behalf, protecting your personal information from disclosure.
3. You can access your favorite anonymizer website, type in your destination, and the anonymizer does your surfing for you and passes the results back to your browser.
4. Many single-point anonymizers create an anonymized URL by appending the name of the site you wish to access to their URL, something like the following.
5. The 2010 version of the F-Secure Internet Security suite provides users with an updated interface that makes the software easier to use.
6. Norton Internet Security 2010 has won Editor's Choice awards from PC Magazine for its speed, detection ability and all-around excellence.
7. AVG Internet Security 9 provides antivirus, anti-malware and firewall components in one convenient package.
8. Avira also features a bootable rescue CD as a free download so that you can clean your system even if you can't boot it up.

UNIT 5. GRAPHICS AND DESIGN



I. Pre-reading activities.

Task 1. Discuss the following questions.

1. How important are graphics and design in the modern computer technologies?
2. Can the modern society manage without graphics and design?
3. How important is preparation of specialists in graphics and design in Ukraine?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

1. dimension [dɪ'menʃn] n.
2. digital ['dɪdʒɪtl] adj.
3. image ['ɪmɪdʒ] n.
4. artifact ['ɑ:tɪfækt] n.
5. pixel ['pɪks(ə)l] n.
6. sprite [sprɪt] n.
12. virtual ['vɜ:tʃʊəl] adj.
13. matrix ['meɪtrɪks] n.
14. multiple ['mʌltɪpl] adj.
15. procedural [prə'si:dʒərəl]
16. simulation [sɪmjʊ'leɪʃən]
17. hierarchy ['haɪərə:kɪ] n.

- | | |
|------------------------------------|------------------------------|
| 7. animation [æni'meɪʃən] n. | 18. skeletal ['skelətɪ] adj. |
| 8. bitmap ['bɪtmæp] n. | 19. algorithm ['ælgərɪð(ə)m] |
| 9. overlay [əʊvə'leɪ] n., v. | 20. bandwidth ['bændwɪdθ] n |
| 10. complementary [kɒmplɪ'mentəri] | 21. medium ['mi:dɪəm] n. |
| 11. vector ['vektə] n. | 22. encode [ɪn'kəʊd] v. |

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|----------------|------------------------|
| 12. simulation | i) класифікувати |
| 13. to encode | j) піксель |
| 14. to assort | k) растр |
| 15. artifact | l) фантом, спрайт |
| 16. pixel | m) растрове зображення |
| 17. raster | n) моделювання |
| 18. sprite | o) каркасний |
| 19. bitmap | p) матриця |
| 20. skeletal | i) артефакт |
| 21. matrix | k) кодувати |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- 2D computer graphics are mainly used in applications that were originally developed upon traditional printing and drawing technologies such as typography.
- A large form of digital art being pixel art is created through the use of raster graphics software, where images are edited on the pixel level.
- A sprite is a two-dimensional image or animation that is integrated into a larger scene.
- Computer animation is the art of creating moving images via the use of computers. It is a subfield of computer graphics and animation.
- Other methods of animation include procedural and expression-based techniques.

II. While-reading activities.

Task 5. Read the text and answer the questions.

- Where is two-dimensional computer graphics mostly used?
- How do pixel art and sprite graphics differ from each other?
- What is the connection between vector graphics and sprite graphics?

Image types

Two-dimensional. 2D computer graphics are the computer-based generation of digital images — mostly from models, such as digital image, and by techniques specific to them.

2D computer graphics are mainly used in applications that were originally developed upon traditional printing and drawing technologies such as typography. In those applications, the two-dimensional image is not just a representation of a real-world object, but an independent artifact with added semantic value; two-dimensional models are therefore preferred, because they give more direct control of the image than 3D computer graphics, whose approach is more akin to photography than to typography.

Pixel art. A large form of digital art being pixel art is created through the use of raster graphics software, where images are edited on the pixel level. Graphics in most old (or relatively limited) computer and video games, graphing calculator games, and many mobile phone games are mostly pixel art.

Sprite graphics. A sprite is a two-dimensional image or animation that is integrated into a larger scene. Initially including just graphical objects handled separately from the memory bitmap of a video display, this now includes various manners of graphical overlays.

Originally, sprites were a method of integrating unrelated bitmaps so that they appeared to be part of the normal bitmap on a screen, such as creating an animated character that can be moved on a screen without altering the data defining the overall screen.

Vector graphics. Vector graphics formats are complementary to raster graphics. Raster graphics is the representation of images as an array of pixels and is typically used for the representation of photographic images. Vector graphics consists in encoding information about shapes and colors that comprise the image, which can allow for more flexibility in rendering.

Three-dimensional. 3D graphics are graphics that use a three-dimensional representation of geometric data. 3D computer graphics rely on similar algorithms as 2D computer graphics do in the frame and raster graphics (like in 2D) in the final rendered display. In computer graphics software, the distinction between 2D and 3D is occasionally blurred; 2D applications may use 3D techniques to achieve effects such as lighting, and primarily 3D may use 2D rendering techniques.

Computer animation. Computer animation is the art of creating moving images via the use of computers. It is a subfield of computer graphics and animation. Increasingly it is created by means of 3D computer graphics, though

2D computer graphics are still widely used for stylistic, low bandwidth, and faster real-time rendering needs. Sometimes the target of the animation is the computer itself, but sometimes the target is another medium, such as film. It is also referred to as CGI (Computer-generated imagery or computer-generated imaging), especially when used in films.

Virtual entities may contain and be controlled by assorted attributes, such as transform values (location, orientation, and scale) stored in an object's transformation matrix. Animation is the change of an attribute over time. Multiple methods of achieving animation exist; the rudimentary form is based on the creation and editing of keyframes, each storing a value at a given time, per attribute to be animated. The 2D/3D graphics software will change with each keyframe, creating an editable curve of a value mapped over time, in which results in animation. Other methods of animation include procedural and expression-based techniques: the former consolidates related elements of animated entities into sets of attributes, useful for creating particle effects and crowd simulations; the latter allows an evaluated result returned from a user-defined logical expression, coupled with mathematics, to automate animation in a predictable way (convenient for controlling bone behavior beyond what a hierarchy offers in skeletal system set up).

To create the illusion of movement, an image is displayed on the computer screen then quickly replaced by a new image that is similar to the previous image, but shifted slightly. This technique is identical to the illusion of movement in television and motion pictures.

From: http://en.wikipedia.org/wiki/Computer_graphics

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What are the differences between three-dimensional and two-dimensional graphics?
2. What are the main features of computer animation?
3. What are the main methods of computer animation?
4. How is the illusion of movement created in animation?
5. What does 3D computer graphics rely on?

Task 7: Complete the following sentences using the text:

1. 2D computer graphics are
2. The two-dimensional image is not just a representation of

3. A large form of digital art being pixel art is created through
4. Originally, sprites were a method of
5. Vector graphics consists in
6. Increasingly the computer animation it is created by means of... .
7. The 2D/3D graphics software will change with

Task 8. Are the statements true or false? Say why:

1. 2D computer graphics are mainly used in applications that were originally developed to regulate traffic.
2. Two-dimensional image is a representation of a real-world object which has semantic value.
3. Tree-dimensional models are therefore preferred, because they give more direct control of the image than 2D computer graphics.
4. Pixel art is used in old computer and video games, graphing calculator games, and many mobile phone games.
5. Originally sprite included just graphical objects handled separately from the memory bitmap of a video display.
6. Raster graphics is an array of pixels and is mostly used for the representation of cartoons and films.
7. There is always a strict distinction between 2D and 3D.
8. Computer animation is used to represent static images on the screen of computers.
9. Virtual entities contain attributes, which are stored in an object's transformation matrix.
10. In computer animation the illusion of movement is created by similar images which quickly replace each other.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. A sprite is a two-dimensional image or animation		A. where images are edited on the pixel level.
2. A large form of digital art being pixel art is created through the use of raster graphics software,		B. an array of pixels and is typically used for the representation of photographic images.

3. Raster graphics is the representation of images as		C. creating an editable curve of a value mapped over time, in which results in animation.
4. The 2D/3D graphics software will change with each keyframe,		D. creating moving images via the use of computers.
5. Computer animation is the art of		E. that is integrated into a larger scene.

Task 10: Put the words in the right order to make sentences.

1. graphic visual the methodology of communication design is.
2. the most composition is of features of graphic design one important.
3. published Raffe's *Graphic Design*, , to be the first book to is considered use "Graphic Design" in its title in 1927.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2					printing		
3		draw					
4		overlay					
5			complementary				
6	code						
7							transforming
8			multiple				
9			procedural				

Task 12: Fill in the gaps with suitable prepositions.

1. Computer generated imagery can be categorized (a) _____ several different types.
2. (b) _____ the past decade, other specialized fields have been developed (c) _____ information visualization, and scientific visualization more concerned (d) _____ the visualization (e) _____ three dimensional phenomena (architectural, meteorological, medical, biological, etc.), where the emphasis

- is (f) _____ realistic renderings of volumes, surfaces, illumination sources, and so forth, perhaps (g) _____ a dynamic (time) component.
3. Many (h) _____ the most important early breakthroughs (i) _____ the transformation (j) _____ graphics (k) _____ utilitarian (l) _____ realistic occurred (m) _____ the University of Utah (n) _____ the 1970s.

V. Final tasks

Task 13. Discuss the following ideas with your group-mates.

1. Computer graphics is the fastest developing field in computer industry.
2. Specialists in computer graphics will soon be in growing demand in Ukraine.
3. Ukraine can become a potential hub of Europe in computer graphics.
4. Ukrainian specialists in computer graphics can successfully compete with professionals in developed countries.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: image, technique, artifact, pixel, raster, sprite, bitmap, overlay, data, vector, algorithm, medium, film, matrix, simulation, hierarchy.

Adjectives: digital, complementary, virtual, multiple, skeletal.

Verbs: to overlay, to encode, to assort.

Task 15: Provide the opposites to the English adjectives and phrases:

Virtual, multiple, separate, initial, flexible, widely used, animated, latter, logical, quick.

Task 16: Decipher the English abbreviation and explain what it means: SGI.

Task 17: Match the words and definitions:

1. pixel		a) a representation in which each item corresponds to one or more bits of information, esp. the information used to control the display of a computer screen.
2. raster		b) the process of assigning a specific

		parameter value to an object at a specific point in time.
3. bitmap		c) the smallest area on a computer screen which can be given a separate colour by the computer.
4. animation		d) a series of mathematical steps which will give you the answer to a particular kind of problem or question.
5. encoding		e) an organizational structure in which two or more lines of command, responsibility, or communication may run through the same individual.
6. algorithm		f) a system in which members of an organization or society are ranked according to relative status or authority
7. bandwidth		g) a rectangular pattern of parallel scanning lines followed by the electron beam on a television screen or computer monitor
8. medium		h) a type of graphical representation using lines to construct the outlines of objects
9. matrix		i) a means by which something is communicated or expressed
10. hierarchy		k) the manipulation of electronic images by means of a computer in order to create moving images
11. vector		l) the range of frequencies used for a particular telecommunications signal, radio transmission, or computer network.
12. key frame		m) converting (information or an instruction) into a particular form
13. sprite		n) a computer graphic which may be moved on-screen and otherwise manipulated as a single entity

Task 18: Make up your own sentences with the words and expressions from Task 17 and share them with your partner.

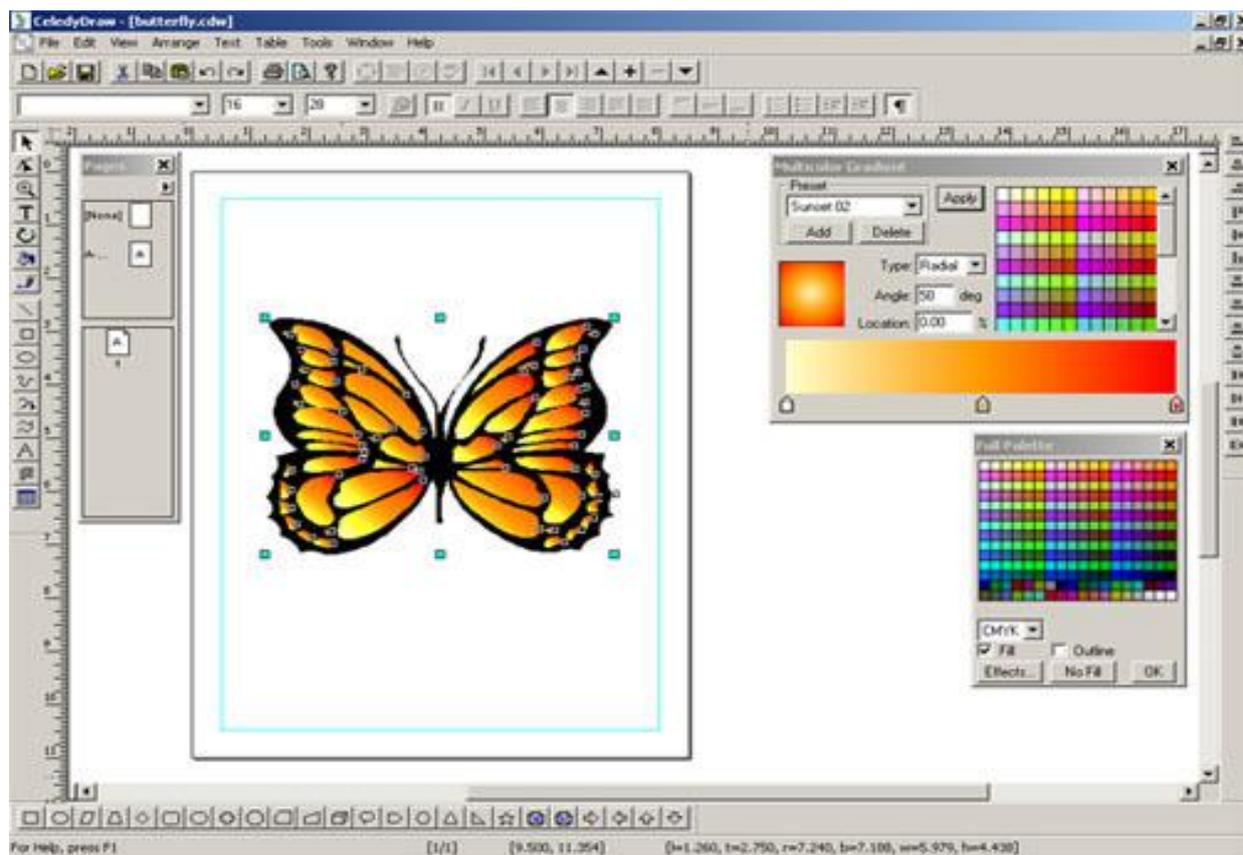
Task 19: Put the verbs in brackets in the correct grammar form.

1. The phrase “computer graphics” itself (a) _____ (coin) in 1960 by William Fetter, a graphic designer for Boeing. In 1961 another student at MIT, Steve Russell, (b) _____ (create) the second video game, Spacewar. (c) _____ (write) for the DEC PDP - 1, Spacewar (d) _____ (be) an instant success and copies started (e) _____ (flow) to other PDP-1 owners and eventually DEC (f) _____ (get) a copy.
2. Recently many powerful tools (g) _____ develop to visualize data.
3. Computer imagery (h) _____ (find) on television, in newspapers, for example in weather reports, or for example in all kinds of medical investigation and surgical procedures.
4. The term computer graphics (i) _____ (use) in a broad sense (j) _____ (describe) "almost everything on computers that (k) _____ (not be) text or sound". Typically, the term *computer graphics* (l) _____ (refer) to several different things.

Task 20: Correct the sentences. There is one mistake in each sentence. Find it and write the sentences that have been corrected.

1. A good Computer Graphic Design Training will equipped you with a wide range of design skills.
2. In 1849, Henry Cole have become one of the major forces in design education in Great Britain.
3. During the Tang Dynasty (618–907) between the 7th and 9th century AD, wood blocks was cut to print on textiles and later to reproduce Buddhist texts.
4. A Buddhist scripture printed in 868 is believing to be the earliest known printed book.
5. Sometime around 1450, Johann Gutenberg’s printing press made books wide available in Europe.

UNIT 6. DESKTOP PUBLISHING



I. Pre-reading activities.

Task 1. Discuss the following questions.

1. What does desktop publishing include?
2. Where can the application of modern web design be most profitable?
3. What are the reasons for such unstoppable and fast development of web design?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

- | | |
|------------------------------------|-------------------------------------|
| 1. computerized [kəmp`ju:təraɪzd], | 13. billboard I ['bɪlbɔ:d] n. |
| 2. poster ['pəustə] n. | 14. cascade [kæs'keɪd] n. |
| 3. printable ['prɪntəbl] adj. | 15. view [vju:] n., v. |
| 4. parameter [pə'ræmɪtə] n. | 16. template ['templɪt] n. |
| 5. monitor ['mɒnɪtə] n. | 17. automatically [ɔ:tə'mætɪk(ə)lɪ] |
| 6. layout ['leɪaut] n. | 18. modify ['mɒdɪfaɪ] v. |
| 7. embed [ɪm'bed] adj. | 19. aesthetically [i:s'teɪtɪk(ə)lɪ] |

- | | |
|------------------------------------|---------------------------------|
| 8. transparency [træn'spærənsɪ] n. | 20. typography [taɪ'pɒgrəfɪ] n. |
| 9. wraparound ['ræpəraʊnd] n. | 21. margin ['mɑ:ʤɪn] n. |
| 10. operate ['ɒp(ə)reɪt], | 22. batch [bætʃ] n. |
| 11. mode [məʊd] n. | 23. process ['prəʊses] n. |
| 12. proceeding [prə'si:dɪŋ] n. | |

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|------------------------|--|
| 1. bunch | a) прозорість у КГА |
| 2. template | b) циклічне повернення |
| 3. monitor | c) афіша, реклама |
| 4. layout | d) режим |
| 5. transparency | e) багатосторінковий |
| 6. wraparound | f) верстка друкованих видань на комп'ютері |
| 7. trimming | g) монітор |
| 8. mode | h) потік робіт і документообігу |
| 9. billboard | i) клієнтська частина інтерфейсу |
| 10. multipage | j) шаблон |
| 11. desktop publishing | k) пакет |
| 12. workflow | l) розбивка, розмітка |
| 13. front-ends | m) підгонка (графічного примітиву чи зображення) |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- All computerized documents are technically electronic, which are limited in size only by computer memory or computer data storage space.
- Each page for printing has trim sizes (edge of paper) and a printable area if bleed printing is not possible as is the case with most desktop printers.
- Page layout is the process by which the elements are laid on the page orderly, aesthetically, and precisely.
- Typography styles may be applied to text automatically with style sheets.
- The key difference between electronic typesetting software and DTP software is that DTP software is generally interactive and WYSIWYG in design.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What is limited by computer memory in desktop publishing?
2. What are the functions of master pages?
3. What is Page layout?

There are two types of pages in desktop publishing, electronic pages and virtual paper pages to be printed on physical paper pages. All computerized documents are technically electronic, which are limited in size only by computer memory or computer data storage space.

Virtual paper pages will ultimately be printed, and therefore require paper parameters that coincide with international standard physical paper sizes such as "A4," "letter," etc., if not custom sizes for trimming. Some desktop publishing programs allow custom sizes designated for large format printing used in posters, billboards and trade show displays. A virtual page for printing has a predesignated size of virtual printing material and can be viewed on a monitor in WYSIWYG format. Each page for printing has trim sizes (edge of paper) and a printable area if bleed printing is not possible as is the case with most desktop printers.

A web page is an example of an electronic page that is not constrained by virtual paper parameters. Most electronic pages may be dynamically re-sized, causing either the content to scale in size with the page or causing the content to re-flow.

Master pages are templates used to automatically copy or link elements and graphic design styles to some or all the pages of a multipage document. Linked elements can be modified without having to change each instance of an element on pages that use the same element. Master pages can also be used to apply graphic design styles to automatic page numbering. Cascading Style Sheets can provide the same global formatting functions for web pages that master pages provide for virtual paper pages.

Page layout is the process by which the elements are laid on the page orderly, aesthetically, and precisely. Main types of components to be laid out on a page include text, linked images that can only be modified as an external source, and embedded images that may be modified with the layout application software. Some embedded images are rendered in the application software, while others can be placed from an external source image file. Text may be keyed into the layout, placed, or (with database publishing applications) linked

to an external source of text which allows multiple editors to develop a document at the same time.

Graphic design styles such as color, transparency, and filters, may also be applied to layout elements. Typography styles may be applied to text automatically with style sheets. Some layout programs include style sheets for images in addition to text. Graphic styles for images may be border shapes, colors, transparency, filters, and a parameter designating the way text flows around the object called "wraparound" or "runaround."

Comparison with word processing

While desktop publishing software still provides extensive features necessary for print publishing, modern word processors now have publishing capabilities beyond those of many older DTP applications, blurring the line between word processing and desktop publishing.

In the early days of graphical user interfaces, DTP software was in a class of its own when compared to the fairly spartan word processing applications of the time. Programs such as WordPerfect and WordStar were still mainly text-based and offered little in the way of page layout, other than perhaps margins and line spacing. On the other hand, word processing software was necessary for features like indexing and spell checking, features that are common in many applications today.

Comparison with other electronic layout software

In modern usage, DTP is not generally said to include tools such as TeX or troff, though both can easily be used on a modern desktop system and are standard with many Unix-like operating systems and readily available for other systems. The key difference between electronic typesetting software and DTP software is that DTP software is generally interactive and WYSIWYG in design. Other electronic typesetting software, such as TeX, LaTeX and other variants, tends to operate in batch mode, requiring the user to enter the processing program's markup language without immediate visualization of the finished product. This kind of workflow is less user-friendly than WYSIWYG, but more suitable for conference proceedings and scholarly articles as well as corporate newsletters or other applications where consistent, automated layout is important. Recent interactive front-ends to TeX such as LeX have produced WYSIWYGM (what you see is what you mean) hybrids of DTP and batch processing, focused more on semantics than traditional DTP.

From: http://en.wikipedia.org/wiki/Desktop_publishing

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What are the main types of components that can be laid out on a page?
2. What is provided by Cascading Style Sheets in DTP?
3. What can graphic styles for images include?
4. What is difference between word processing and DTP?
5. What is the main difference between electronic typesetting software and DTP software?
6. When are TeX, LaTeX preferred and why?

Task 7: Complete the following sentences using the text:

1. ... in desktop publishing, electronic pages and virtual paper pages to be printed on physical paper pages.
2. All computerized documents are technically electronic,
3. ... allow custom sizes designated for large format printing used in posters, billboards and trade show displays.
4. A virtual page for printing has a predesignated size of ...
5. Each page for printing has trim sizes (edge of paper) and a printable area if ...
6. Graphic design styles such as may also be applied to layout elements.
7. Typography styles may be applied to
8. Some layout programs include ...
9. Graphic styles for images may be

Task 8. Are the statements true or false? Say why:

1. There are three types of pages in desktop publishing.
2. Virtual paper requires paper parameters that are different in many countries.
3. A web page is not constrained by virtual paper parameters.
4. Most electronic pages can be changed in size and content.
5. Master pages can provide the same global formatting functions for web pages that pages provide for virtual paper pages.
6. The process by which the elements are laid on the page orderly and precisely is Page layout.
7. Among the types of components which are included are texts and linked images.
8. Desktop publishing does not include such graphic design styles as color, transparency, and filters.

9. Publishing capacities of DTP applications and word processing can be always distinct.
10. TeX or troff, though both can be used on a modern desktop system, are not standard with many Unix-like operating systems.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. The key difference between electronic typesetting software and DTP software is that	a) modern word processors now have publishing capabilities beyond those of many older DTP applications.
2. While desktop publishing software still provides extensive features necessary for print publishing,	b) the fairly spartan word processing applications of the time.
3. On the other hand, word processing software was necessary for features like	c) focused more on semantics than traditional DTP.
4. In the early days of graphical user interfaces, DTP software was in a class of its own when compared to	d) DTP software is generally interactive and WYSIWYG in design.
5. Recent interactive front-ends to TeX such as LeX have produced WYSIWYGM hybrids of DTP and batch processing,	e) indexing and spell checking, features that are common in many applications today.

Task 10: Put the words in the right order to make sentences.

1. have some never type of print design Web designers done any.
2. may be most dynamically electronic pages re-sized.
3. programs a few rely on all desktop publishers.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

№	Noun	Verb	Adjective	Adverb	Present participle	Gerund
1	<i>acceleratio n</i>	<i>acceler ate</i>	<i>accelerati ve</i>	----	<i>accelerati ng</i>	<i>accelerating</i>
2		include				
3	application					
4						overlapping
5			automatic			
6					cascading	
7	storage					
8		display				
9				dynamically		
10		add				

Task 12: Fill in the gaps with suitable prepositions.

- Before the invention ____ (a) desktop publishing software the tasks involved ____ (b) desktop publishing were done manually, ____ (c) a variety of people and involved graphic design, typesetting, and prepress tasks ____ (d) sometimes leads ____ (e) confusion ____ (f) what desktop publishing is and how it is done.
- Desktop Publishing is the process ____ (g) using the computer and specific types ____ (e) software to combine text and graphics to produce documents ____ (h) as newsletters, brochures, books, Web pages, etc
- Properly speaking, desktop publishing is the technical assembly ____ (i) digital files ____ (j) the proper format ____ (k) printing or ____ (l) electronic distribution.

V. Final tasks

Task 13. Discuss the following ideas with your group-mates:

- Desktop publishing as a job is currently in decline.
- Graphic design and desktop publishing are so similar, that they can be developed by the same specialists.
- Desktop publishing will be developing further on and new specialists will be required to operate it.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Adjectives: text-based, computerized, multipage, orderly, precise, aesthetical.

Verbs: to re-size, to re-flow, to cascade, to modify, to embed, to operate.

Phrases: desktop publishing, electronic page, virtual paper page, physical paper page, computer memory or computer data storage, trade show displays, desktop printers, web page, Cascading Style Sheets, page layout, database publishing, style sheets, border shapes, Unix-like operating systems, batch mode, graphical user interfaces.

Task 15: Provide the opposites to the English adjectives:

International, virtual, multipage, orderly, precise.

Task 16: Decipher the English abbreviations and acronyms and explain what they mean:

DTP, WYSIWYG, TeX, WYSIWYG, LeX, LaTeX, WYSIWYGM.

Task 17: Match the words and definitions:

1. workflow		a) is a set of data or information which is designed to be viewed as part of a website.
2. template		b) the working area of a computer screen regarded as a representation of a notional desktop and containing icons representing items such as files
3. web page		c) reducing the size, amount, number, or cost of
4. multipage		d) a large printed picture, used for decoration
5. deskboard		e) the sequence of processes through which a piece of work passes from

		initiation to completion
6. image		f) a machine that can be connected to a computer in order to make copies on paper of documents or other information held by the computer.
7. key		g) a preset format for a document or file
8. front-end		h) consisting of many pages
9. interactive		i) to incorporate (a text or code) within the body of a file or document
10. embed		j) an exact copy of a computer's hard disk, made for backing up data or setting up new machines
11. printer		k) enter or operate on (data) by means of a computer keyboard or telephone keypad
12. poster		l) allowing a two-way flow of information between it and a user; responding to the user's input
13. trimming		m) (of a device or program) directly accessed by the user and allowing access to further devices or programs
14. filter		n) a piece of software that processes data before passing it to another application.

Task 18: Make up your own sentences with the words from Task 17 and present them to your partner.

Task 19: Match the phrases and definitions:

1. web page		a) the size of a book or a page of a book after all excess material has been cut
-------------	--	--

		off
2. Cascading Style Sheets (CSS)		b) the way in which text or pictures are set out on a page
3. word processor		c) a computer's capacity for storing information
4. WordStar		d) printing that goes beyond the edge of the sheet before trimming
5. page layout		e) a hypertext document connected to the World Wide Web
6. trim size		f) a simple mechanism for adding style (e.g., fonts, colors, spacing) to Web documents.
7. computer memory		g) a language, or style language, is a computer language that expresses the presentation of structured documents
8. batch processing		h) a program or machine for storing, manipulating, and formatting text entered from a keyboard and providing a printout
9. style sheet		i) a type of user interface that allows users to interact with electronic devices using images rather than text commands.
10. database publishing		j) a popular, fully-featured commercial word processor program that is available for multiple platforms including Linux.
11. graphical user interface (GUI)		k) a word processor application that had a dominant market share during the

		early- to mid-1980s, originally written for the CP/M operating system but later ported to DOS.
12. bleed (printing)		l) the execution of a series of programs ("jobs") on a computer without manual intervention.
13. WordPerfect		m) an area of automated media production in which specialized techniques are used to generate paginated documents from source data residing in traditional databases.
14. spell checking		n) computing a type of template file consisting of font and layout settings to give a standardized look to certain documents
15. style sheet		o) checking the text while someone types it

Task 20: Make up your own sentences with the words and expressions from Task 19 and share them with your partner.

Task 21 Put the verbs in brackets in the correct grammar form.

- Desktop publishing (a) _____ (to begin) in 1983 with a program (b) _____ (to develop) by James Bessen at a community newspaper in Philadelphia. That program, Type Processor One, (c) _____ (to run) on a PC using a graphics card for a WYSIWYG display and (d) _____ (to offer) commercially by Best info in 1984. The DTP market (e) _____ (to explode) in 1985 with the introduction in January of the AppleLaserPrinter printer, and later in July with the introduction of PageMaker software from Aldus which rapidly (f) _____ become the DTP industry standard software.
- The term "desktop publishing" (g) _____ (attribute) to Aldus Corporation founder Paul Brainerd, who (h) _____ (to seek) a marketing catch-phrase

- (i) _____ (to describe) the small size and relative affordability of this suite of products in contrast to the expensive commercial phototypesetting equipment of the day.
3. Page layout (j) _____ (to be) the process by which the elements (k) _____ (to lay) on the page orderly, aesthetically, and precisely. Main types of components (l) _____ (to lay out) on a page (m) _____ (to include) text, linked images that can only (n) _____ (to modify) as an external source, and embedded images that may (o) _____ (to modify) with the layout application software. Some embedded images (p) _____ (to render) in the application software, while others can (q) _____ (to place) from an external source image file.

Task 22: Correct the sentences. There is one mistake in each sentence. Find it and write the sentences that have been corrected.

1. Just about anyone can to do desktop publishing with the right software.
2. Additionally, desktop publishing software is frequently uses by consumers for personal use for various desktop printed projects.
3. However, while employers may not be hire desktop publishers, they do want employees with desktop publishing skills.
4. Graphic design and desktop publishing share so much similarities that people often use the terms interchangeably.
5. Graphic designers not use desktop publishing software and techniques to create the print materials they envision.

UNIT 7. MULTIMEDIA



I. Pre-reading activities.

Task 1. Discuss the following questions.

1. Can the modern society manage without multimedia?
2. In which spheres of the modern society do multimedia play the most essential role?
3. Are there any spheres of the modern society which can manage without multimedia? Which ones?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

- | | |
|----------------------------------|-------------------------------------|
| 1. multimedia [mʌlti'mi:diə] n. | 11. hypermedia ['haɪpəmi:diə] n. |
| 2. spatial ['speɪʃ(ə)l] adj. | 12. linear ['liːniə] adj. |
| 3. temporal ['temp(ə)r(ə)l] adj. | 13. presentation [prezən'teɪʃən] n. |
| 4. content ['kɒntent] n. | 14. live [laɪv] adj. |
| 5. rudimentary [ru:di'ment(ə)rɪ] | 15. broadcast ['brɔ:dkɑ:st] v |
| 6. audio ['ɔ:diəu] n. | 16. analog ['ænələg] n. |
| 7. animation [æni'meɪʃn] n. | 17. network ['netwɜ:k] n. |
| 8. image ['ɪmɪdʒ] n. | 18. imulator ['sɪmjʊ:leɪtə] n. |

- | | |
|--------------------------------------|-------------------------------------|
| 9. interactivity [ɪntəræk'tɪvɪtɪ] n. | 19. navigational [nævɪ'geɪʃən(ə)l] |
| 10. synonymous
[sɪ'nɒnɪməs] adj. | 20. collaborative [kə'læbərətɪv] ad |

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|-----------------------------------|--|
| 1. application | A. статичне зображення, відеокадр |
| 2. hypermedia | B. інтерактивні мультимедійні засоби (системи) |
| 3. still images | C. навігаційна система |
| 4. electronic media | D. медіаплеєр |
| 5. mixed media | E. аналогові електронні медіа |
| 6. interactive multimedia | F. сенсорні технології |
| 7. navigation system | G. навчання на базі комп'ютерів |
| 8. media player | H. прикладна програма |
| 9. analog electronic media | I. мультимедіа |
| 10. digital electronic media | J. просторові відеопрограми |
| 11. haptic technology | K. електронні ЗМІ |
| 12. spatial temporal applications | L. цифрові електронні медіа |
| 13. computer based training | M. гіпермедіа, гіперсередовище |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- Multimedia is usually recorded and played, displayed, or accessed by information content processing devices.
- Multimedia may be broadly divided into linear and non-linear categories.
- Online multimedia is increasingly becoming object-oriented and data-driven.
- Multimedia is distinguished from mixed media in fine art.
- Non-linear uses interactivity to control progress as with a video game or self-paced computer based training.

II. While-reading activities.

Task 5. Read the text and answer the questions:

- In which areas can multimedia be used?

2. What do multimedia include?
3. Which multimedia devices are used to store and experience multimedia content?

Multimedia finds its application in various areas including, but not limited to, advertisements, art, education, entertainment, engineering, medicine, business, scientific research and spatial temporal applications. Multimedia refers to content that uses a combination of different content forms. This contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material. Multimedia includes a combination of text, audio, still images, animation, video, or interactivity content forms.

Multimedia is usually recorded and played, displayed, or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live performance. Multimedia devices are electronic media devices used to store and experience multimedia content. Multimedia is distinguished from mixed media in fine art; by including audio, for example, it has a broader scope. The term "rich media" is synonymous for interactive multimedia. Hypermedia can be considered one particular multimedia application.

Multimedia may be broadly divided into linear and non-linear categories. Linear active content progresses often without any navigational control for the viewer such as a cinema presentation. Non-linear uses interactivity to control progress as with a video game or self-paced computer based training. Hypermedia is an example of non-linear content.

Multimedia presentations can be **live** or **recorded**. A recorded presentation may allow interactivity via a navigation system. A live multimedia presentation may allow interactivity via an interaction with the presenter or performer.

Multimedia presentations may be viewed by person on stage, projected, transmitted, or played locally with a media player. A broadcast may be a live or recorded multimedia presentation. Broadcasts and recordings can be either analog or digital electronic media technology. Digital online multimedia may be downloaded or streamed. Streaming multimedia may be live or on-demand.

Multimedia games and simulations may be used in with special effects, with multiple users in an online network, or locally with an offline computer, game system, or simulator.

The various formats of technological or digital multimedia may be intended to enhance the users' experience, for example to make it easier and faster to convey information. Or in entertainment or art, to transcend everyday experience.

A lasershow is a live multimedia performance.

Enhanced levels of interactivity are made possible by combining multiple forms of media content. Online multimedia is increasingly becoming object-oriented and data-driven, enabling applications with collaborative end-user innovation and personalization on multiple forms of content over time. Examples of these range from multiple forms of content on Web sites like photo galleries to simulations whose co-efficients, events, illustrations, animations or videos are modifiable. In addition to seeing and hearing, haptic technology enables virtual objects to be felt. Emerging technology involving illusions of taste and smell may also enhance the multimedia experience.

Much of the electronic old and new media used by commercial artists is multimedia. Exciting presentations are used to grab and keep attention in advertising.

From: <http://en.wikipedia.org/wiki/Multimedia>

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What are the categories into which multimedia can be divided?
2. What can a recorded presentation allow?
3. What can a multimedia presentation allow?
4. How can digital online multimedia be received?
5. What are the types of streaming multimedia?
6. How are online multimedia changing nowadays?
7. What illusions can the emerging technology of multimedia involve?

Task 7: Complete the following sentences using the text:

1. This contrasts with media that use only rudimentary computer displays such as
2. Multimedia includes
3. Multimedia is usually recorded and
4. Multimedia devices are
5. Hypermedia can be
6. Multimedia may be broadly divided into

7. A recorded presentation may allow
8. A live multimedia presentation may allow
9. Multimedia games and simulations may be used
10. The various formats of technological or digital multimedia may be
11. Online multimedia is increasingly becoming
12. In addition to seeing and hearing, Haptic technology enables

Task 8. Are the statements true or false? Say why:

1. Multimedia is used in such fields as advertisements, art, education, entertainment.
2. Multimedia is contrasted with media that use text-only or traditional forms of printed or hand-produced material.
3. Multimedia includes a combination of various content forms.
4. Multimedia is recorded and played, displayed, or accessed by information content processing devices, such as electronic devices.
5. Multimedia is used the same as mixed media in fine art.
6. Hypermedia can not be used as an multimedia application.
7. A recorded presentation does not allow interactivity via a navigation system.
8. A live multimedia presentation is based on interaction with the presenter or performer.
9. Multimedia games and simulations may be used by multiple users in an online network, but never locally.
10. An example of a recorded multimedia performance is a laser show.
11. Multimedia can be enhanced by new technology which involves illusions of taste and smell.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. Online multimedia is increasingly becoming object-oriented and data-driven,		a) by commercial artists is multimedia.
2. The various formats of technological or digital		b) often without any navigational control for the viewer such as a

multimedia may be intended to enhance the users' experience,		cinema presentation.
3. Linear active content progresses		c) to grab and keep attention in advertising.
4. Much of the electronic old and new media is used		d) for example to make it easier and faster to convey information.
5. Exciting presentations are used		e) enabling applications with collaborative end-user innovation and personalization on multiple forms of content over time.

Task 10: Put the words in the right order to make sentences.

1. uses multimedia content forms different a combination of .
2. from multimedia mixed media is distinguished in fine art.
3. multimedia some games use features video also of.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

№	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2	engineer						
3		refer					
4	combination						
5		contrast					
6			traditional				
7		animate					
8						considered	
9							training
10						projected	

Task 12: Fill in the gaps with suitable prepositions.

1. _____ (a) common usage, multimedia refers _____ (b) an electronically delivered combination _____ (c) media including video, still images, audio, text _____ (d) such a way that can be accessed interactively.
2. Creative people use multimedia _____ (e) a variety _____ (f) purposes ranging _____ (g) fine arts, _____ (h) entertainment, _____ (i) commercial art, _____ (j) media and software services provided _____ (k) any _____ (l) the industries listed below.

V. Final tasks

Task 13: Discuss the following ideas with your group-mates:

1. Multimedia can considerably improve the Ukrainian education.
2. Multimedia is a good opportunity to boost the Ukrainian economy.
3. Ukraine has enough qualified specialists to develop multimedia independently.
4. Multimedia designers are in demand in Ukraine as well as abroad.

V. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: application, display, audio, animation, video, interactivity, device, hypermedia, presentation, network, lasershow.

Adjectives: spatial, temporal, rudimentary, hand-produced, computerized, electronic, linear, transmitted, digital, on-demand, online, haptic.

Verbs: to broadcast, to download, to transcend, to enhance.

Phrases: still images, electronic media, mixed media, interactive multimedia, navigation system, computer based training, media player, analog electronic media, digital electronic media, haptic technology, spatial temporal applications.

Task 15: Provide the opposites to the English words:

to enhance, multiple, to emerge.

Task 16: Match the words and definitions:

1. engineering		A. the manipulation of electronic images by means of a computer in order to create moving images
2. media		B. carried out or accessed by means of a computer or other electronic device, especially over a network
3. audio		C. the person who actually uses a particular product
4. animation		D. the branch of science and technology concerned with the design, building, and use of engines, machines, and structures
5. interactive		E. broadcast or send out (an electrical signal or a radio or television program)
6. electronic		F. relating to space
7. to project		G. something newly introduced, such as a new method or device
8. to transmit		H. information made available by a website or other electronic medium
9. collaborative		I. creating a specialized form of a product tailored for an individual customer
10. end-user		J. allowing a two-way flow of information between it and a user; responding to the user's input
11. spatial		K. the main means of mass communication regarded collectively
12. innovation		L. produced by or involving two or more parties working together

13. content		M. estimate or forecast (something) on the basis of present trends
14. personalization		N. sound, especially when recorded, transmitted, or reproduced

Task 17: Make up your own sentences with the words from Task 16 and share them with your partner.

Task 18: Match the phrases and definitions:

1. still image		A. a variety of media used in an entertainment or work of art B. another term for multimedia
2. processing device		C. training which is mainly delivered through a computer
3. mixed media		D. program of reproducing multimedia data
4. video game		E. media relating to or using signals or information represented by a continuously variable physical quantity such as spatial position or voltage.
5. computer based training		F. an immovable picture
6. media player		G. media relating to information expressed as series of the digits 0 and 1.
7. analog electronic media		H. a game played by electronically manipulating images produced by a computer program on a television screen or display

8. digital electronic media		I. any device in a computer that handles this intermediate stage; responsible for controlling the storage and retrieval of information.
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Task 19: Make up your own sentences with the words and expressions from Task 18 and share them with your partner.

Task 20: Put the verbs in brackets in the correct grammar form.

- The term *multimedia* (a) _____ (to coin) by singer and artist Bob Goldstein (b) _____ (to promote) the July 1966 opening of his “LightWorks at L'Oursin” show at Southampton, Long Island. Goldstein (c) _____ (to be) aware of a British artist named Dick Higgins, who (d) _____ (to discuss) a new approach to art-making two years previously. Then he (e) _____ (to named) it “intermedia.”
- Multimedia (f) _____ (to represent) the convergence of text, pictures, video and sound into a single form. The power of multimedia and the Internet (g) _____ (to lie) in the way in which information is (h) _____ (to link).
- A good site must (i) _____ (to make) with a specific purpose in mind and a site with good interactivity and new technology can also (j) _____ (to be) useful for attracting visitors. The site must (k) _____ (to be) attractive and innovative in its design, function in terms of its purpose, easy (l) _____ (to navigate), frequently (m) _____ (to update) and fast (n) _____ (to download).

Task 21: Correct the sentences. There is one mistake in each one. Find it and write the sentences that have been corrected.

- The English education in middle school in China is good invested and assisted with various equipments.
- English education today have gone into the vicious circle.
- Educators need to consider how to perfect the education system for improve students’ practical ability of English.
- Multimedia teaching is more intuitive then old ways; teachers can simulate situations in real life.

UNIT 8. WEB DESIGN



I. Pre-reading activities.

Task 1. Discuss the following questions.

1. What does the concept “web design” include?
2. Where can the application of modern web design be the most fruitful?
3. What are the reasons for such uninterrupted and persistent development of web design?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

1. discipline [ˈdɪsəplɪn] n., v.
2. standard [ˈstændəd] n.
3. design [dɪˈzaɪn] n., v.
4. principle [ˈprɪn(t)səpl] n.
5. interface [ɪntəˈfeɪs] n.
6. vector [ˈvektə] n.

- | | |
|---|------------------------------|
| 7. standardize ['stændədəɪz] v. | 8. package ['pækɪdʒ] n. |
| 9. optimization [ɒptɪmaɪ'zeɪʃ(ə)n] n. | 10. imagery ['ɪmɪdʒ(ə)rɪ] n. |
| 11. aspect ['æspekt] n. | 12. version ['vɜːʃ(ə)n] n. |
| 13. guideline ['gaɪdlaɪn] n. | 14. author ['ɔːθə] n. |
| 15. technologic(al) [teknə'lɒdʒɪk((ə)l)] adj. | 16. ranking ['ræŋkɪŋ] n. |
| 17. standpoint ['stændpɔɪnt] n. | 18. monitor ['mɒnɪtə] n. |
| 19. scroll [skrɔʊl] n. | 20. minimize ['mɪnɪmaɪz] v. |

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|-----------------------|--|
| 1. web-formatted | A. інтерфейс |
| 2. grid-based design | B. рамки бачення, рамки дії |
| 3. interface | C. розширення екрану |
| 4. scope | D. скриптова мова |
| 5. screen resolution | E. фон, на якому виводяться на екран або малюються об'єкти |
| 6. website | F. у веб форматі |
| 7. scripting language | G. запрограмований вручну |
| 8. background | H. розмітка (сторінки електронного документу) |
| 9. hand-coded | I. валідатор |
| 10. mark-up | J. заснований на сітці дизайн |
| 11. validator | K. Веб-сайт |
| 12. pixel | L. піксель, мінімальний елемент зображення |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- Web design includes many different skills and disciplines in the production and maintenance of websites.
- Web design partially overlaps web engineering in the broader scope of web development.
- Web designers are expected to have an awareness of usability and if their role involves creating mark up then they are also expected to be up to date with web accessibility guidelines.
- Search engine optimization tools may be used to check search engine ranking and suggest improvements.

e) Fluid layouts increased in popularity around 2000 as an alternative to HTML-table-based layouts and grid-based design.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What do different areas of web design include?
2. What technologies and software are used to create web pages?
3. What is permanent in the work of web designers despite the fact that the tools are updated over time?

Web design includes many different skills and disciplines in the production and maintenance of websites. The different areas of web design include web graphic design; interface design; authoring, including standardized code and proprietary software; user experienced design; and search engine optimization. Often many individuals will work in teams covering different aspects of the design process, although some designers will cover them all. The term web design is normally used to describe the design process relating to the front-end (client side) design of a website including writing mark up. Web design partially overlaps web engineering in the broader scope of web development. Web designers are expected to have an awareness of usability and if their role involves creating mark up then they are also expected to be up to date with web accessibility guidelines.

Although web design has a fairly recent history, it can be linked to other areas such as graphic design. However web design can also be seen from a technological standpoint. It has become a large part of people's everyday lives. It is hard to imagine the Internet without animated graphics, different styles of typography, background and music.

Web designers use a variety of different tools depending on what part of the production process they are involved in. These tools are updated over time by newer standards and software but the principles behind them remain the same. Web graphic designers use vector and raster graphics packages to create web-formatted imagery or design prototypes. Technologies used to create websites include standardized mark-up, which can be hand-coded or generated by WYSIWYG software. There is also software based on plug-ins that bypasses the client's browser versions. These are often WYSIWYG but with the option of using the software's scripting language. Search engine optimization tools may be used to check search engine ranking and suggest improvements.

Other tools web designers might use include mark up validators and other testing tools for usability and accessibility to ensure their web sites meet web accessibility guidelines.

Page layout

Part of the user interface design is affected by the quality of the page layout. For example, a designer may consider whether the site's page layout should remain consistent on different pages when designing the layout. Page pixel width may also be considered vital for aligning objects in the layout design. The most popular fixed-width websites generally have the same set width to match the current most popular browser window, at the current most popular screen resolution, on the current most popular monitor size. Most pages are also center-aligned for concerns of aesthetics on larger screens.

Fluid layouts increased in popularity around 2000 as an alternative to HTML-table-based layouts and grid-based design in both page layout design principle and in coding technique, but were very slow to be adopted. This was due to considerations of screen reading devices and varying windows sizes which designers have no control over. Accordingly, a design may be broken down into units (sidebars, content blocks, embedded advertising areas, navigation areas) that are sent to the browser and which will be fitted into the display window by the browser, as best it can. As the browser does recognize the details of the reader's screen the browser can make user-specific layout adjustments to fluid layouts, but not fixed-width layouts. Although such a display may often change the relative position of major content units, sidebars may be displaced below body text rather than to the side of it. This is a more flexible display than a hard-coded grid-based layout that doesn't fit the device window. In particular, the relative position of content blocks may change while leaving the content within the block unaffected. This also minimizes the user's need to horizontally scroll the page.

From: http://en.wikipedia.org/wiki/Web_design#Tools_and_technologies

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What does the term web design mean?
2. What does web design partially overlap with in the broader scope of web development?
3. Is web design linked to any other areas? Which ones?
4. What can't be imagined in people's everyday lives without web design?

5. What graphics packages do web designers use to create web-formatted imagery or design prototypes?
6. Which other tools might be used by web designers to make their web sites accessible?
7. When did fluid layouts become popular?
8. Why did fluid layouts increase in popularity?

Task 7: Complete the following sentences using the text:

1. The term web design is normally used
2. Web designers are expected
3. Although web design has a fairly recent history
4. Web designers use a variety of different tools
5. Web graphic designers use
6. Other tools web designers might use include
7. Accordingly, a design may be broken down
8. As the browser does recognize the details of the reader's screen
9. Although such a display may often change
10. This is a more flexible display than
11. This also minimizes

Task 8. Are the statements true or false? Say why:

1. Web design includes few certain different skills and disciplines in the production of websites.
2. Individuals work in teams or independently on different or all aspects of the design process.
3. The design process relating to the front-end (client side) design of a website including writing mark up is termed as web design.
4. Web design does not cover web engineering.
5. Web design has a very long history.
6. Web design plays an important role in people's everyday lives.
7. Web designers use tools which are always permanent und unchanging.
8. Web graphic designers use only raster graphics packages for creation of web-formatted imagery or design prototypes.
9. Web graphic designers use standardized mark-up, software based on plug-ins, WYSIWYG, mark up validators and other testing tools in their work.

10. Page pixel width is believed to be important for aligning objects in the layout design.
11. Web designers always design site layouts with the only page.
12. Web designers make most pages center-aligned for concerns of safety.
13. Fluid layout became more popular in the previous century.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. This is a more flexible display than		A. by the quality of the page layout.
2. This was due to considerations of screen reading devices		B. depending on what part of the production process they are involved in.
3. Part of the user interface design is affected		C. a hard-coded grid-based layout that doesn't fit the device window.
4. Web designers use a variety of different tools		D. for aligning objects in the layout design.
5. Page pixel width may also be considered vital		E. and varying windows sizes which designers have no control over.

Task 10: Put the words in the right order to make sentences.

1. dozens a website no longer comprising is popular of pages.
2. which a good is the one is talked about web design.
3. trend the freshest is parallax scrolling in the web design.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Present participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	<i>accelerating</i>	<i>accelerating</i>
2		maintain			
3	optimization				
4		overlap			
5			accessible		

6			technological		
7	dependance				
8	web-format				
9			prototypical		
10				advertising	

Task 12: Fill in the gaps with suitable prepositions.

The web and graphic design industry is expanding (a) _____ leaps and bounds. However, each year brings its own unique surprises. We foresee many trends emerging (b) _____ the web design realm (c) _____ more focus being given (d) _____ creating less complicated and more sophisticated designs.

Although, we have observed many latest trends disappear and re-appear (e) _____ the past few years, we can make some predictions (f) _____ modern web design trends that will eventually capture the design industry (g) _____ future.

Long gone are the days (h) _____ businesses wanted logos and icons popping (i) _____ or down their websites to attract user attention. As more and more hand held devices are being adapted, designers are keen (j) _____ constructing design elements that appear smoothly (k) _____ flat screens. Thus, flat designs are currently the most sought-after element (l) _____ web designing but the design industry rarely stays stagnant.

V. Final tasks

Task 13. Discuss the following ideas with your group-mates.

1. What are your predictions about the development of web design in Ukraine and the world?
2. Multimedia designers will be in demand in this country in the foreseeable future.
3. Web design is one of the most creative professions in information technologies.
4. Companies cannot manage without web designers nowadays.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: maintenance, front-end, interface, design, website, user, engine, scope, guideline, standpoint, background, tool, principle, software, imagery, mark-up, plug-in, browser, improvement, validator, pixel, monitor, sidebar.

Adjectives: recent, web-formatted, hand-coded, flexible, consistent.

Verbs: to author, to link, to update, to generate, to bypass, to ensure, to align, to displace, to minimize, to scroll, to overlap.

Phrases: design process, search engine, mark up, graphic design, production process, vector and raster graphics packages, imagery or design prototypes, WYSIWYG software, scripting language, engine optimization, testing tools, web site, page layout, pixel width, screen resolution, fluid layout, HTML-table-based layout, grid-based design, screen reading device, content blocks, embedded advertising areas, navigation areas, body text.

Abbreviations: WYSIWYG, HTML.

Task 15: Provide the opposites to the English words:

Flexible, to minimize, horizontal, background, software, improvement, recent.

Task 16: Match the words and definitions:

1. maintenance		A. a part of a computer or program that allows access to other parts
2. website		B. the process of setting out material on a page
3. interface		C. a computer program used to check the validity or syntactical correctness of a fragment of code or document
4. sidebar		D. a minute area of illumination on a display screen, one of many from which an image is composed
5. front-end		E. visual images collectively
6. mark up		F. 1. a device or program enabling a user to communicate with a computer G. 2. a device or program for connecting two items of hardware or software so that they can be operated

		jointly or communicate with each other
7. layout		H. a type of graphical user interface element
8. validator		I. an attitude to a particular issue
9. guideline		J. the process of keeping something in good condition
10. standpoint		K. the sequence of characters or other symbols that you insert at certain places in a text or word processing file to indicate how the file should look when it is printed or displayed
11. browser		L. a location connected to the Internet that maintains one or more pages on the World Wide Web
12. pixel		M. a first or preliminary version of a device or vehicle from which other forms are developed
13. imagery		N. a computer program with a graphical user interface for displaying HTML files, used to navigate the World Wide Web
14. prototype		O. a general rule, principle, or piece of advice
15. raster		P. a number of computers linked together via the Internet so that their combined power may be harnessed to work on difficult problems
16. grid		Q. a rectangular pattern of parallel scanning lines followed by the electron beam on a television screen or computer monitor

Task 17: Make up your own sentences with the words from Task 16 and share them with your partner.

Task 18: Put the verbs in brackets in the correct grammar form.

1. Since the end of the browsers wars there (a) _____ (to be) new browsers (b) _____ (to come) onto the scene. Many of these (c) _____ (to be) open source (d) _____ (to mean) that they (e) _____ (to tend) to have faster development and (f) _____ (to be) more supportive of new standards. The new options (g) _____ (to consider) by many (h) _____ (to be) better than Microsoft's Internet Explorer.
2. Since the start of the 21st century the web (i) _____ (to become) more and more (j) _____ (to integrate) into peoples' lives. As this (k) _____ (to happen) the technology of the web also (l) _____ (to move) on. There also (m) _____ (to be) significant changes in the way people (n) _____ (to use) and (o) _____ (to access) the web, and this (p) _____ (to change) the design of sites.
3. During 1998 Netscape (q) _____ (to release) Netscape Communicator code under an open source license, (r) _____ (to enable) thousands of developers to participate in (s) _____ (to improve) the software.

Task 19: Correct the sentences. There is one mistake in each one. Find it and write the sentences that have been corrected.

1. When we mention the importance scrolling, we cannot undermine the popularity of parallax scrolling.
2. The year 2015 is predicted to witness mobile internet usage overtake the conventional laptops and desktops.
3. The future cannot be foreseen, however, the current trends and developments can make us to predict the outcomes.

default [dɪ'fɔ:lt] n.
consume [kən'sju:m] v.

resilience [rɪ'zɪlɪəns] n.
portability [pɔ:tə'bɪlətɪ] n.

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|-----------------------|--|
| 1. user interface | A. версія мови програмування |
| 2. disk driver | B. рецептурний довідник
(збірник корисних рішень
для загального
користування) |
| 3. data structure | C. сумісність |
| 4. dialect | D. драйвер диску |
| 5. markup language | E. робот (інтелектуальна
програма, що працює без
людини) |
| 6. cookbook | F. екран дісплея |
| 7. interoperability | G. трьохвимірний |
| 8. robot | H. користувальницький
інтерфейс |
| 9. display | I. мова програмування |
| 10. three-dimensional | J. структура даних |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- A. Compatibility is when the software is able to operate with other products that are designed for interoperability with another product.
- B. A programming language is a notation for writing programs, which are specifications of a computation or algorithm.
- C. Modularity takes place when the resulting software comprises well defined, independent components which leads to better maintainability.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What is a design process?
2. What is a design model compared to?
3. Is computer language the same that programming language?

Software design is both a process and a model. The design process is a sequence of steps that enable the designer to describe all aspects of the future software. It is important to note, however, that the design process is not simply a cookbook. Creative skill, past experience, a sense of what makes “good” software are critical success factors for a competent design. The design model is the equivalent of an architect’s plans for a house. It begins by representing the totality of the thing to be built (e.g., a three-dimensional rendering of the house) and slowly refines the thing to provide guidance for constructing each detail (e.g., the plumbing layout). Similarly, the design model that is created for software provides a variety of different views of the computer software.

There are many aspects to consider in the design of a piece of software. The importance of each should reflect the goals the software is trying to achieve:

- **Compatibility** - The software is able to operate with other products that are designed for interoperability with another product. For example, a piece of software may be backward-compatible with an older version of itself.
- **Extensibility** - New capabilities can be added to the software without major changes to the underlying architecture.
- **Fault-tolerance** - The software is resistant to and able to recover from component failure.
- **Maintainability** - A measure of how easily bug fixes or functional modifications can be accomplished. High maintainability can be the product of modularity and extensibility.
- **Modularity** - the resulting software comprises well defined, independent components which leads to better maintainability. The components could be then implemented and tested in isolation before being integrated to form a desired software system. This allows division of work in a software development project.
- **Reliability** - The software is able to perform a required function under stated conditions for a specified period of time.
- **Reusability** - the software is able to add further features and modification with slight or no modification.
- **Robustness** - The software is able to operate under stress or tolerate unpredictable or invalid input. For example, it can be designed with a resilience to low memory conditions.
- **Security** - The software is able to withstand hostile acts and influences.

- **Usability** - The software user interface must be usable for its target user/audience. Default values for the parameters must be chosen so that they are a good choice for the majority of the users.¹
- **Performance** - The software performs its tasks within a user-acceptable time. The software does not consume too much memory.
- **Portability** - The usability of the same software in different environments.
- **Scalability** - The software adapts well to increasing data or number of users.

A programming language is a notation for writing programs, which are specifications of a computation or algorithm. Some, but not all, authors restrict the term “programming language” to those languages that can express *all* possible algorithms.

A *computer programming language* is a language used to write computer programs, which involve a computer performing some kind of computation or algorithm and possibly control external devices such as printers, disk drives, robots, and so on. For example, PostScript programs are frequently created by another program to control a computer printer or display.

Abstractions

- Programming languages usually contain abstractions for defining and manipulating data structures or controlling the flow of execution.

Expressive power

- The theory of computation classifies languages by the computations they are capable of expressing. All Turing complete languages can implement the same set of algorithms. ANSI/ISO SQL-92 and Charity are examples of languages that are not Turing complete, yet often called programming languages.

- Markup languages like XML, HTML or troff, which define structured data, are not usually considered programming languages. Programming languages may, however, share the syntax with markup languages if a computational semantics is defined. XSLT, for example, is a Turing complete XML dialect. Moreover, LaTeX, which is mostly used for structuring documents, also contains a Turing complete subset.

- The term *computer language* is sometimes used interchangeably with programming language. However, the usage of both terms varies among authors, including the exact scope of each.

From: http://en.wikipedia.org/wiki/Programming_language
http://en.wikipedia.org/wiki/Software_design

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What are the critical success factors for a competent designer?
2. What aspects should be considered in the design of a piece of software?
3. What is compatibility aimed at?
4. What do we call maintainability?
5. What is the principle of modularity?
6. What is reliability?
7. What is considered to be reusability?
8. How is the principle of robustness described?
9. What is the principle of security?
10. What is performance?
11. What do we call scalability?
12. Are markup languages like XML, HTML or troff, considered programming languages?
13. What is a computer programming language?

Task 7: Complete the following sentences using the text:

1. The design model is the equivalent of
2. Similarly, the design model that is created for software provides
3. There are many aspects to consider
4. The software is able to operate with
5. The software is resistant to
6. High maintainability can be
7. The components could be then implemented
8. The software is able to operate under stress or
9. The software is able to perform
10. The software is able to withstand
11. The software user interface
12. The software adapts well to
13. A programming language is
14. A computer programming language is
15. Programming languages usually contain
16. The theory of computation classifies

17. Programming languages may, however,
18. The term computer language is sometimes used

Task 8. Are the statements true or false? Say why:

1. The design process is a number of sequences of ultimate steps that enable the designer to describe all aspects of the future software.
2. To create “good” software one needs skill and experience.
3. The design model is unique and cannot be compared with anything else.
4. There are only few aspects to consider in the design of a piece of software.
5. Compatibility means that the software is compatible with other products that are designed for interoperability with another product.
6. Extensibility is an aspect which presupposes that no changes can be added.
7. The software is resistant and able to recover from component failure.
8. The software can perform required functions under stated conditions for unlimited time.
9. The software can be reused in future and modifications can be added.
10. Robustness means that software can operate with resilience to low memory conditions.
11. The software adapts to increasing data or number of users, as the aspect of scalability says.
12. The term *computer language* totally coincides with the term *programming language*.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. The theory of computation classifies languages		A. that enable the designer to describe all aspects of the future software.
2. The term <i>computer language</i> is sometimes		B. which are specifications of a computation or algorithm.
3. A programming language is a notation for writing programs,		C. by the computations they are capable of expressing.
4. The design process is a sequence of steps		D. of an architect’s plans for a house.
5. The design model is the		E. used interchangeably with

equivalent		programming language.
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Task 10: Put the words in the right order to make sentences.

1. to different software design activities may refer.
2. involves planning a software solution usually software design.
3. a process design both software is and a model.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	acceleration	<u>accelerat</u> <u>e</u>	<u>accelerative</u>	---	<u>accelerating</u>	<u>accelerated</u>	<u>acceleratin</u> <u>g</u>
2		define					
3	interchange						
4						included	
5							involving
6		specify					
7	tolerance						
8	structure						
9		predict					

Task 12: Fill in the gaps with suitable prepositions.

Choosing a programming language depends (a) _____ your language experience and the scope (b) _____ the application you are building. For example, if you are extending an application (c) _____ existing XML Web services, you might use a scripting language (d) _____ little or no programming effort. (e) _____ client-server applications, you would probably choose the single language you are most comfortable with (f) _____ the entire application. (g) _____ new enterprise applications, where a large team (h) _____ developers create components and services (i) _____ deployment across multiple remote sites, the best choice might be to use several languages depending (j) _____ developer skills and long-term maintenance expectations.

(k) _____ most situations, you can effectively use all (l) _____ the Microsoft programming languages. Nevertheless, each programming language has its relative strengths and you will want to understand the features unique (m) _____ each language. The following sections will help you choose the right programming language (n) _____ your application.

V. Final tasks

Task 13: Discuss the following ideas with your group-mates:

1. Software design is a profession for men in Ukraine and in the world.
2. Software designing is undeveloped in Ukraine.
3. Software design is developing much faster than hardware designing.
4. Software design is one of the most creative professions in information technologies.
5. Nowadays people cannot manage without software designing.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: cookbook, interoperability, architect, component, maintainability, algorithm, computation, printer, designer, target, robot, troff, subset, goal, feature, software, robot, display, dialect.

Adjectives: compatible, underlying, resilient, usable, portable, interchangeable, three-dimensional, independent, portable.

Verbs: to withstand, to perform, to consume, to restrict, to accomplish, to comprise, to implement, to perform.

Task 15: Provide the opposites to the English words:

Independent, reliable, portable, software, increasing, external, abstract, frequently, theory, complete, tolerant.

Task 16: Match the words and definitions:

1. model		A. a state in which smth. is able to be extended
2. three-dimensional		B. a possibility of preserving a condition or situation or the state of being preserved
3. guidance		C. a part or element of a larger whole, especially a part of a machine or

		vehicle
4. compatibility		D. a state when smth. is able to be used more than once
5. extensibility		E. the state of being free from danger or threat
6. architecture		F. a state in which two things are able to exist or occur together without problems or conflict
7. resistant		G. a program design when interacting parts are designed according to certain rules
8. maintainability		H. the information put into a computer
9. modularity		I. having or appearing to have length, breadth, and depth
10. component		J. the directing of the motion or position of something, especially an aircraft, spacecraft, or missile
11. reliability		K. the conceptual structure and logical organization of a computer or computer-based system
12. reusability		L. the quality of being robust
13. robustness		M. a state when smth. is consistently good in quality or performance and can be trusted
14. security		N. offering resistance to something or someone
15. input		O. a particular design or version of a

		product
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Task 17: Make up your own sentences with the words and expressions from Task 16 and share them with your partner.

Task 18: Put the verbs in brackets in the correct grammar form.

1. From its beginnings in the 1940s, writing software (a) _____ (to evolve) into a profession.
2. By the early 1980s, software engineering (b) _____ (to emerge) as a bona fide profession, (c) _____ (to stand beside) computer science and traditional engineering. In the 1940s, 1950s, and 1960s, men often (d) _____ (to fill) the more prestigious and better paying hardware engineering roles, but often (e) _____ (to delegate) the writing of software to women. Today, fewer women (f) _____ (to work) in software engineering than in other professions, a situation whose cause (g) _____ (not to identify) clearly. It often (h) _____ (to attribute) to sexual discrimination, cyberculture or bias in education. Many academic and professional organizations (i) _____ (to consider) this situation unbalanced and (j) _____ (to try) hard to solve it. The most important development (k) _____ (to be) that new computers (l) _____ (to come out) almost every year or two, rendering existing ones obsolete. Software people had (m) _____ (to rewrite) all their programs (n) _____ (to run) on these new machines. Programmers (o) _____ (not to have) computers on their desks and had (p) _____ (to go) to the “machine room”.

Task 19: Correct the sentences. There is one mistake in each one. Find it and write the sentences that have been corrected.

1. The finally goal of any engineering activity is the same type of documentation.
2. When a design effort will be completed, the design documentation will be turned over to the manufacturing team.
3. Numerous articles and books have appeared describing how apply new software.

UNIT 10. JAVA



I Pre-reading activities:

Task 1. Discuss the following questions.

1. What do you know about the Java programming language?
2. What are the typical distinguishing features of Java?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

license ['laɪsəns] n., v.

community [kə'mju:nətɪ] n.

process ['prəʊses] n.

alternative [ɔ:'l' tɜ:nətɪv] adj.

bytecode [baɪt 'kəʊd] n.

adequate ['ædɪkwət] adj.

analogous [ə'næləgəs] adj.

design [dɪ'zaɪn] n., v.

applet ['aplɪt] n.

graphics ['græfɪks] n.

convert ['kɒnvɜ:t] v.

code [kəʊd] n.

implementation [ɪmplɪmen'teɪʃ(ə)n] n.

programming ['prəʊgræmɪŋ] n.

reference ['ref(ə)r(ə)n(t)s] n.

executable ['eksɪkjʊ:təbl] adj.

operating [ɒpəreɪtɪŋ] n.
instruction [ɪn'strʌkʃ(ə)n] n.

platform ['plætfɔ:m] n.

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|--------------------------------|---|
| 1) bytecode | a) архітектура комп'ютера |
| 2) end user | b) байт-код |
| 3) applet | c) серверне технічне забезпечення |
| 4) threading | d) аплет (програма на мові Ява) |
| 5) host hardware | e) віртуальна машина Ява |
| 6) implementation dependencies | f) залежність від мови програмування |
| 7) Java virtual machine | g) основний компонент |
| 8) computer architecture | h) плагін для браузера |
| 9) core component | i) ліцензія для загального користування |
| 10) public license | j) організація поточної обробки (даних) |
| 11) browser plugin | k) кінцевий користувач |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- A. Java is a general-purpose computer programming language that is concurrent, class-based, object-oriented and specifically designed to have as few implementation dependencies as possible.
- B. This is achieved by compiling the Java language code to a representation called Java bytecode, instead of directly to architecture-specific machine code.
- C. A major benefit of using bytecode is porting.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What are the general features of Java?
2. What are the main advantages of Java?
3. What are the conveniences of Java applications?

Java is a general-purpose computer programming language that is concurrent, class-based, object-oriented and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers “write once.run anywhere” (WORA), meaning that code that runs on one platform does not need to be recompiled to run on another. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of computer architecture. Java is, as of 2015, one of the most popular programming languages in use, particularly for client-server web applications, with a reported 9 million developers. Java was originally developed by James Gosling at Sun Microsystems (which has since merged into Oracle Corporation) and released in 1995 as a core component of Sun Microsystems’ Java platform’. The language derives much of its syntax from C and C++, but it has fewer low-level facilities than either of them.

The original and reference implementation Java compilers, virtual machines, and class libraries were originally released by Sun under proprietary licenses. As of May 2007, in compliance with the specifications of the Java Community Process, Sun relicensed most of its Java technologies under the GNU Public License. Others have also developed alternative implementations of these Sun technologies, such as the GNU for Java (bytecode compiler), GNU Classpath (standard libraries), and IcedTea-Web (browser plugin for applets).

Principles

There were five primary goals in the creation of the Java language:

1. It must be “simple, object-oriented and familiar”
2. It must be “robust and secure”
3. It must be “architecture-neutral and portable”
4. It must execute with “high performance”
5. It must be “interpreted, threaded, and dynamic”

Java platform

One design goal of Java is portability, which means that programs written for the Java platform must run similarly on any combination of hardware and operating system with adequate runtime support. This is achieved by compiling the Java language code to a representation called Java bytecode , instead of directly to architecture-specific machine code. Java bytecode instructions are analogous to machine code, but they are intended to be executed by a virtual machine (VM) written specifically for the host hardware. End users commonly use a Java Runtime Environment (JRE) installed on their own machine for standalone Java applications, or in a web browser for Java applets.

Standardized libraries provide a generic way to access host-specific features such as graphics, threading, and networking.

A major benefit of using bytecode is porting. However, the overhead of interpretation means that interpreted programs almost always run more slowly than programs compiled to native executables would. Just-in-Time (JIT) compilers were introduced from an early stage that compile bytecodes to machine code during runtime. Java is platform independent. But as Java virtual machine must convert Java bytecode into machine language which depends on the operating system being used, it is platform dependent.

From: http://en.wikipedia.org/wiki/Programming_language

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. How many users are working with client-server web applications today?
2. Who developed Java and when?
3. Who originally released Java compilers, virtual machines, and class libraries?
4. What are five primary goals in the creation of the Java language?
5. What does portability mean?
6. How is portability achieved?
7. What is porting?
8. What is provided by standardized libraries?

Task 7: Complete the following sentences using the text:

1. Java is a computer programming language that
2. It is intended to let
3. Java was originally developed by
4. The language derives much of its syntax
5. Sun relicensed most of its Java technologies
6. There were five primary goals
7. One design goal of Java is portability
8. Java bytecode instructions are
9. End users commonly use
10. Standardized libraries provide
11. ... is porting.
12. But as Java virtual machine must convert

Task 8. Are the statements true or false? Say why:

1. Java is a general-purpose computer programming language which is specifically designed to have as few implementation dependencies as possible.
2. The aim of creation of the Java language was to create code that runs on one platform and does not need to be recompiled to run on another one.
3. About 9 million developers use Java.
4. The person who firstly developed Java was James Gosling at Yale university.
5. There were six primary goals to create the Java language.
6. One of design goals stipulates that programs written for the Java platform must run similarly on any combination of hardware and operating system.
7. The only benefit of using bytecode is porting.
8. Java is always platform dependant.
9. With Java interpreted programs always run with the same speed.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. One design goal of Java is portability, which means that programs written for the Java platform		A. were originally released by Sun under proprietary licenses.
2. The original and reference implementation Java compilers, virtual machines, and class libraries		B. such as graphics, threading, and networking.
3. Java is, as of 2015, one of the most popular programming languages in use,		C. in the creation of the Java language
4. Standardized libraries provide a generic way to access host-specific features		D. must run similarly on any combination of hardware and operating system with adequate runtime support.
5. There were five primary goals		E. particularly for client-server web applications, with a reported 9 million developers.

Task 10: Put the words in the right order to make sentences.

- libraries of compiled Java can use in APIs are code you your programs that.
- ready-made functionality let you programming add to save they you time.
- supports of comments three kinds the Java language.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2			concurrent				
3		orient					
4	host						
5		operate					
6			usable				
7		merge					
8							creating

Task 12: Fill in the gaps with suitable prepositions.

If you are new to programming (a) _____ the Java language, have some experience (b) _____ other languages, and are familiar (c) _____ things like displaying text (d) _____ graphics (e) _____ performing simple calculations, this tutorial could be (f) _____ you. It walks (g) _____ how to use the Java2 Platform software (h) _____ create and run three common types (i) _____ programs written (j) _____ the Java platform applications, applets, and servlets.

You will learn (j) _____ applications, applets, and servlets are similar and different, (k) _____ to build a basic user interface that handles simple end user input, (l) _____ to read data (m) _____ and write data (n) _____ files and databases, and (o) _____ to send and receive data (p) _____ the network. This tutorial is not comprehensive, but instead takes you (q) _____ a straight and uncomplicated path (p) _____ the more common programming features available (r) _____ the Java platform.

From:

<https://msdn.microsoft.com/en-us/library/aa292164%28v=vs.71%29.aspx>

V. Final tasks

Task 13: Discuss the following ideas with your group-mates:

1. Java is getting out-of-date and will be replaced by more modern computer languages.
2. It is a must to study Java for students of universities, may be even schools.
3. Having mastered the Java programming language, rookies can find a generously paid job.
4. The Java programming language can be learned independently.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: platform, bytecode, syntax, applet, portability, plugin, hardware, graphics, threading, networking,

Adjectives: general-purpose, concurrent, class-based, object-oriented , executable, robust, secure, bytecode.

Phrases: computer programming language, implementation dependencies, Java virtual machine, computer architecture, core component, Public License, browser plugin, machine code, virtual machine, host hardware, end user, operating system.

Acronyms and abbreviations: WORA, JMV, VM, JRE, JIT.

Task 15: Provide the opposites to the English words:

General-purpose, concurrent, class-based, secure, virtual, host.

Task 16: Match the words and definitions:

1. bytecode		A. the structure of statements in a computer language
2. architecture		B. the system by which consecutive messages relating to a single subject on a message board or newsgroup are stored for retrieval

3. client		C. a form of instruction set designed for efficient execution by a software interpreter
4. server		D. the interconnection of two or more networks in different places, as in working at home with a link to a central computer in an office
5. syntax		E. a standard for the hardware of a computer system, determining what kinds of software it can run
6. facility		F. (of software) the ability of being transferred from one machine or system to another
7. reference		G. a very small application, especially a utility program performing one or a few simple functions
8. applet		H. program instructions
9. threading		I. a special feature of a service or machine, which offers the opportunity to do or benefit from something
10. platform		J. the complex or carefully designed structure of something
11. portability		K. the use of a source of information in order to ascertain something
12. host		L. a computer or computer program which manages access to a centralized resource or service in a network
13. networking		M. general term for what enhances an application. It comprises snap-in, plug-

		in, theme and skin
14. code		N. a computer which mediates multiple access to databases mounted on it or provides other services to a network
15. plugin		O. a program that is capable of obtaining a service provided by another program
16. compiler		P. a computer program which converts language that people can use into a code that the computer can understand.

Task 17: Make up your own sentences with the words from Task 16 and share them with your partner.

Task 18: Put the verbs in brackets in the correct grammar form.

- Java compilers (a) _____(not to produce) native object code for a particular platform but rather ‘byte code’ instructions for the Java Virtual Machine (JVM). Making Java code (b) _____(work) on a particular platform is then simply a matter of (c) _____(to write) a byte code interpreter to simulate a JVM. What this all (d) _____(mean) is that the same compiled byte code (e) _____(to run) unmodified on any platform that (f) _____(to support) Java.
- The Java programming language (g) _____(to evolve) from a language (h) _____(to name) Oak. Oak (i) _____(to develop) in the early nineties at Sun Microsystems as a platform-independent language (j) _____(to aim) at allowing entertainment appliances such as video game consoles and VCRs to communicate. Oak (k) _____(to be) first slated to appear in television set-top boxes (l) _____(to design) to provide video-on-demand services.
- The excitement of the Internet (m) _____(to attract) software vendors such that Java development tools from many vendors quickly (n) _____(to become) available. That same excitement (o) _____(to provide) the impetus for a multitude of software developers to discover Java and its many wonderful features.

UNIT 11. JOBS IN INFORMATION TECHNOLOGIES



I Pre-reading activities:

Task 1. Discuss the following questions.

1. Which specialists in IT technologies are mostly demanded in the world and in Ukraine?
2. Can the Ukrainian education system prepare IT specialists who could compete with foreign IT professionals?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

consultant [kən'sʌlt(ə)nt] n.

position [pə'zɪʃ(ə)n] n.

developer [dɪ'veləpə] n.

smartphone ['smɑ:t fəʊn] n.

career [kə'riə] n.

coding ['kəʊdɪŋ] n.

tablet ['tæblət] n.

visually ['vɪʒuəlɪ] adv.

geographic(al) [dʒɪə'græfɪk((ə)l]

technology [tek'nɒlədʒɪ] n.

optimize ['ɒptɪmaɪz] v.

surfer ['sɜ:fə] n.

code [kəʊd] n.

phrase [freɪz] n.

programming ['prəʊgræmɪŋ] n.

stylish ['staɪlɪʃ] adj.

buzz [bʌz] n., v.

specialize ['speʃ(ə)laɪz] v.

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|------------------------------------|---------------------------------------|
| 1. IT nerd | a) розробник програмного забезпечення |
| 2. cybersportsman | b) спеціаліст з інформаційної безпеки |
| 3. Web designer | c) розробник комп'ютерних ігор |
| 4. Web programmer | d) комп'ютерний фанат |
| 5. site administrator | e) системний адміністратор |
| 6. game designer | f) системний програміст |
| 7. forum moderator | g) адміністратор сайту |
| 8. Information Security Specialist | h) розробник інтернет сайтів |
| 9. software architect | i) модератор форуму |
| 10. system administrator | j) веб програміст |
| 11. system programmer | k) учасник комп'ютерних відеоігор |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- A. Information technology – often shortened to just IT – is a buzz phrase you've probably heard.
- B. Computer crime detectives are computer forensic investigators who search for, identify and evaluate information from computer systems, often for trial evidence.
- C. Data Modeler is another position that translates poorly without jargon.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What do mobile application developers deal with?
2. What is included in the scope of responsibilities of health IT specialists?
3. What is the field of mobile application developers work?

Top ten jobs in information technology

Information technology – often shortened to just IT – is a buzz phrase you've probably heard. IT workers are highly specialized in their field, which is probably why they're often just called "IT nerds." They like what they do and

understand it inside and out. IT workers are also essential to just about every modern business model.

So what's the real benefit of being the behind-the-scenes technological lifeblood of a company? Excellent pay is your reward, more often than not. Consider these 10 leading fields and their median salary ranges.

1 IT consultant. Ranking number 13 on CNN's most recent Best Jobs in America list, the work of being an IT consultant is as vague as it sounds. In this position, your job is to evaluate the systems and do the research that no one else entirely understands. As CNN puts it, everyone from local startups to the Fortune 500 companies need IT consultants to help them figure out the cheapest and fastest ways to run computers better. *Salary:* \$96,400, according to CNN.

2. Cloud architect. You've heard of cloud computing of course. Although that storage space existing in the ether can't be touched literally, it still needs to be organized and given an architecture. That's what this job is for. *Salary:* \$112,000, making it one of the highest paying IT jobs.

3. Computer forensic investigator. Computer crime detectives are computer forensic investigators who search for, identify and evaluate information from computer systems, often for trial evidence. *Salary:* \$64,000 according to TBS.

4. Health IT specialist. Health IT is a blossoming field, especially with major changes going on in healthcare due to the Affordable Care Act and the gradual transition to electronic health records. Health IT specialists mix computer knowledge with record-keeping skills, but specialties in medical coding, billing and cancer registry are also in demand, according to TBS. *Salary:* \$45,000, according to TBS.

5. Mobile application developer Chances are that you and most people you know have smartphones and/or tablet computers. According to Career Realism, the use of mobile tech is predicted to exceed personal computers at some time in 2013, so businesses are more heavily relying on IT professionals with experience in this field than ever before. Using basic coding languages, developers will create programs for future IOS and Android devices. *Education:* A bachelor's in software engineering, computer science, mobile computer or related fields, according to TBS. *Salary:* \$90,000 with high growth outlook, reports TBS.

6. Web developer. Web developers are jacks of all trades. They create web pages, web applications and web content, but their skill set requires them to have excellent understanding of what makes a good operating system, what the average surfer finds visually stimulating and how to optimize sites for

mobile tech, among numerous other skills. They also need proficiency in Web languages, like HTML and Javascript. *Salary*: \$90,000, according to TBS.

7. Software engineer. If you like video games or want to design the next Facebook you should address software engineers who are behind all the programs we run on our mobile devices and personal computers – and there is a very wide range of niche fields you can work in. *Salary*: \$89,000 according to TBS.

8. Information technology vendor manager. Slightly more hands-off compared to some tech positions, vendor managers oversee supply when it comes to software and hardware. This can mean anything from Microsoft's latest word processor to health IT programs for hospitals. *Salary*: \$88,000, reports TBS.

9. Geospatial professionals. Sound confusing? Geographic information systems are complicated, but exciting and getting more so every day. GIS tech uses geographic data to evaluate and communicate trends and patterns in visually stylish and comprehensive ways, according to CareerRealism. *Salary*: Up to \$84,000 according to CareerRealism.

10. Data Modeler. Another position that translates poorly without jargon, these IT professionals create data designs and define relationships between data fields, according to TBS. Since any company's data is vital, it's modeling needs to work perfectly – a more complex task as reliance on computers grows. *Salary*: A hefty \$103,000, according to TBS.

From: <http://www.experience.com/entry-level-jobs/news/top-10-jobs-in-information-technology/>

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. Which jargon words used by IT professionals are mentioned in the text and what do they mean?
2. What are the top leading fields of IT and the corresponding average salaries?
3. What are the responsibilities of IT consultants?
4. What is included in the scope of responsibilities of data modelers?
5. What is the work of computer forensic investigators aimed at?
6. What are the responsibilities of health IT specialists?
7. What do web developers deal with?
8. What is the field of work for Software engineers?
9. Why are Information Technology vendor managers more independent comparing with other IT professionals?

10. What is the work of geospatial professionals aimed at?
11. Which of the jobs is the best paid one?
12. Which of the above-mentioned jobs is the mostly paid in Ukraine?
13. Are there any other highly paid “IT nerds” in Ukraine?

Task 7: Complete the following sentences using the text:

1. Information technology – often shortened to
2. They like what they do
3. As CNN puts it, everyone from local startups to
4. ... it still needs to be organized and given an architecture.
5. Computer crime detectives are
6. Health IT is a blossoming field ...
7. According to Career Realism, the use of mobile tech is
8. ... jacks of all trades.
9. If you like video games... .
10. ... vendor managers oversee
11. Geographic information systems are complicated, but
12. Since any company’s data is vital

Task 8. Are the statements true or false? Say why:

1. A buzz word for specialists working in Information technology is “IT nerds.”
2. They are fond of their work and know it thoroughly.
3. Their reward is only interest, as they are usually underpaid.
4. The author of the text describes just leading fields where IT specialists earn the same salary.
5. An IT consultant is needed to ensure that a company’s computers operate as cheap and fast as possible.
6. Cloud architects are engaged in the organization of cloud computing.
7. Identification and evaluation of information from computers and computer systems aimed at discovering crimes is the work of computer forensic investigators.
8. Health IT specialists earn the most meager salaries among other IT specialists.
9. Developing programs for future IOS and Android devices is always for software engineers.

10. Web developers are professionals engaged in the most limited fields of IT.
11. Software engineers are professionals who design all the programs we run on our mobile devices and personal computers.
12. Vendor managers are the most independent IT professionals in their work.
13. GIS techs use economic and geographic data to evaluate trends and patterns in stylish and comprehensive ways.
14. Data Modeler is responsible for any company's data, their work aims at creating data designs.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. Web developers create web pages, web applications and web content,		A. so businesses are more heavily relying on IT professionals with experience in this field than ever before.
2. According to Career Realism, the use of mobile tech is predicted to exceed personal computers at some time in 2013,		B. especially with major changes going on in healthcare due to the Affordable Care Act and the gradual transition to electronic health records.
3. Health IT is a blossoming field,		C. in visually stylish and comprehensive ways, according to CareerRealism.
4. Using basic coding languages,		D. but their skill set requires them to have excellent understanding of what makes a good operating system
5. GIS tech uses geographic data to evaluate and communicate trends and patterns		E. developers will create programs for future IOS and Android devices.

Task 10: Put the words in the right order to make sentences.

1. design computer systems services and related be broken down into four subindustries can.
2. remaining the two smaller are much subindustries.

3. systems computer services also support design provided to client.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	reliance						
3		supply					
4					processing		
5				considerably			
6			comparative				
7						confused	
8	investigation						
9			transitive				

Task 12: Fill in the gaps with suitable prepositions.

Computers and information technology (IT) touch nearly every aspect (a) _____ modern life. Information technology can help (b) _____ such diverse tasks (c) _____ driving motor vehicles (d) _____ diagnosing diseases. IT enables seamless integration and communication (e) _____ businesses anywhere (f) _____ the world. (g) _____ keep IT systems running, a large workforce is needed (h) _____ maintain networks, create new software, and ensure information security. In addition, the proliferation of smart phones has given rise to a new “app economy,” (i) _____ which new employment opportunities are available (j) _____ workers who create the programs that run (k) _____ mobile devices. Unlike many other sectors of the economy, employment (l) _____ the computer systems design and related services industry (commonly known as IT services) was not significantly affected (m) _____ the recession of 2007–2009. The industry lost about 1 percent of its employment (n) _____ 2009 but regained momentum (o) _____ 2010, when it surpassed the employment numbers (p) _____ 2008. The high demand (q) _____ the services provided (r) _____ this industry has created a large number (s) _____ fast-growing and high-paying IT jobs.

V. Final tasks

Task 13: Discuss the following ideas with your group-mates:

1. The salary of IT professionals varies in different fields.

2. The previous work experience is much more important for the employment of IT specialists than their education.
3. Ukrainian IT nerds can't compete with corresponding professionals in developed countries.
4. Foreign language knowledge is a necessity for getting a good job in IT.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: field, reward, model, consultant, position, surfer, proficiency, vendor, data, jargon, developer.

Adjectives: vague, concurrent, visual, optimizing, hands-off, geospatial, complicated, exciting, stylish, hefty.

Verbs: to optimize, to specialize, to oversee, to evaluate, to communicate.

Phrases: IT nerds, to run computers, cloud architect, cloud computing, mobile application developer, computer forensic investigator, record-keeping, tablet computer, coding language, jacks of all trades, visually stimulating, data fields, understand it inside and out.

Abbreviations: IOS, GIS, HTML, TBC.

Task 15: Provide the opposites to the English words: visual, vague, complicated, exciting, hefty.

Task 16: Read about job descriptions of IT specialists. Match the words and definitions. Mind that the specialists may have more responsibilities:

1. IT consultant		A. analyzes corporate or individual computer files to collect evidence of fraud, like. embezzlement, unauthorized leaks of information, identity theft, child pornography, or distribution of virus and malware
2. Computer forensic		B. oversees supply when it comes to

investigator		software and hardware
3. Web developer		C. makes maps and customized geographic information systems (GIS) applications and manipulates data to serve a variety of purposes; reads and interprets maps, manipulates and understands digital land data, and manages data entered into a GIS database
4. Software engineer		D. creates the design works to empower production system and practice to use data and thrust business processes; reviews a company's data accounting , organizes the integration of data and migration activities to enhance operating efficiency
5. Health IT specialist		E. consults on the issues of software designing of companies
6. Cloud architect		F. oversees a cloud computing strategy
7. Information technology vendor manager		G. designs and codes programs that run on phones and tablets. In addition to creating applications that are installed on these devices, some may make Web applications.
8. Data Modeler		H. has a wide range of job responsibilities: develops new web applications; makes sure that these apps run correctly by maintaining them on a daily basis; enhances each application in new ways etc.
9. Mobile		I. maintains patient records and keeps

application developer		them secure. Must keep up with current computer and software technology as well as legislative requirements
10. Geospatial professionals		J. is responsible to develop new web applications and technologies for his employer, develops new Internet applications for the company; hands over the duty of developing database management systems on the web which would have the capacity to store a substantial amount of data etc.

<http://www.bestjobdescriptions.com/it/data-modeler-job-description>

<http://www.buzzle.com/articles/web-developer-job-description.html>

<http://www.careerbuilder.com/jobs/keyword/information-technology-specialist/>

Task 17: Make up your own sentences with the words and expressions from Task 16 and share them with your partner.

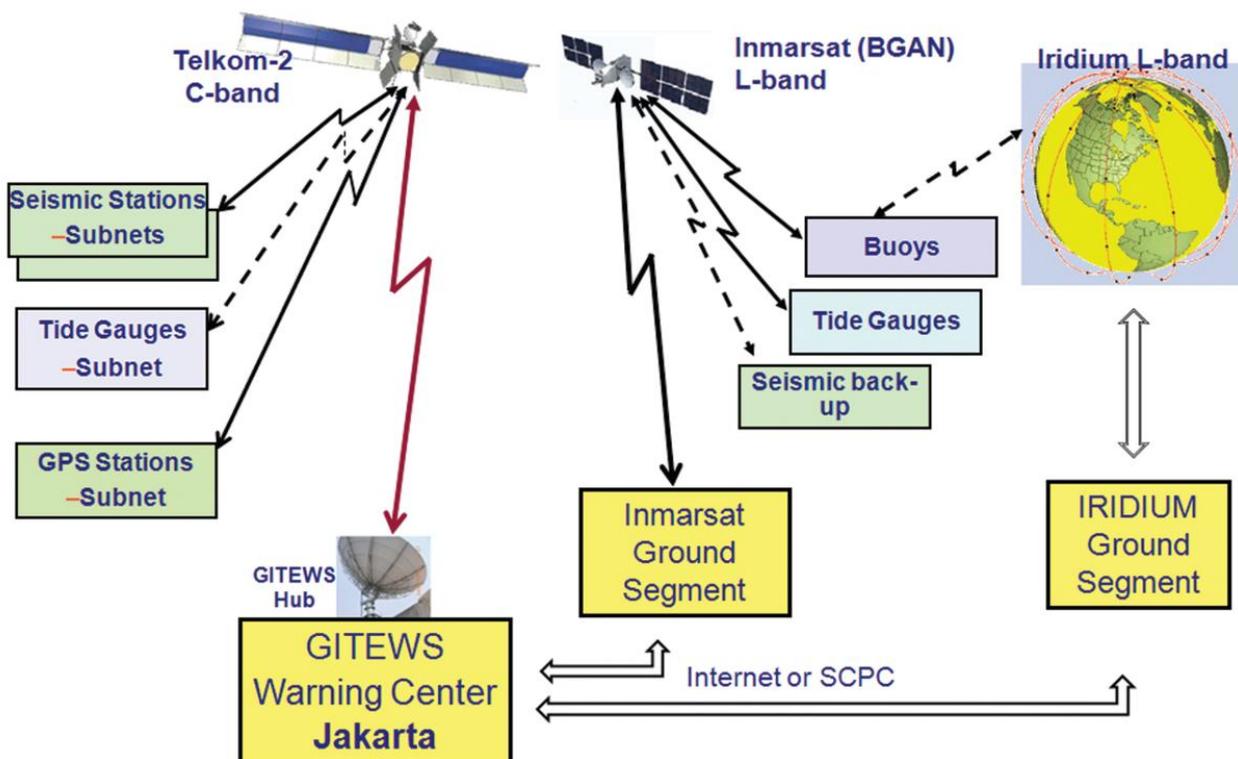
Task 18: Put the verbs in brackets in the correct grammar form.

Electronic computers, using either relays or valves, (a) _____ (begin) to appear in the early 1940s. The electromechanical Zuse, (b) _____ (to complete) in 1941, was the world's first programmable computer, and by modern standards one of the first machines that could be (c) _____ (to consider) a complete computing machine. Colossus, (d) _____ (to develop) during the Second World War (e) _____ (to decrypt) German messages (e) _____ (to be) the first electronic digital computer. Although it (f) _____ (to be) programmable, it (g) _____ (not to be) general-purpose, being designed (h) _____ (to perform) only a single task. It also (i) _____ (to lack) the ability (j) _____ (to store) its program in memory; programming (k) _____ (to be carried out) using plugs and switches (l) _____ (to alter) the internal wiring. The first recognizably modern electronic digital store-program computer (m) _____ (to be) the Manchester Small-Scale (SSEM), which (n) _____ (to run) its first program on 21 June 1948.

Task 19: Correct the sentences. There is one mistake in a sentence. Find it and write down the sentences that have been corrected.

1. The industry is largest of any computer-related industry, employing more than 1.5 million people in 2013.
2. The first two are largest, and account for almost 90 percent of all IT services employment.
3. For most of the past 20 years, employment in computer systems design and related services have grown rapidly.

UNIT 12. COMMUNICATION SYSTEMS



I Pre-reading activities:

Task 1. Discuss the following questions.

1. What is the communication system in IT technologies?
2. What do you know about the types of communication systems in the world?
3. What is the role of communication systems in human activities?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

signal ['sɪgn(ə)l] n.	electromagnetic [ɪlektərə(u)mæg'netɪk] adj.
communication [kəmju:nɪ'keɪʃ(ə)n] n.	oscillation [ɔsɪ'leɪʃ(ə)n] n.
fiber ['faɪbə] n.	tactical ['tæktɪk(ə)l] adj.
medium ['mi:dɪəm] n.	duplex ['dju:pleks] n.
modulate ['mɒdjəleɪt] v.	antenna [æn'tenə] n.
electrical [ɪ'lektɪk(ə)l] adj.	unison ['ju:nɪs(ə)n] n.
exterior [ɪk'stɪərɪə] n.	radio ['reɪdɪəu] n.
propagate ['prɒpəgeɪt] v.	transmission [trænz'mɪʃ(ə)n] n.
conductor [kən'dʌktə] n.	device [dɪ'vaɪs] n.
assembly [ə'sembli] n.	transmitter [trænz'mɪtə] n.

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

1. communication networks	A. станції в багатопунктній мережі
2. transmission systems	B. термінальне обладнання
3. relay stations	C. волоконно-оптичний зв'язок
4. tributary stations	D. електрична вібрація
5. terminal equipment	E. взаємозв'язок, з'єднання
6. fiber-optic communication	F. системи передачі
7. electrical oscillations	G. передавач, трансмітер
8. interconnection	H. мережі зв'язку
9. transmitter	I. двосторонній зв'язок
10. duplex	J. потік даних
11. tributary	K. ретрансляційні станції

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- Fiber-optic communication systems transmit information from one place to another by sending light through an optic fiber.
- The light forms an electromagnetic carrier wave that is modulated to carry information.

- c) Emergency communication system is any system (typically computer based) that is organized for the purpose of supporting the two way communication of emergency messages between both individuals and groups of individuals.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What does the term 'communication systems' denote?
2. What does the system usually consist of?
3. What are the requirements for individual components of a system?

In telecommunication, a **communications system** is a system or facility for transferring data between persons and equipment. The system usually consists of a collection of individual communication networks, transmission systems, relay stations, tributary stations and terminal equipment capable of interconnection and interoperation. These individual components must serve a common purpose, be technically compatible, employ common procedures, respond to control and operate in unison.

A **communications subsystem** is a functional unit or operational assembly that is smaller than the larger assembly under consideration.

There examples of communication systems:

An **optical communication system** is any form of telecommunication that uses light as the transmission medium. Equipment consists of a transmitter, which encodes a *message* into an optical signal, a channel, which carries the signal to its destination, and a receiver, which reproduces the message from the received optical signal. Fiber-optic communication systems transmit information from one place to another by sending light through an optic fiber. The light forms an electromagnetic carrier wave that is modulated to carry information.

A **radio communication system** is composed of several communications subsystems that give exterior communications capabilities. A radio communication system comprises a transmitting conductor in which electrical oscillations or currents are produced and which is arranged to cause such currents or oscillations to be propagated through the free space medium from one point to another remote therefrom and a receiving conductor at such distant point adapted to be excited by the oscillations or currents propagated from the transmitter.

Power line communication systems operate by impressing a modulated carrier signal on power wires. Different types of powerline communications use

different frequency bands, depending on the signal transmission characteristics of the power wiring used. Since the power wiring system was originally intended for transmission of AC power, the power wire circuits have only a limited ability to carry higher frequencies. The propagation problem is a limiting factor for each type of power line communications.

A **duplex communication system** is a system composed of two connected parties or devices which can communicate with one another in both directions. The term *duplex* is used when describing communication between two parties or devices. Duplex systems are employed in nearly all communications networks, either to allow for a communication “two-way street” between two connected parties or to provide a “reverse path” for the monitoring and remote adjustment of equipment in the field. Antenna: -an antenna is basically a small length of a conductor that is used to radiate or receive electromagnetic waves. It acts as a conversion device. At the transmitting end it converts high frequency current into electromagnetic waves. At the receiving end it transforms electromagnetic waves into electrical signals that is fed into the input of the receiver.

A tactical **communication system** is a communications system that (a) is used within, or in direct support of tactical forces, (b) is designed to meet the requirements of changing tactical situations and varying environmental conditions, (c) provides securable communications, such as voice, data, and video, among mobile users to facilitate command and control within, and in support of, tactical forces, and (d) usually requires extremely short installation times, usually on the order of hours, in order to meet the requirements of frequent relocation.

An **emergency communication system**. Emergency communication system is any system (typically computer based) that is organized for the purpose of supporting the two way communication of emergency messages between both individuals and groups of individuals. These systems are designed to integrate the cross-communication of messages among variety of communication technologies.

From: ["Communications Standard Dictionary", 2nd Edition, Martin H. Weik]. (1995-02-06) http://en.wikipedia.org/wiki/Communications_system

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What is a communications subsystem?
2. What are the main features of an optical communication system?

3. What are the main characteristics of fiber-optic communication systems?
4. How can one describe a radio communication system?
5. What are the main features of power line communication systems?
6. What are the properties and functions of an antenna?
7. What are the properties of a tactical communication system?
8. What is the purpose of an emergency communication system?
9. How are emergency systems designed?

Task 7: Complete the following sentences using the text:

1. In telecommunication, a communications system is a
2. The system usually consists of
3. These individual components must
4. A communications subsystem is
5. An optical communication system is
6. A radio communication system is composed of
7. A radio communication system comprises
8. Power line communication systems operate
9. A duplex communication system is
10. Duplex systems are employed
11. Antenna: -an antenna is basically
12. A tactical communication system is
13. Emergency communication system is
14. These systems are designed to integrate

Task 8. Are the statements true or false? Say why:

1. The system usually consists of a collection of independent communication networks, transmission systems, relay stations, tributary stations which operate separately from each other.
2. Communication systems include different components, but they do not work together.
3. A communications subsystem is larger than a system.
4. An important principle of an optical communication system is based on light broadcast through an optic fiber.
5. A transmitting conductor and receiving conductor are the key components of a radio communication system.

6. Different types of power lines, which use different frequency bands, can be found in duplex communication systems.
7. A radio communication system is a system composed of two connected parties or devices which can communicate with one another in both directions.
8. The term duplex is used when describing communication between two or more parties or devices.
9. Any antenna is basically a small length of a conductor that is used to radiate and block electromagnetic waves.
10. A tactical communication system is meant for changing tactical situations and varying environmental conditions.
11. A tactical communication system is meant for securable communications, such as voice, data, but it does not transmit video.
12. A radio communication system comprises only one communication subsystem.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. A radio communication system is composed of		A. that is organized for the purpose of supporting the two way communication of emergency messages between both individuals and groups of individuals.
2. Emergency communication system is any system (typically computer based)		B. integrate the cross-communication of messages among variety of communication technologies.
3. These systems are designed to ...		C. by impressing a modulated carrier signal on power wires.
4. Power line communication systems operate ...		D. that is used to radiate or receive electromagnetic waves and acts as a conversion device.
5. An antenna is basically a small length of a conductor		E. several communications subsystems that give exterior communications capabilities.

Task 10: Put the words in the right order to make sentences.

1. want I and company to thank you your.
2. our is specialty in of structured cabling the area.
3. are also highly our technicians trained in of the systems the use.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
2		transfer					
3					equipping		
4		interconnect					
5	response						
6						assembled	
7	reproduction						
8		modulate					
9	propagation						

Task 12: Fill in the gaps with suitable prepositions.

1. Our communication solutions are custom tailored to fit your unique system and feature needs. We take pride ____ (a) our ability to work ____ (b) a broad range of service providers ____ (c) provide input ____ (d) who, depending ____ (e) what your location and functionality requirements, will offer the best communications packages available.
2. Contact us today ____ (f) a free quote and to answer questions you may have concerning pricing, service, installation timelines, and maintenance.
3. Telarus prides themselves ____ (g) their ability to partner ____ (h) diverse and unique companies ____ (i) the telecommunications industry. Their in-house IT staff has created multiple award-winning software solutions that make it easy to do business ____ (j) us, whether you're a one-man-shop ____ (k) a Fortune 100 company. And when doing business is easy, everyone wins!

V. Final tasks

Task 13: Discuss the following ideas with your group-mates:

1. In the future the number of specialists working with communication systems will increase.
2. Basics of communication systems should be taught in all universities, probably even in schools.
3. The field of communication systems can solve the problem of unemployment in Ukraine as well as in other countries.
4. Ukrainian professionals in the field of communication systems have the same level of competence as professionals in the developed countries.

V. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: communication, network, transmission, tributary, fiber, signal, oscillation, transfer, exterior, conductor, power line, duplex, device, antenna, emergency, facility, interconnection, subsystem, receiver, transmitter, input, tributary.

Adjectives: compatible, electromagnetic, exterior, duplex, tactical, optical, fiber.

Verbs: to modulate, to propagate.

Phrases: communication networks, transmission systems, relay stations, tributary stations, terminal equipment, operate in unison, fiber-optic communication, electrical oscillations, receiving conductor.

Task 15: Provide the opposites to the English words: exterior, receiver, input, to respond, compatible.

Task 16: Match the words and definitions:

1. network		A. movement back and forth in a regular rhythm
------------	--	--

2. transmission		B. a group or system of interconnected people or things
3. input		C. a thread or filament from which a vegetable tissue, mineral substance, or textile is formed
4. tributary		D. a special feature of a service or machine, which offers the opportunity to do or benefit from something
5. transmitter		E. a unit consisting of components that have been fitted together
6. fiber		F. a material or device that conducts or transmits heat or electricity, especially when regarded in terms of its capacity to do this
7. oscillation		G. a thing made or adapted for a particular purpose, especially a piece of mechanical or electronic equipment
8. duplex		H. simultaneous performance or utterance of action or speech
9. power line		I. the information put into a computer
10. device		J. (of a stream, etc.) feeding a larger stream
11. antenna		K. the faculty of instinctively detecting and interpreting subtle signs
12. conductor		L. a program or signal that is broadcast or sent out
13. facility		M. allowing the transmission of two signals simultaneously in opposite

		directions
14. assembly		N. a cable carrying electrical power, especially one supported by pylons or poles
15. unison		O. a set of equipment used to generate and transmit electromagnetic waves carrying messages or signals, especially those of radio or television

Task 17: Make up your own sentences with the words from Task 16 and share them with your partner.

Task 18: Put the verbs in brackets in the correct grammar form.

1. Communication System Inc. (a) _____ (to provide) top notch communication systems and service since 1997. We (b) _____ (to dedicate) to providing outstanding customer service and we actively (c) _____ (to support) our customers at all levels.
2. Our specialty (d) _____ (to be) in the area of structured cabling and voice over IP platforms. Our regular customers particularly (e) _____ (to value) the time and dedication we (f) _____ (to take) to make sure their communication systems (g) _____ (to work) properly.
3. Samsung (i) _____ (to be) the world's most popular consumer electronics brand since 2005 and (h) _____ (to be) the best known South Korean brand in the world.
4. ShoreTel, Inc., (j) _____ (to be) a leading provider of Pure IP unified communications systems. ShoreTel (k) _____ (to enable) companies of any size (l) _____ (to integrate) all communications-voice, data, messaging-with their business processes. Independent of device or location, ShoreTel's distributed software architecture (m) _____ (to eliminate) the traditional costs, complexity and reliability issues typically (n) _____ (to associate) with other solutions.

Task 19: Correct the sentences. There is one mistake in each sentence. Find it and write the sentences that have been corrected.

1. At the transmitting end it converts high frequency current onto electromagnetic waves.

2. On the receiving end it transforms electromagnetic waves into electrical signals that is fed into the input of the receiver.
3. Harris Corporation (HRS) has received an order to supplying communication systems to the Air National Guard (ANG).
4. Harris is dedicated for developing best-in-class communications products, systems and services.
5. Additional information about Harris Corporation are available at the site of the company.

UNIT 13. NETWORKS



I Pre-reading activities:

Task 1. Discuss the following questions.

1. What is the communication network?
2. What types of networks do you know?
3. Do you use any networks in your life?

Task 2: Some of the following English words look or sound similar to the Ukrainian ones. Pronounce them after your teacher:

campus ['kæmpəs] n.	geographic(al) [dʒɪə'græfɪk(ə)l] adj.
metropolitan [metrə'pɒlɪt(ə)n]	satellite ['sæt(ə)laɪt] n.
station ['steɪʃ(ə)n] n.	protocol ['prəʊtəkɒl] n.
node [nəʊd] n.	fiber [faɪbə] n.
laser ['leɪzə] n.	optical ['ɒptɪk(ə)l] adj.
session ['seʃ(ə)n] n.	cable ['keɪbl] n., v.
e-mail ['i:meɪl] n., v.	categorize ['kætɪgəraɪz] v.
individual [ɪndɪ'vɪdʒuəl] adj.	machine [mə'ʃi:n] n.
transmit [trænz'mɪt] v.	topology [tə'pɒlədʒi] n.
communicate [kə'mju:nɪkeɪt] v.	

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|-------------------------|---|
| 1. leased line | A. загальнооміська мережа |
| 2. home security system | B. передавати дані |
| 3. node | C. периферійні пристрої |
| 4. metropolitan-area | D. виділена лінія |
| 5. digital device | E. кільцева мережа з маркерним доступом |
| 6. Ethernet | F. пірінговий, децентралізований |
| 7. campus network | G. університетська (або інша) локальна мережа |
| 8. to transmit data | H. цифровий пристрій |
| 9. peripheral devices | I. система внутрішньої безпеки |
| 10. peer-to-peer | J. мережа Ethernet |
| 11. token-ring network | K. вузол (зв'язку) |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- A. Fiber-optic communication systems transmit information from one place to another by sending light through an optic fiber.
- B. The light forms an electromagnetic carrier wave that is modulated to carry information.

C. Emergency communication system is any system (typically computer based) that is organized for the purpose of supporting the two way communication of emergency messages between both individuals and groups of individuals.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What are the means of transferring data through computer networks?
2. What is CAN?

A **computer network** or **data network** is a telecommunications network which allows computers to exchange data. In computer networks, networked computing devices pass data to each other along data connections (network links). Data is transferred in the form of packets. The connections between nodes are established using either cable media or wireless media. The best-known computer network is the Internet.

There are many types of computer networks, including:

Local-area networks (LANs): The computers are geographically close together (that is, in the same building).

Wide-area networks (WANs): The computers are farther apart and are connected by telephone lines or radio waves.

Campus-areas networks (CANs): The computers are within a limited geographic area, such as a campus or military base.

Metropolitan-area networks (MANs): A data network designed for a town or city.

Home-area networks (HANs): A network contained within a user's home that connects a person's digital devices.

A **local-area network (LAN)** is a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings, however, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a *wide-area network (WAN)*.

Most LANs connect work stations and personal computers. Each *node* (individual computer) in a LAN has its own CPU with which it executes programs, but it also is able to access data and devices anywhere on the LAN. This means that many users can share expensive devices, such as laser prints, as well as data. Users can also use the LAN to communicate with each other, by sending e-mail or engaging in chat sessions.

LANs are capable of transmitting data at very fast rates, much faster than data can be transmitted over a telephone line; but the distances are limited, and there is also a limit on the number of computers that can be attached to a single LAN.

Wide-area network is a computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local-area networks (LANs).

Computers connected to a wide-area network are often connected through public networks, such as the telephone system. They can also be connected through leased lines or satellites. The largest WAN in existence is the Internet.

CAN is an acronym for *campus-area network*. They have an interconnection of local-area networks within a limited geographical space, such as a school campus or a military base.

MAN is short for **M**etropolitan **A**rea **N**etwork, a data network designed for a town or city. In terms of geographic breadth, MANs are larger than local-area networks, but smaller than Wide-area network (WANs). MANs are usually characterized by very high-speed connections using fiber optical cable or other digital media.

HAN is short for **h**ome **a**rea **n**etwork. A HAN is a network contained within a user's home that connects a person's digital devices, from multiple computers and their peripheral devices to telephones, VCRs, televisions, video games, home security systems, "smart" appliances, fax machines and other digital devices that are wired into the network.

In addition to these types, the following characteristics are also used to categorize different types of networks:

Topology: The geometric arrangement of a computer system. Common topologies include a bus, star, and ring.

Protocol: The protocol defines a common set of rules and signals that computers on the network use to communicate. One of the most popular protocols for LANs is called Ethernet. Another popular LAN protocol for PCs is the *IBM token-ring network*.

Architecture: Networks can be broadly classified as using either a peer-to-peer or client/server architecture.

Computers on a network are sometimes called nodes. Computers and devices that allocate resources for a network are called servers.

From: <http://www.webopedia.com/TERM/N/network.html>

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What are the main types of computer networks?
2. What are the main parameters of local-area networks?
3. What are the main parameters of wide-area networks?
4. What are the means of connecting computers within local-area networks?
5. What does the acronym MAN stand for?
6. What are the main parameters of *Metropolitan Area Networks*?
7. How do *home area networks* differ from other networks?
8. What does HAN stand for?
9. What is usually connected to HANs?
10. What other characteristics are used to categorize different types of networks?
11. What is another word for computers within a network?

Task 7: Complete the following sentences using the text:

1. A network is a
2. There are many types of computer networks
3. A *local-area network* (LAN) is a computer network
4. Each *node* (individual computer) in a LAN
5. LANs are capable of
6. Typically, a WAN consists of
7. Computers connected to a wide-area network are
8. The largest WAN
9. CAN has interconnection of
10. MANs are usually characterized by
11. A HAN is a network contained
12. The following characteristics are also used to categorize different types of networks
13. Computers and devices that allocate resources

Task 8. Are the statements true or false? Say why:

1. A network is a group of two or more independently operating computer systems.

2. According to the author there are 5 types of computer networks.
3. Among the network types wide-area networks are the largest ones according to their geography.
4. Some networks are linked to each other by means of other communication systems (telephone systems etc).
5. There are designs of networks that will use satellites in the near future.
6. *Metropolitan area networks are the most limited networks in terms of covering areas.*
7. CANs are networks which are laid only in rural areas.
8. MANs boast high-speed operating due to fiber optical cables.
9. Fiber optical cable is the only media used in MANs.
10. CANs are *networks covering the smallest* geographical space.
11. HANs are designed for homes of users only.
12. HANs are connected to a person's digital devices.
13. Another word for computers within a network is nodes.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. A computer network or data network is ...		A. in the form of packets.
2. In computer networks, networked computing devices pass data ...		B. using either cable media or wireless media.
3. Data is transferred ...		C. are called servers.
4. The connections between nodes are established ...		D. a telecommunications network which allows computers to exchange data.
5. Computers and devices that allocate resources for a network		E. to each other along data connections (network links).

Task 10: Put the words in the right order to make sentences.

4. materials, operating require selecting procedures in networking.
5. more networks have access, most households as a result to one or.
6. networks there are of broad types three.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

№	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2	exchange						
3		compute					
4						established	
5					limiting		
6	design						
7			accessible				
8	allocation						
9	server						

Task 12: Fill in the gaps with suitable prepositions.

- Baseband is transmission (a)_____ digital data (b)_____ their raw form (1001 1101 1010 0011). This allows very fast and reliable communication (c)_____ short distances; however, (d)_____ to the realistic electrical properties (e)_____ used media, the range (f)_____ baseband transmission is very limited and decreases (g)_____ increasing speed. Baseband technology is frequently used (h)_____ LAN.
- Networking refers (j) _____ the total process (k) _____ creating and using computer networks, (l) _____ respect to hardware, protocols and software, including wired and wireless technology. It involves the application (m) _____ theories (n) _____ different technological fields, like IT, computer science and computer/electrical engineering.

V. Final tasks

Task 13: Discuss the following ideas with your group-mates:

- Computer networks have reached their pinnacle and can hardly further develop.
- Modern computer networks fully satisfy the demands of the society.
- Computer networks in Ukraine are of lower quality than in developed countries.
- Ukrainian education prepares competitive professionals for Ukraine and foreign countries.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: network, campus, node, laser, session, satellite, interconnection, fiber, cable, machine, topology, protocol, Ethernet, architecture, peer, resource, server, campus, data, bus, star, ring.

Adjectives: metropolitan, compatible, digital, local, individual, optical, multiple, wired, geometric, limited, digital.

Verbs: to facilitate, to confine, to engage, to communicate, to transmit, to categorize, to link, to execute, to attach.

Phrases: computer system, computer network, telephone line, radio wave, metropolitan area, digital device, work station, laser print, chat session, video game, home security system, “smart” appliance, fax machine, peritheral devices, peer-to-peer, *token-ring network*, to allocate resources, leased line.

Decipher the acronyms and abbreviations: LANs, WANs, CANs, MANs, HANs, CPU, CAN, HAN, IBM.

Task 15: Provide the opposites to the English words: local, individual, metropolitan, compatible, limited.

Task 16: Match the words and definitions to the words:

1. network		A. a thread or filament from which a vegetable tissue, mineral substance, or textile is formed
2. node		B. a distinct set of conductors carrying data and control signals within a computer system, to which pieces of equipment may be connected in parallel
3. program		C. a group of people or things arranged in a circle
4. device		D. the arrangement and interlinking of

		computers in a computer network
5. satellite		E. a system for connecting a number of computer systems to form a local area network, with protocols to control the passing of information and to avoid simultaneous transmission by two or more systems
6. fiber		F. a series of coded software instructions to control the operation of a computer or other machine
7. cable		G. transmitted by satellite; using or relating to satellite technology
8. bus		H. a set of rules governing the exchange or transmission of data between devices
9. star		I. a piece of equipment, such as a computer or peripheral, attached to a network
10. ring		J. a thing made or adapted for a particular purpose, especially a piece of mechanical or electronic equipment
11. Ethernet		K. an insulated wire or wires having a protective casing and used for transmitting electricity or telecommunication signals
12. topology		L. a computer or computer program which manages access to a centralized resource or service in a network
13. protocol		M. a data or communication network in

		which all nodes are independently connected to one central unit
14. server		N. branches

Task 17: Make up your own sentences with the words from Task 16 and share them with your partner.

Task 18: Match the phrases and definitions to them:

1. work station		a) popular type of personal computer printer that uses a non-impact (keys don't strike the paper), photocopier technology.
2. peripheral device		b) the telephonic transmission of scanned printed material (both text and images)
3. laser print		c) an electronic device which uses discrete, numerable data and processes for all its operations
4. chat session		d) any computer connected to a local-area network. It could be a workstation or a personal computer.
5. fax machine		e) computer networks in which each computer can act as a server for the others, allowing shared access to files and peripherals without the need for a central server
6. leased line		f) any device, such as a disk, printer, modem, or screen, concerned with input/output, storage, etc Often shortened to peripheral
7. digital device		g) appliances which utilize modern computer and communications technology to make functions faster, cheaper and more energy-efficient.
8. "smart" appliances		h) a local area network (LAN) in which all computers are connected in a ring or star topology and a bit- or token-passing scheme is used in order to prevent the

		collision of data between two computers that want to send messages at the same time.
9. peer-to-peer		i) chat session is basically like skypeing with someone using microphones and a webcam
10. <i>token-ring network</i>		j) a telephone line that has been leased for private use.

Task 18: Make up your own sentences with the words and expressions from Task 17 and share them with your partner.

Task 19: Put the verbs in brackets in the correct grammar form.

1. A computer network, or simply a network, (a)_____ (to be) a collection of computers and other hardware components (b)_____ (to interconnect) by communication channels that (c)_____ (to allow) sharing resources and information. Today, computer networks (d)_____ (to be) the core of modern communication. All modern aspects of the public switched telephone network (PSTN) are (e) _____ (to control) by computers. Telephony increasingly (f)_____ (to run) over the Internet Protocol, although not necessarily the public Internet. The scope of communication (g)_____ (to increase) significantly in the past decade. This boom in communications (h)_____ (to be) possible without the progressively (i)_____ (to advance) computer network.
2. Capacity (j)_____ (to be) is a measure of transfer capacity of a network and (k)_____ (to measure) in bits per second (bps or b/s), today commonly Mbps or Mb/s. It (l)_____ (to show) us how many data units (m)_____ (to transfer) each second.
3. One of the earliest examples of a computer network (n)_____ (to be) a network of communicating computers that (o)_____ (to function) as part of the U.S. military's Semi-Automatic Ground Environment (SAGE) radar system.

Task 20: Correct the sentences. There is one mistake in each sentence. Find it and write the sentences that have been corrected.

1. Computer networking depend on the theoretical application and practical implementation of fields.
2. Even public switched telephone networks is controlled by computer systems.

3. LANs are characterized by higher communication and data transfer rates and the lacks of any need for leased communication lines.

UNIT 14. VIDEO GAMES



I Pre-reading activities:

Task 1. Discuss the following questions.

1. Why do video games play such an important role in young peoples' lives?
2. Can video games be addictive, psychologically damaging etc.?
3. Should children be allowed to play video games as often as they want?

Task 2: Some of the following English words look or sound similar to the Ukrainian ones. Pronounce them after your teacher:

interface ['ɪntəfeɪs] n.

console [kən'səʊl] n.

arcade [ɑ:'keɪd] n.

controller [kən'trəʊlə] n.

mobile ['məʊbaɪl] adj.

reproduction ['ri:prə'dʌkʃ(ə)n] n.

peripheral [pə'rɪf(ə)r(ə)l] adj.

physics ['fɪzɪks] n.

processing ['prəʊsesɪŋ] n.

joystick ['dʒɔɪstɪk] n.

platform ['plætfɔ:m] n.

gameplay ['geɪmpleɪ] n.

engine ['endʒɪn] n.

mantle ['mæntl] n.

audio ['ɔːdɪəu] adj.
creative [kri'eɪtɪv] adj.
simulator ['sɪmjələɪtə] n.

video ['vɪdɪəu] n.
raster ['ræstə] n.
motherboard ['mʌðəbɔːd] n.

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|-----------------------------------|---------------------------------|
| 1. user interface | A. ігрова відеоприставка |
| 2. visual feedback | B. універсальний комп'ютер |
| 3. video game console | C. ігровий контролер |
| 4. mainframe computer | D. силовий зворотній зв'язок |
| 5. arcade games | E. блок обробки графіки |
| 6. game controller | F. інтерфейс користувача |
| 7. touch-sensitive screen | G. приладний драйвер |
| 8. force feedback | H. ігри на ігрових приставках |
| 9. graphics processing unit (GPU) | I. сенсорний екран |
| 10. console-style games | J. візуальний зворотній зв'язок |
| 11. device driver | K. аркадні ігри |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- A. A few of the most common game controllers are gamepads, mouses, keyboards, and joysticks.
- B. The word *video* in *video game* traditionally referred to a raster display device, but it now implies any type of display device that can produce two-or three-dimensional images.
- C. CPU manufacturers historically relied mainly on increasing clock rates to improve the performance of their processors, but had begun to move steadily towards multi-core CPUs by 2005.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What is the word *video* in *video game* referred to?
2. What are platforms in video games and what are their examples?

A **video game** is an electronic game that involves human interaction with a user interface to generate visual feedback on a video device. The word *video* in *video game* traditionally referred to a raster display device, but it now

implies any type of display device that can produce two-or three-dimensional images. The electronic systems used to play video games are known as platforms; examples of these are personal computers and video game consoles. These platforms range from large mainframe computers to small handheld devices. Specialized video games such as arcade games, while previously common, have gradually declined in use. Video games have gone on to become an art form and industry.

The input device primarily used to manipulate video games is called a game controller, and varies across platforms. For example, a controller might consist of only a button and a joystick, while another may feature a dozen buttons and one or more joysticks. Many modern computer games allow or require the player to use a keyboard and a mouse simultaneously. A few of the most common game controllers are gamepads, mice, keyboards, and joysticks. In recent years, additional methods of input have emerged such as camera-based player observation for video game consoles and touch-sensitive screens on mobile devices.

Video games typically use additional means of providing interactivity and information to the player. Audio is almost universal, using sound reproduction devices, such as speakers and headphones. Other feedback may come via haptic peripherals, such as vibration or force feedback, with vibration sometimes used to simulate force feedback.

PC gaming technology. Hardware

Modern computer games place great demand on the computer's hardware, often requiring a fast central processing unit (CPU) to function properly. CPU manufacturers historically relied mainly on increasing clock rates to improve the performance of their processors, but had begun to move steadily towards multi-core CPUs by 2005. These processors allow the computer to simultaneously process multiple tasks, called threads, allowing the use of more complex graphics, artificial intelligence and in-game physics.

Similarly, 3D games often rely on a powerful graphics processing unit (GPU), which accelerates the process of drawing complex scenes in real time. GPUs may be an integrated part of the computer's motherboard, the most common solution in laptops, or come packaged with a discrete graphics card with a supply of dedicated VideoRAM, connected to the motherboard through either an AGP or PCI-express port. It is also possible to use multiple GPUs in a single computer, using technologies such as NVidia's Scalable Link Interface and ATI's CrossFire.

Sound cards are also available to provide improved audio in computer games. These cards provide improved 3D audio and provide audio

enhancement that is generally not available with integrated alternatives, at the cost of marginally lower overall performance. The Creative Labs SoundBlaster line was for many years the *de facto* standard for sound cards, although its popularity dwindled as PC audio became a commodity on modern motherboards.

Physics processing units (PPUs), such as the Nvidia PhysX (formerly AGEIA PhysX) card, are also available to accelerate physics simulations in modern computer games. PPU allow the computer to process more complex interactions among objects than is achievable using only the CPU, potentially allowing players a much greater degree of control over the world in games designed to use the card.

Virtually all personal computers use a keyboard and mouse for user input. Other common gaming peripherals are a headset for faster communication in online games, joysticks for flight simulators, steering wheels for driving games and gamepads for console-style games.

Software

Computer games also rely on third-party software such as an operating system (OS), device drivers, libraries and more to run. Today, the vast majority of computer games are designed to run on the Microsoft Windows family of operating systems. Whereas earlier games written for DOS would include code to communicate directly with hardware, today Application programming interfaces (APIs) provide an interface between the game and the OS, simplifying game design. Microsoft's DirectX is an API that is widely used by today's computer games to communicate with sound and graphics hardware. OpenGL is a cross-platform API for graphics rendering that is also used. The version of the graphics card's driver installed can often affect game performance and gameplay. In late 2013, AMD announced Mantle, a low-level API for certain models of AMD graphics cards, allowing for greater performance compared to software-level APIs such as DirectX, as well as simplifying porting to and from the PlayStation 4 and Xbox One consoles, which are both built upon AMD hardware. It is not unusual for a game company to use a third-party game engine, or third-party libraries for a game's AI or physics.

From: https://en.wikipedia.org/wiki/List_of_video_game_genres

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What are arcade games and what is their place nowadays?

2. What does a controller for video games consist of?
3. What are the most common game controllers?
4. What are the additional methods of input which have recently emerged?
5. What are the additional means of providing interactivity and information for the player which are used in video games?
6. What is the reason for a greater role of central processing unit (CPU) in modern computer games?
7. What is the role of graphics processing unit (GPU)?
8. What are the main features of the modern GPU?
9. What is the role of sound cards in modern video games and why is this role increasing?
10. What was the *de facto* standard for sound cards for many years?
11. What are the main and peripheral components for user input in video games?
12. What is third-party software computer games rely on?
13. What provides an interface between the game and the operating system?
14. What else can affect game performance and game play?

Task 7: Complete the following sentences using the text:

1. A video game is
2. are known as platforms
3. These platforms range from
4. Video games have gone on to
5. is called a game controller
6. Many modern computer games allow
7. A few of the most common game controllers are
8. Video games typically use additional means of
9. Modern computer games place great demand on
10. These processors allow
11. ... 3D games often rely on
12. It is also possible to use multiple GPUs in
13. Sound cards are also available
14. These cards provide
15. ... such as the Nvidia PhysX (formerly AGEIA PhysX) card, are

16. PPU allow the computer to
17. ... use a keyboard and mouse
18. Computer games also rely on
19. earlier games written for DOS would include
20. The version of the graphics card's driver installed can
21. In late 2013, AMD announced Mantle

Task 8. Are the statements true or false? Say why:

1. The principle of any video game is interaction of a human with a user interface to generate visual feedback on a video device.
2. The word *video* which referred to a raster display device in the past, now implies any type of display device that can produce one-dimensional images.
3. Video game consoles are electronic systems which are used to play video games (platforms).
4. Specialized video games, such as arcade games, are still very popular among computer users.
5. Nowadays a controller in video games might consist of only a button and a joystick, while another may have many buttons and several joysticks.
6. Computer games allow the player to use either a keyboard or a mouse.
7. In recent years touch-sensitive screens on mobile devices are also used in computer games.
8. Audio is used very seldom, using such sound reproduction devices as speakers and headphones.
9. Many modern computer games require fast central processing units in order to function properly.
10. Threads are multiple tasks which help to use more complex graphics, artificial intelligence and in-game physics.
11. GPU stands for graphics processing unit which accelerates the process of drawing complex scenes in real time.
12. To play video games GPUs should be integrated in the computer's motherboard only.
13. Sound cards are used to provide improved audio in computer games.
14. The Creative Labs SoundBlaster line has been a standard for sound cards, though PC audio became a commodity on modern motherboards.
15. Physics processing units (PPUs) are used to accelerate physics simulations in modern computer games.

16. Common gaming peripherals are a headset, joysticks for flight simulators, steering wheels for driving games and gamepads, though the most necessary of them are a keyboard and a mouse.
17. The third-party software for computer games is an operating system (OS), device drivers, libraries etc.
18. Microsoft's DirectX is an API that is rarely used in today's computer games to communicate with sound and graphics hardware.
19. Game companies often use a third-party game engine, or third-party libraries.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. Sound cards are also ...		A. third-party software such as an operating system (OS), device drivers, libraries and more to run.
2. Computer games also rely on		B. to run on the Microsoft Windows family of operating systems.
3. Today, the vast majority of computer games are designed ...		C. a powerful graphics processing unit (GPU), which accelerates the process of drawing complex scenes in real time.
4. Similarly, 3D games often rely on ...		D. providing interactivity and information to the player.
5. Video games typically use additional means of		E. available to provide improved audio in computer games.

Task 10: Put the words in the right order to make sentences.

1. games video one of the fastest entertainment industries represent growing.
2. reminds us Video Games Day a very still that games video are new creation.
3. Video Games on Day Each year, falls July 8.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

№	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerativ e</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>acceleratin g</i>
2	involvement						
3		refer					
4		specialize					
5					manipulating		
6	control						
7	requirement						
8						integrated	
9							simulating

Task 12: Fill in the gaps with suitable prepositions.

Video Games Day celebrates popular video games that stormed _____ (a) the market, and changed the way your kids play games. From Atari _____ (b) Nintendo to Xbox, video games provide all too many hours _____ (c) playing time _____ (d) your television set.

In grandma and grandpa's day, they had stick horses _____ (e) toys and playtime. Today kids (big kids and little kids) have an enormous array _____ (f) video games to play. Before you get tired _____ (g) one game, another one hits the market.

Our extensive research _____ (h) this special day discovered two separately distinct dates. Also, both dates _____ (i) this special day refer _____ (j) it _____ (k) *Video Games Day* and *National Video Games Day*. Based _____ (l) our research results, we give the edge to September 12th as *National Video Games Day*. Lucky gamer that you are, you get to celebrate two video games days.

Celebrate *National Video Games Day* _____ (m) playing video games. If you are _____ (n) school, make this a marathon day _____ (o) video games. Better still, invite a few friends and hold a competition. Just make certain that you have enough controllers.

V. Final tasks

Task 13: Discuss the following ideas with your group-mates:

1. Video games are already the cheapest kind of entertainment that can be afforded by young people nowadays.
2. Any personal computer can download and play video games.
3. The video games industry is an excellent opportunity to decrease the level of unemployment.
4. Children should be strictly controlled in their selection of video games.
5. Many people can become addicted to video games and thus devastate their budgets.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: interface, raster, console, interaction, mainframe, arcade, input, controller, joystick, gamepad, headphone, feedback, thread, motherboard, simulator, platform, gameplay, mantle, engine, peripheral, keyboard, mouse, porting, commodity, simulation, code, cross-platform.

Adjectives: mobile, universal, haptic, peripheral, scalable, audio, creative, handheld, touch-sensitive, multi-core, scalable, complex, console-style, two-or three-dimensional.

Verbs: to simulate, to function, to process, to accelerate, to enhance, to dwindle, to accelerate, to install, to simplify.

Phrases: electronic game, user interface, video device, visual feedback, video game consoles, mainframe computers, arcade games, input device, game controller, touch-sensitive screens, mobile devices, sound reproduction device, force feedback, central processing unit, clock rates, graphics processing unit, Scalable Link Interface, CrossFire, sound cards, Creative Labs SoundBlaster, de facto, Physics processing units, Nvidia PhysX, console-style games, operating system, device drivers, Application programming interfaces, game engine.

Abbreviations: CPU, GPU, VideoRAM, AGP, NVidia's and ATI's, 3D audio, PPU's, AGEIA PhysX, OS, DOS, DirectX, APIs, OpenGL, cross-platform API, AMD, Xbox One consoles, AI.

Task 15: Provide the opposites to the English words: input, mobile, sensitive, peripheral, universal, creative, complex, to dwindle, to simplify.

Task 16: Match the words and definitions:

1. interface		A. a small electronic device for playing computerized video games
2. console		B. the return of part of the output of an electronic circuit, device, or mechanical system to its input, so modifying its characteristics.
3. mainframe		C. a program enabling a computer to execute programs written for a different operating system
4. arcade		D. the features of a computer game, such as its plot and the way it is played, as distinct from the graphics and sound effects
5. input		E. a device or program for connecting two items of hardware or software so that they can be operated jointly or communicate with each other
6. gamepad		F. 1) a large high-speed computer, especially one supporting numerous workstations or peripherals 2) the central processing unit and primary memory of a computer
7. feedback		G. a computer game of the type that is often played in amusement arcades.
8. thread		H. a handheld controller for video games
9. motherboard		I. a programming structure or process formed by linking a number of separate elements or subroutines, especially each of the tasks executed concurrently

		in multithreading
10. joystick		J. a printed circuit board containing the principal components of a computer or other device, with connectors into which other circuit boards can be slotted
11. simulator		K. the lever which the player uses in order to control the direction of the things on the screen.
12. gameplay		L. a place where, or a device through which, energy or information enters a system
13. peripheral		M. a panel of keys that operate a computer or typewriter
14. keyboard		N. any device, such as a disk, printer, modem, or screen, concerned with input/output, storage, etc
15. library		O. a collection of programs and software packages made generally available, often loaded and stored on disk for immediate use

Task 18: Make up your own sentences with the words from Task 17 and share them with your partner.

Task 19: Put the verbs in brackets in the correct grammar form.

1) The history of video games (a) _____ (to go) as far back as the early 1950s, when academics (b) _____ (to begin) designing simple games, simulations, and artificial intelligence programs as part of their computer science research. Video gaming (c) _____ (not to reach) mainstream popularity until the 1970s and 1980s, when arcade video games, gaming consoles and home computer games (d) _____ (to introduce) to the general public. Since then, video gaming (e) _____ (to become) a popular form of entertainment and a part of modern culture in most parts of the world. As of 2015, there (f) _____ (to be) eight generations of video game consoles.

2) The earliest video games (g) _____ (to develop) as an outgrowth of computer research in fields such as artificial intelligence. As computer technology (h) _____ (to evolve) through the 1940s from the electromechanical Z3 (1941) to the stored-program EDSAC (1949), computers (i) _____ (to become) both powerful and flexible enough (j) _____ (to serve) a variety of scientific and business functions. In 1951, the computer (k) _____ (to commercialize) in the United States by the typewriter company Remington Rand, (l) _____ (to pave) the way for the adoption of the mainframe by academic institutions, research organizations etc. Adoption of computer technology (m) _____ (to be) was initially limited to only the largest such organizations, however, by prohibitive cost, expansive space requirements, enormous power consumption, and the need (n) _____ (to employ) to employ a highly trained staff (o) _____ (to maintain) and (p) _____ (to operate) the machines. This (q) _____ (to create) an environment in which every second of computer use needed (r) _____ (to justify) as part of a serious scientific or business endeavor. Early game creation (s) _____ (to be) was thus largely limited to testing or demonstrating theories (t) _____ (to relate) to areas such as human-computer interaction and military strategy.

Task 20: Correct the sentences. There is one mistake in a sentence. Find it and write the sentences that have been corrected.

1. What better way to celebrate **Video Games Day** then by playing video games?!
2. University mainframe game development had blossomed in the early 1970s.
3. Early video games used interactive electrons devices with various display formats.

UNIT 15. NEWEST TECHNOLOGIES



I Pre-reading activities:

Task 1. Discuss the following questions.

1. Do you know any newest computer technologies developed in the world and in Ukraine? Which ones?
2. Has Ukraine got enough potential to develop something new in IT technologies?
3. What are the main fields for implementation of new IT technologies?

Task 2: Some of the following English words sound similar to the Ukrainian ones. Pronounce them after your teacher:

secret ['si:kret] n., adj.

code [kəud] n.

control [kən'trəul] v.

gesture ['dʒestʃə] n.

special ['speʃ(ə)l] adj.

version ['vɜ:ʃ(ə)n] n.

1 image ['ɪmɪdʒ] n.

industry ['ɪndəstri] n.

incorporation

[ɪnkɔ:p(ə)'reɪʃ(ə)n] n.

external [ɪk'stɜ:n(ə)l]

scanner ['skænə] n.

affect [ə'fekt] v.

product ['prɒdʌkt] n.
basic ['beɪsɪk] adj.
signal ['sɪgn(ə)l] n.
project ['prɒʃekt] n.

archival [ɑ:'kaɪv(ə)l]
webcam ['webkæm] n.
graph [grɑ:f], [græf] n.
blog [blɒg] n.

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|---------------------------|---|
| 1. hardware | A. подкаст (цифровий запис радіо-або телепрограми, яку можна скачати з інтернету) |
| 2. cell | B. програма iTunes |
| 3. feature | C. зручний для користувача |
| 4. incorporation | D. цифровий |
| 5. podcast | E. технологічний прогрес |
| 6. iTunes | F. програмне забезпечення |
| 7. user-friendly | G. інкорпорування |
| 8. digital | H. архівний |
| 9. archival | I. відео блог |
| 10. technological advance | J. функція, характеристика |
| 11. video blog | K. комірка, секція (ділянка пам'яті, де зберігається частина файлів) |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- A. There are so many different things that computers can do, and every year many new computer products and technological advances are announced!
- B. The Apple TV, in conjunction with iTunes, could make Apple computers the most popular computers on the market.
- C. Using computer technology, the Apple TV will be able to wirelessly stream both music and videos from the computer or Internet.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. Which new types of computer technologies are described in the text?
2. What is one of the greatest types of computer technologies, according to the text?

Computer technology is one of the most rapidly changing and developing fields within the world! There are so many different things that computers can do, and every year many new computer products and technological advances are announced! Here are a couple of the newest and greatest pieces of computer technology:

Newest: One of the newest types of computer technology is a new product which Bill Gates calls “Surface.” This project took five years to make, and it was only known by its secret code name “Milan.” The “Surface” looks like a low, blacktop coffee table, but it is sensitive to the touch. Keyboards and mouses are not needed, because "Surface" is completely controlled by hand gestures and movements! The hardware for this product is run by a special version of Microsoft's Windows Vista. "Surface" is scheduled to be released to the public in November of 2007. It is thought that this easier way of computer technology will be more accessible and user-friendly to people who struggle with keyboards and the computer mouse. In addition, "Surface" will also be helpful to retailers. T-Mobile USA has a contract with Microsoft for "Surface," and they will be able to place different cell phones on the top of the “Surface” screen. The screen will sense which different types of cell phones are there, and then pull up a list of the phones’ different features!

Newest: Another one of the newest types of computer technology is the Apple TV. This is a new product which will use computer technology to hook the computer and TV together. It is known as Apple TV and iTV. Using computer technology, the Apple TV will be able to wirelessly stream both music and videos from the computer or Internet. The basic television set will be able to pick up on these signals, and the image will be available for viewing on the television screen! This is one of the newest and most exciting types of computer technology that has been announced recently. This new computer technology also is giving Macintosh, or “Apple” computers a way to directly compete with the Personal Computer industry (also called PC computers). The Apple TV, in conjunction with iTunes, could make Apple computers the most popular computers on the market.

Greatest: One of the greatest types of computer technology was the development and incorporation of digital material. The external device the scanner has been one of the most popular and useful pieces of computer technology! The scanner has changed the ways that researchers look at materials, and it has also greatly affected the world of technology! In addition, it has changed the world of education, because now different documents and images are available for teachers to use within their own classroom. Scanners

and digital computer technology has also helped to preserve some important archival information, and it also has made this information accessible to the public! The world has been forever changed because of digital computer technology and the scanner!

Greatest: One of the other great inventions of computer technology was the development of the webcam. Because of the webcam people are able to hold meetings and conversations with people who live far away! Webcams, in conjunction with Internet technology has made business meetings and educational meetings more meaningful. Now, people can show different graphs, charts, and ideas over a webcam, without the hassle of trying to explain technical details over the phone. Actions and images definitely speak louder with words because of the webcam! In addition, the webcam also is able to record people talking and discussing different topics, which has led to the use of video podcasts and video blogs.

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. Why are computer technologies changing and developing so rapidly?
2. How long did it take to design and launch the “Surface”?
3. What was the secret code for the “Surface”?
4. How is the hardware for the “Surface” run?
5. Who will especially benefit from the release of the “Surface”?
6. Which computer is capable of hooking the computer and TV together?
7. What are the technical characteristics of the Apple TV?
8. What are the other technical characteristics of the webcam?
9. How does the scanner serve education?
10. What can people do using the webcam?

Task 7: Complete the following sentences using the text:

1. The “Surface” looks like
2. Keyboards and mouses are not needed
3. The hardware for this product is run
4. . . . "Surface" will also be helpful to
5. T-Mobile USA has a contract
6. The screen will sense

7. ... is the Apple TV.
8. Using computer technology, the Apple TV
9. The basic television set will be able
10. The Apple TV, in conjunction with iTunes
11. ... the development and incorporation of digital material.
12. The scanner has changed
13. ... it has changed the world of education,
14. The world has been forever changed
15. ... was the development of the webcam.
16. Because of the webcam people are able
17. Webcams, in conjunction with Internet technology
18. In addition, the webcam also is able to record

Task 8. Are the statements true or false? Say why:

1. New computer products and technological advances appear once in several years.
2. Bill Gates calls a new product “Surface” as one of the recent computer products.
3. “Surface” was previously called “Milan” and took three years to design and produce it.
4. The “Surface” has been designed in the form of a coffee table.
5. There are no keyboards and mouses as there is no need in them.
6. The “Surface” is partially controlled by gestures and movements of a man!
7. The “Surface” is designed for people who struggle with keyboards and the computer mouse.
8. Apple TV is a product of computer technology which connects the computer and TV together.
9. The Apple TV can occasionally download music and videos from the computer or Internet.
10. The Apple TV is to be launched in several years.
11. The development and incorporation of digital material is also considered one of the greatest computer technologies.
12. The scanner has not become a very necessary technology as its functions can be substituted by other devices.
13. The scanner has changed the world of education, because teachers can use it for educational purposes.

14. The scanner also preserves important archival information to make it useful for the public.
15. The webcam allows people to hold meetings and conversations with people at great distances.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. The basic television set will be able to pick up on these signals,		A. without the hassle of trying to explain technical details over the phone.
2. Now, people can show different graphs, charts, and ideas over a webcam,		B. that has been announced recently.
3. This is one of the newest and most exciting types of computer technology		C. will be more accessible and user-friendly to people who struggle with keyboards and the computer mouse.
4. It is thought that this easier way of computer technology		D. which different types of cell phones are there.
5. The screen will sense		E. and the image will be available for viewing on the television screen!

Task 10: Put the words in the right order to make sentences.

1. technologies future be to serve designed people have to.
2. has technologies future the good society to use with intentions
3. creative thinking imagination determine the design and will of future technology.

Task 11: Fill in the gaps with suitable prepositions.

1. Computer technologies are the advanced features and improvements which are done (a) _____ the computer components (the devices that build the computer). We know what the computer is build (b) _____, the box (the computer cover, where all the parts that build the computer goes (c) _____, the motherboard, where all of the components connect (d) _____, and binds all of

those hardware devices to work together. The CPU (Central Processing Unit) which gets more efficient, quicker, and it even multiply itself (e) _____ the same chip so you get better performance and multitasking.

2. The computer **cooling systems** ((f) _____ computers tend to get heated) have improved, (g) _____ simple fans that blew the hot air (h) _____ of the box (i) _____ venting holes, (j) _____ sophisticated water cooling systems.

3. We got used (k) _____ being able to use our equipments without wires, as we call it “wireless “. The technology (l) _____ wireless enabled us to connect our laptops (m) _____ wireless networks, (n) _____ wires. We have equipments that work (o) _____ wireless, as you use your keyboard and mouse (p) _____ you sit (q) _____ **from the computer**, sitting comfortably wherever you want to, and still be able to do your work.

From: <http://www.computerworld.com/>

Task 12: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

No	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2					developing		
3							announcing
4			controllable				
5		incorporate					
6			affective				
7	archive						
8			inventive				
9						conversed	

Task 13: Put the verbs in brackets in the correct grammar form.

1. It (a) _____ (to be) around two years since Canonical (b) _____ (to unveil) Ubuntu for mobile in a tangible capacity, and next week, the first Ubuntu phone (c) _____ (to go) finally on sale.

2. Laptops and tablets both (d) _____ (to offer) many useful features, so why (e) _____ (not to get) the best of both worlds? Convertible laptops certainly (f) _____ (not to be) a new concept, but there (g) _____ (to be) plenty of lackluster implementations in the past. Thankfully, Dell (h) _____ (to have) an impressive two-in-one Ultrabook that (i) _____ (to weigh) in at just 2.5 pounds. Better yet, it’s currently on offer with a surprisingly steep discount.

3. Samsung (j) _____ (to be) already under fire for its privacy language and data-sharing in Smart TVs, but the hits just (k) _____ (to keep on) coming. The company (l) _____ (to use) also a partnership with Yahoo (m) _____ (to serve) ads to users — even when viewing their own content.
4. An incredible new astronomical find (n) _____ (to let) astronomers (o) _____ (to watch) as two stars (p) _____ (to spiral) inward toward one of the most violent events in the universe.
5. The English language is composed of more than a million words, but when it (q) _____ (to come) to presenting oneself professionally on LinkedIn many people (r) _____ (to gravitate) toward 10 words in particular. You should not. Instead, you should (s) _____ (to focus) on specific accomplishments, (t) _____ (to avoid) vague or generic buzzwords and (u) _____ (to use) examples (v) _____ (to showcase) your talents in your profile, according to LinkedIn.

From: <http://www.cio.com/article/2882198/linkedin/the-10-most-overused-linkedin-buzzwords.html>

Task 14: Correct the sentences. There is one mistake in each one. Find it and write the sentences that have been corrected.

1. The future of technology will be determining by usability combined with simplicity.
2. Technology has evolved from 1900, what used to work before can seem out aged by now.
3. Future technology will bring much opportunities to those who are willing to learn how to use it and exploit it to the maximum.

From: <http://www.useoftechnology.com/future-technology-newest-inventions/>

V. Final tasks

Task 15: Discuss the following ideas with your group-mates:

1. Ukrainian IT professionals are capable of developing and launching the most advanced computer technologies.
2. Ukraine can be a profitable market for the newest computer technologies.
3. Ukraine is hopelessly behind developed countries in producing advanced computer technologies.

4. In the near future the newest computer technologies can solve many problems in the world and in Ukraine, such as unemployment, health care, education etc.

VI. Additional exercises

Task 16: Explain the meaning of the words and phrases in English:

Nouns: advance, project, code, keyboard, gesture, schedule, screen, signal, image, industry, scanner, invention, webcam, blog, wireless, retailer, chart.

Adjectives: accessible, user-friendly, sensitive, basic, external, archival, meaningful, helpful, available, digital.

Verbs: to affect, to announce, to control, to release, to hook, to affect, to hassle.

Phrases: cell phone, computer product, technological advance, computer technology, to pull up a list, television set, video podcasts, video blogs.

Abbreviations: iTv, iTunes.

Task 3: Provide the opposites to the English words: advance, hardware, incorporation, retailer, accessible, sensitive, basic, external, meaningful, helpful, available.

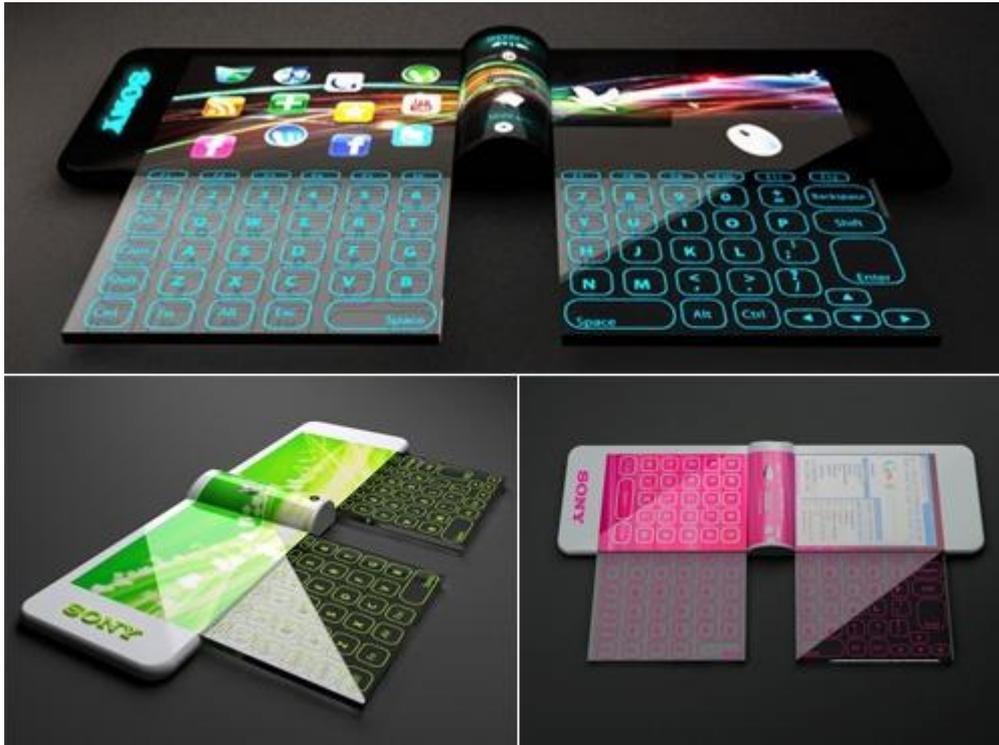
Task 17: Match the words and definitions:

1. cell phone		A. a plan for carrying out a process or procedure, giving lists of intended events and times
2. project		B. a video camera connected to a computer, allowing its images to be seen by Internet users
3. code		C. a personal website or web page on which an individual records opinions, links to other sites, etc. on a regular basis 2.
4. keyboard		D. converting (a document or picture) into

		digital form for storage or processing on a computer
5. hardware		E. a multimedia digital file made available on the Internet for downloading to a portable media player, computer, etc.
6. schedule		F. a sheet of information in the form of a table, graph, or diagram
7. screen		G. a type of telephone which does not need wires to connect it to a telephone system.
8. chart		H. a panel of keys that operate a computer or typewriter
9. scanning		I. the machines, wiring, and other physical components of a computer or other electronic system
10. webcam		J. an individual or collaborative enterprise that is carefully planned to achieve a particular aim
11. podcast		K. (also television set) a device with a screen for receiving television signals
12. blog		L. broadcasting, computer networking, or other communication using radio signals, microwaves, etc
13. television set		M. a system of words, letters, figures, or symbols used to represent others, especially for the purposes of secrecy
14. wireless		N. a monitor which displays an image generated by a computer

Task 18: Make up your own sentences with the words and expressions from Task 17 and share them with your partner.

UNIT 16. FUTURE COMPUTERS



I Pre-reading activities:

Task 1. Discuss the following questions.

1. How do you imagine computers of the future? Describe them.
2. Which countries will be leaders in producing future computers?

Task 2: Some of the following English words look or sound similar to the Ukrainian ones. Pronounce them after your teacher:

innovation [ɪnəʊ'veɪʃ(ə)n] n.

trend [trend] n.

evolution [i:və'l(j)u:ʃ(ə)n] n.

vacuum ['vækju:m] n.

instrumental [ɪn(t)strə'ment(ə)l] adj.

monitor ['mɒnɪtə] n., v.

laptop ['læptɒp] n.

netbook ['netbuk] n.

integrated ['ɪntɪgreɪtɪd] adj.

tablet ['tæblɪt] n.

arena [ə'ri:nə] n.

smartphone ['smɑ:tfəʊn] n.

certify ['sɜ:tɪfaɪ] v.

provider [prə'vaɪdə] n.

focus ['fəʊkəs] n., v.

tube [tʃu:b] n.

portability [pɔ:tə'bɪlətɪ] n.

personal ['pɜ:s(ə)n(ə)l] adj.

Task 3: Match the English words and phrases on the left with their Ukrainian equivalents on the right.

- | | |
|----------------|-------------------------------------|
| 1. touchscreen | A. екранний монитор, монитор на ЭЛТ |
| 2. cloud | В. навчальний курс, тренінг |
| 3. tablet | С. електронна лампа |
| 4. CRT monitor | Д. стек (пам'яті) |
| 5. boot camp | Е. рідкокристалічний екран |
| 6. smartphone | Ф. хмара, хмарне середовище |
| 7. netbook, | Г. ультрабук |
| 8. vacuum tube | Н. сенсорний екран |
| 9. ultrabook | І. нетбук |
| 10. stack | Ж. смартфон |
| 11. LCD screen | К. планшет |

Task 4. Guess from the contexts what each of the underlined words or phrases means.

- A. These mobile devices share several characteristics including the integrated folding design and portability
- B. For example, modern televisions and appliances are now Web-enabled.
- C. CBT Planet is a leading provider of computer training courses including instructor-led courses and boot camps.

II. While-reading activities.

Task 5. Read the text and answer the questions.

1. What were the characteristics of the first computing machines?
2. Who mostly contributed to bringing the computer down to size?
3. What changed with the introduction of the personal computer?

The Future of Computers: From Tubes to Tablets

Recent innovations such as the iPad provide an exciting glimpse into the future of computers. Before looking forward toward future computer trends, let's take a quick look back to gain a better appreciation of the evolution thus far. Do you remember when the first primitive computing machines occupied entire buildings? The massive machines from the mid-20th century consisted of row upon row of vacuum tubes and wires. You had to use stacks of punch cards to program these beasts.

The Future of Computers: Home Computers

Steve Jobs and Bill Gates were both instrumental in bringing the computer down to size. With the introduction of the personal computer and its widespread acceptance, computers shrunk while processing power increased. Even the bulky CRT monitors got a makeover with flat LCD monitors now the norm. In addition, costs have fallen so much over the years that many households own several personal computers and wireless networks. Future technology won't necessarily render the home PC obsolete, but it will change it. For example, modern televisions and appliances are now Web-enabled. Expect future technology to blend appliances into the home network.

The Future of Computers: Laptops, Netbooks, and Ultrabooks

First there were laptops, then there were netbooks, and now there are "ultrabooks." These mobile devices share several characteristics including the integrated folding design and portability. Differences include size and storage (laptops use hard disks, netbooks rely more heavily on the cloud, and ultrabooks use Flash memory). Despite their similarities and differences, future computer trends point to a lesser reliance on keyboards which could potentially render this category obsolete.

The Future of Computers: Tablets

Apple's iPad has significantly influenced future computer trends. It was soon followed by a flood of tablets. With small sizes, simple designs, extreme portability, Internet access, thousands of apps, and loads of features, tablets can do just about anything a full-size desktop or laptop can do. They fall short in the keyboard arena, but again, that may be about to change.

Future Technology: Speech Recognition and Touchscreen Technology.

While speech recognition is still imperfect, it has improved greatly in recent years. Windows 7 includes a built-in speech recognition program in its operating system while Nuance's Dragon Naturally Speaking software continues to gain acceptance.

Not only is the keyboard in danger, the mouse is too thanks to touchscreen technology. Tablets and smartphones currently make use of touchscreen technology and many "all in one" desktops now come with touchscreen LCDs. When Windows 8 comes out, it is expected to take the touchscreen into the mainstream.

The Future of Computers has Arrived – Are You Ready?

If history is to be any guide, some of the most powerful advances in the world of computers and computer technology are likely to be completely unforeseen. After all, some of the most powerful technologies of the past have

taken us by surprise, so stay tuned for truly fascinating future computer trends. If you're ready to embrace the future of computers, consider getting certified or mastering the skills you need to succeed in today's IT world.

About CBT Planet:

CBT Planet is a leading provider of computer training courses including instructor-led courses and boot camps. With a focus on IT topics such as computers, networking, and virtualization along with IT certification training, computer software training, and business soft skills training, CBT Planet offers a wide selection of courses focused on current and future technology. Choose from intensive IT certification boot camps or take a more leisurely approach with self-paced online IT training videos. The future of computers continues to evolve, and CBT Planet can help position you for success.

From: <http://www.cbtplanet.com/articles-tutorials/the-future-of-computers.htm>

III. Post-reading activities

Task 6: Answer the questions based on the text:

1. What allowed many households to own personal computers and wireless networks?
2. Which characteristics are included in such mobile devices as laptops, netbooks, and ultrabooks?
3. What are the differences between laptops, netbooks, and ultrabooks?
4. What are the positive and dubious characteristics of tablets?
5. Which innovations does Windows 7 possess compared to the previous versions?
6. What are the technical characteristics of tablets and smart phones nowadays?
7. What services are provided by CBT Planet?

Task 7: Complete the following sentences using the text:

1. The massive machines from the mid-20th century
2. With the introduction of the personal computer
3. Even the bulky CRT monitors go
4. Future technology won't necessarily render
5. Expect future technology to
6. First there were laptops
7. Differences include

8. Despite their similarities and differences
9. Apple's iPad has significantly influenced
10. While speech recognition is still imperfect
11. Windows 7 includes
12. Tablets and smartphones currently
13. When Windows 8 comes out
14. If you're ready to embrace the future of computers
15. CBT Planet is a leading provider
16. The future of computers continues

Task 8. Are the statements true or false? Say why:

1. To look forward towards future computer trends one should take a quick look back to understand the evolution of computers.
2. First computers could occupy whole premises.
3. The main components of mid-20th century computers were only vacuum tubes and punch cards.
4. Unfortunately both Steve Jobs and Bill Gates failed to bring computers down to size.
5. Nowadays many households in the whole world own several personal computers and wireless networks due to the falling costs for producing them.
6. Computer designers are working to make modern televisions and appliances Web-enabled.
7. Modern laptops, netbooks and ultrabooks are similar in such features as integrated folding design and portability, but differ in size and storage.
8. Tablets boast small sizes, simple designs, extreme portability, thousands of apps, but lack the Internet access.
9. Windows 7 has been designed with a prospect of developing and including a built-in speech recognition program in its operating system.
10. Both keyboards and mice are in danger of disappearance due to the quickly developing touch screen technologies.
11. The advances in the world of computers and computer technology are easily predicted.
12. We should be ready for new fascinating future computer trends as some of the most powerful technologies of the past were unforeseen and surprising.
13. CBT Planet provides training by offering intensive IT certification boot camps or self-paced online IT training videos.

IV. Focus on grammar and lexis

Task 9. Match the beginnings of the sentences in the first column with their ends in the second column.

1. While speech recognition is still imperfect,		A. in bringing the computer down to size.
2. The massive machines from the mid-20th century		B. and now there are “ultrabooks.”
3. Steve Jobs and Bill Gates were both instrumental		C. it has improved greatly in recent years.
4. First there were laptops, then there were netbooks,		D. the mouse is too thanks to touch screen technology.
5. Not only is the keyboard in danger,		E. consisted of row upon row of vacuum tubes and wires.

Task 10: Put the words in the right order to make sentences.

1. use today transistors the computers and to control electricity semiconductors.
2. of the future metamaterials computers will crystals and utilize.
3. computers optical use of particles photons make light called.

Task 11: The following words are borrowed from the text. Fill in the columns of the table by forming other parts of speech.

№	Noun	Verb	Adjective	Adverb	Present participle	Past participle	Gerund
1	<i>acceleration</i>	<i>accelerate</i>	<i>accelerative</i>	----	<i>accelerating</i>	<i>accelerated</i>	<i>accelerating</i>
2			concurrent				
3		execute					
4					developing		
5						implemented	
6		specify					
7	application						
8		derive					
9		design					

Task 12: Fill in the gaps with suitable prepositions.

1. A quantum computer is a computer that makes direct use (a) _____ distinctively quantum mechanical phenomena to perform operations (b) _____

data. (c) _____ a classical (or conventional) computer, the amount (d) _____ data is measured (e) _____ bits; (f) _____ a quantum computer, the data is measured (g) _____ qubits.

The basic principle (h) _____ quantum computation is that the quantum properties of particles can be used to represent and structure data, and that quantum mechanisms can be devised and built to perform operations (i) _____ these data.

2. DNA computers use DNA to store information and perform complex calculations. DNA has a vast amount (j) _____ storage capacity. Computers might tap the vast storage capacity that enables DNA to hold the complex blueprints (k) _____ living organisms. The storage capacity (l) _____ a single gram (m) _____ DNA can hold (n) _____ much information (o) _____ one trillion compact discs.

From: <http://www.futureforall.org/computers/opticalcomputers.htm>

V. Final tasks

Task 13: Discuss the following ideas with your group-mates:

1. In the near future entirely new materials will be used for the construction of computers.
2. New inventions in the sphere of computers are the source of income and enrichment for millions of people.
3. New training programs should be launched right now to prepare people for future computer technologies.
4. Computers of the future will be inaccessible for average users due to their cost.

VI. Additional exercises

Task 14: Explain the meaning of the words and phrases in English:

Nouns: touch screen, innovation, trend, evolution, vacuum, instrumental, monitor, household, laptop, netbook, cloud, tablet, portability, arena, smartphone, mainstream, provider, stack, beast, laptop, netbook, ultrabook, device, portability.

Adjectives: unforeseen, bulky, integrated, Web-enabled, obsolete, imperfect.

Verbs: to surf, to certify, to focus, to blend, to evolve.

Phrases: vacuum tube, punch card, CRT monitors, LCD monitors, wireless networks, integrated folding design, flash memory, boot camps.

Task 15: Provide the opposites to the English words: unforeseen, bulky, integrated, obsolete, imperfect, fascinating, to focus.

Task 16: What do the English abbreviations stand for? Explain what they mean: LCDs, CRT, CBT.

Task 17: Match the words and definitions:

1. innovation		A. a small laptop computer designed primarily for accessing Internet-based applications.
2. smartphone		B. a small portable computer that accepts input directly on to its screen rather via than a keyboard or mouse.
3. evolution		C. a new method, idea, product, etc.
4. netbook		D. a computer suitable for use at an ordinary desk.
5. ultrabook		E. a mobile phone which incorporates a palmtop computer or PDA 'personal digital assistant'.
6. cloud		F. (also called an ultraportable or mini notebook) is a class of laptop computers that are smaller and lighter than a typical notebook.
7. tablet		G. computing terminology which involves deploying groups of remote servers and software networks that allow centralized data storage and online access to computer services or resources.
8. desktop		H. a specification and trademarked brand by Intel for a class of high-end subnotebooks which are designed to

		feature reduced bulk without compromising battery life.
9. laptop		I. evolution is a process of gradual change that takes place over many generations.
10. subnotebook		J. a computer that is portable and suitable for use while travelling.

Task 18: Make up your own sentences with the words from Task 17 and share them with your partner.

Task 19: Match the phrases and definitions:

1. touchscreen technology		A. a kind of memory that retains data in the absence of a power supply
2. boot camp		B. a card perforated according to a code, for controlling the operation of a machine, used in voting machines and formerly in programming and entering data into computers.
3. flash memory		C. technology based on an electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with a special stylus/pen or one or more fingers.
4. vacuum tube		D. computer performance which is characterized by the amount of useful work accomplished by a computer system or computer network compared to the time and resources used.
5. punch card		E. (A cathode ray tube monitor) - an analog computer display or television set with a large, deep casing.

6. processing power		F. a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals.
7. CRT monitor		G. a sealed glass tube containing a near-vacuum which allows the free passage of electric current.
8. LCD monitor		H. a multi boot utility included with Apple Inc.'s OS X that assists users in installing Microsoft Windows operating systems on Intel-based Macintosh computers.

Task 20: Make up your own sentences with the words combinations from Task 19 and share them with your partner.

Task 21: Put the verbs in brackets in the correct grammar form.

- Since Intel's introduction of the category a few years ago, ultrabooks (a) _____ (to pour) into the market in the last couple of years. But the laptops themselves (b) _____ (not to be) a mutation of some sort. Intel simply (c) _____ (to put) a new spin on an (d) _____ (to evolve) category of laptops that (e) _____ (to be) incredibly thin, battery-efficient, and (f) _____ (to use) low-voltage processors. Interestingly enough, these laptops (g) _____ (to be known) previously as CULV laptops (CULV (h) _____ (to stand) for consumer ultra-low-voltage processors), but Intel (i) _____ (to decide), and rightly so, that CULV (j) _____ (not to sound) exactly sexy to consumers.
- What (k) _____ (to be) the world like, if computers the size of molecules (l) _____ (to become) a reality? These (m) _____ (to be) the types of computers that could (n) _____ (to be) everywhere, but never (o) _____ (to see). Nano sized bio-computers that could (p) _____ (to target) specific areas inside your body. Giant networks of computers, in your clothing, your house, your car.

Task 22: Correct the sentences. There is one mistake in each sentence. Find it and write the sentences that have been corrected.

- NASA scientists are working to be solved the need for computer speed using light.

2. Transferring data between multiple cores and between logic elements and memory cells are a key bottleneck in fast-developing computer technology.
3. Understanding the theories above these future computer technologies is not for the meek.

SUPPLEMENTARY TEXTS

Unit 1. Internet

Text 1. 10 internet technologies that educators should be informed about

There are so many different tools and technologies available on the internet today, and so many associated terms and concepts. As I think about topics to focus on here in the coming months, I want to make sure we're touching on the most important ones. What are the most important internet technologies for educators to be aware of, and informed about?

I'm sure many people would probably come up with a slightly different list, but based on my observations and experiences, and feedback from faculty at my institution, I have selected the following technologies. I do not mean to imply that every educator should be expected to use all of these technologies in the classroom, but rather that every educator should understand what these are, the potential they have in the classroom, and how their students may already be using them.

1. Video and Podcasting – One of the most widely adopted internet technologies for use in instructional settings is video streaming. Between YouTube, TeacherTube, EduTube, and many other video hosting sites, there are an abundance of lectures, how-to videos, and supporting materials available in the form of web based video. Podcasting has also been used to provide similar offerings of audio materials through popular sites like iTunes.

2. Presentation Tools – This category is vast and rich. There are hundreds (perhaps thousands) of tools on the Internet that can be used to create and share presentations, from simple Powerpoint slide players like Slideshare to multimedia timeline tools like Vuvox and OneTrueMedia. These tools can be used to support classroom teaching or distance learning, or for student reports and presentations.

3. Collaboration & Brainstorming Tools – This is another wide ranging category, including thought-organizing tools like *mindmap* and bubbl.us, and collaborative tools like [web based interactive whiteboards](#) and [Google Documents](#). Additionally, some of the other tools in this list, such as wikis and virtual worlds, also serve as collaboration tools.

4. Blogs & Blogging – Bloggers and many other regular Internet users are well aware of blogs and blogging, but there are many other professionals who really are not frequenters of the “blogosphere”. In addition to a basic familiarity

with this technology, educators should be aware of sites like Blogger and WordPress, where users can quickly and easily create their own blogs for free.

5. Wikis – The use of Wikis in educational settings is growing every day. Sites like Wetpaint and others allow users to create free wiki web sites and are a great way to get started with using wikis for educational applications.

6. Social Networking – All educators should have a basic understanding of sites like Facebook and MySpace and how they are used. This doesn't mean they need accounts on these sites (and many educators would recommend against using these sites to communicate with their students), but they should understand what they are and how they are being used. Educators should also be aware of the professional social networking site LinkedIn.

7. IM – A large percentage of students use IM regularly, via Aim, IM aggregator site Meebo (Meebo allows users to combine messaging from Aim, Yahoo, MySpace, Facebook, and other sites), or other tools. It behooves educators to be aware of this, and I have even come across various articles about using IM within the classroom setting (such as this one from Educause).

8. Twitter – This listing is really focused on *technologies*, not specific *applications*, but this application is currently just too popular to ignore. You should at least understand what it is and the fundamentals of how it is used.

9. Virtual Worlds – This technology has received a lot of press, with SecondLife being the clear leader thus far in this application area. In my experience, the use of SecondLife has been somewhat constrained by high bandwidth and processing power requirements, but this also means that there is still considerable room for increased adoption of the application as systems continue to become more powerful and higher speed bandwidth more prevalent. Active Worlds is one of a number of competitive technologies, and provides a “universe” dedicated to education that has been popular with educators.

10. RSS Feeds – RSS allows users to create their own “push” data streams (that is, define data flows you want coming to you automatically, rather than having to go and “pull” the information with a Google search or other browsing effort). RSS feeds enable you to take advantage of streams of published content that will be sitting in your In Box, or in an RSS reader, when you want them. There are RSS feeds available for many topics and many web sites.

While many readers may have their own interpretation of which technologies are essential for educators to be aware of, I think this is a great list

to get started with. Of course, this list will require updating over time, as technologies change, and as educator's uses of these technologies evolve. As always, reader input is welcomed. What do you think? Is this a good top 10? Would you like to see some other technologies listed here? Feel free to comment and offer your insights, please. Thanks!

From: <http://www.emergingedtech.com/2009/04/10-internet-technologies-that-educators-should-be-informed-about/>

Text 2. 5 Reasons Why Educators Need To Embrace Internet Technologies

In April I wrote a post about 10 internet technologies that educators should be informed about. This quickly became my most read posting. I included some references in this article to *why* educators should be aware of and informed about these tools, but most of those comments were really about why each specific technology was included in the list, as opposed to why, in a more general sense, it is important for educators to make an effort to embrace these technologies. So that is the topic for this week – why you should care, as an educator, about these tools. What's in it for you as an instructor, and what's in it for your students?

Please note that while I have numbered these, this is not to imply that any one of these takes precedence over the other. Which of these factors are most motivating to you as an instructor is rather subjective.

Reason No. 1: Professional Development. As the world continues to embrace and evolve the Internet, businesses and organizations are increasingly looking to tap into this resource. It is in the best interest of educators, and professionals in general, to be aware of what the Internet has to offer. We can choose to sit back and wish it would all just go away because it's too hard to find the time for it, or we can choose to embrace it, and look for simple ways to learn more about it. Another unavoidable fact is the growing desire for experience and familiarity with the Internet and other computer technologies as a hiring requirement in the educational field.

Reason No. 2: The Power To Engage. Internet tools can be fun! Internet tools are interactive! What a great way to engage students in the classroom. Many of the tools are collaborative, and they are all hands-on. Applications that allow for the creation of cool looking timelines, videos, or other dynamic presentations can be a lot of fun, and when a student realizes that they can easily make the resulting creation available for viewing on the Internet, it can be pretty exciting!

Reason No 3: Students Use Them Already. “Meet them where they live!” We’ve all heard this, and there is a solid undercurrent of wisdom in it. Many students use Internet tools on a regular basis. If you use some of them in the classroom, you will be talking to them in their language. And for those who have not been exposed to a given technology, you’ll be teaching them something they are probably predisposed to learning more about.

Reason No. 4: It’s Not Going Away (It Will Only Grow). The Internet is here to stay. It’s been well over a decade now that ‘average users’ have had access to the Internet, and we’re now knee deep in the Social Media revolution that has defined Web 2.0. It isn’t going away. It isn’t a fad. It’s only going to grow and evolve. It’s already woven into the fabric of the daily lives of millions of people. Yes, a lot of folks are wasting a lot of time doing things on the Internet that don’t contribute to society or offer much in the way of personal growth, but at the same time, there are countless ways in which the multitude of tools and technologies available on the Internet are being used in wonderfully constructive ways. Come and be a part of it, and contribute your voice.

Reason No. 5: Businesses Want to Hire Workers Who Understand The Internet. Yes, they do. If you introduce your students to technologies like Blogs, RSS Feeds, Wikis, and so on, you will be helping to build their resume. Businesses and organizations are more interested in these types of tools every day. They’re thinking about how to get on board and get ahead of the curve, and how they can offer value in the workplace. Blogs are being used to provide updates about new developments, Wikis are being used as knowledge bases, RSS Feeds are being used to capture a steady stream of information about topics of interest, Social Bookmarking tools are being used for research, and the list goes on and on. Name any Internet technology, and there is a growing list of business applications for it. Go to Google and search “Twitter for business” and see the list of articles on the subject. Businesses want to hire workers who understand the Internet.

Conclusion

I am not suggesting by any means that every teacher needs to use as many Internet technologies as possible in their classroom every day. In fact, there are some tools, such as social networking sites like Myspace and Facebook, that some can make a good case for leaving out of the classroom entirely. What *I am* suggesting is that you learn a little about the many different kinds of tools that are out there (many of which are free or very low cost) and give a few a trial run. Online interactive whiteboards, Wikis, virtual worlds, workgroup tools, mind mapping, collaborative documents, the list just goes on and on, and

the potential is endless. You owe it to yourself and your students to be informed, to participate, and to embrace the opportunities.

In addition to the reasons I've listed above for learning about and using Internet technologies in (and out of) the classroom, I'm sure some of you may have other reasons you'd like to see on this list – please comment and let us know what they are!

From: <http://www.emergingedtech.com/2009/05/5-reasons-why-educators-need-to-embrace-internet-technologies/>

Unit 2. World Wide Web

Text 1

Tim Berners-Lee, a British scientist at CERN, invented the **World Wide Web** (WWW) in 1989. The web was originally conceived and developed to meet the demand for automatic information-sharing between scientists in universities and institutes around the world.

The first website at CERN - and in the world - was dedicated to the World Wide Web project itself and was hosted on Berners-Lee's NeXT computer. The website described the basic features of the web; how to access other people's documents and how to set up your own server. The NeXT machine - the original web server - is still at CERN. As part of the project to restore, in 2013 CERN reinstated the world's first website to its original address.

On 30 April 1993 CERN put the World Wide Web software in the public domain. CERN made the next release available with an open licence, as a more sure way to maximise its dissemination. Through these actions, making the software required to run a web server freely available, along with a basic browser and a library of code, the web was allowed to flourish.

From: <http://home.cern/topics/birth-web>

Text 2

The **World Wide Web Consortium** is an international consortium of companies involved with the Internet and the Web. The W3C was founded in 1994 by Tim Berners-Lee, the original architect of the World Wide Web. The organization's purpose is to develop open standards so that the Web evolves in a single direction rather than being splintered among competing factions.

The International Color Consortium was established in 1993 by eight industry vendors for the purpose of creating, promoting and encouraging the

standardization and evolution of an open, vendor-neutral, cross-platform color management system architecture and components. The intent of the International Color Consortium profile format is to provide a cross-platform device profile format. Device profiles can be used to translate color data created on one device into another device's native color space. The acceptance of this format by operating system vendors allows end users to transparently move profiles and images with embedded profiles between different operating systems. *[Source: International Color Consortium Web site]*

Web Scraping refers to an application that processes the HTML of a Web page to extract data for manipulation such as converting the Web page to another format (i.e. HTML to WML). Web Scrapingscripts and applications will simulate a person viewing a Web site with a browser. With these scripts you can connect to a Web page and request a page, exactly as a browser would do. The Web server will send back the page which you can then manipulate or extract specific information from.

The term **Web stack** is used to refer to software stacks in Web development environments. The stack of software, mainly comprised of open source software, will contain an operating system, Web server, database server, and programming language. One of the most most well-known web stacks is LAMP.

Web collaboration provides an organization with the capability to collaborate with customers or internally via the Internet in real time. Web collaboration packages generally consist of Web-based tools within Web sites to assist an organization in the area of sales, new revenue-generation opportunities, and to enhance customer satisfaction. Web collaboration is essentially the back-end software or service that allows your center to share Web pages with customers while offering voice and text chat assistance or to conduct single or multi-user conferences and seminars. Web collaboration can be used in an Internet (IP) environment or integrated with an organizations' existing telephone infrastructure to provide automated customer assistance for a client's Web-based inquiries.

A **Web host** is in the business of providing server space, Web services and file maintenance for Web sites controlled by individuals or companies that do not have their own Web servers. Many ISPs, such as America Online, will allow subscribers a small amount of server space to host a personal Web page. Other commercial ISPs will charge the user a fee depending on the complexity of the site being hosted.

Semantic Web. An extension of the current Web that provides an easier way to find, share, reuse and combine information. It is based on machine-

readable information and builds on XML technology's capability to define customized tagging schemes and RDF's (*ResourceDescription Framework*) flexible approach to representing data. The Semantic Web provides common formats for the interchange of data (where on the Web there is only an interchange of documents). It also provides a common language for recording how data relates to real world objects, allowing a person or a machine to start off in one database, and then move through an unending set of databases which are connected not by wires but by being about the same thing.

Web morality. A phrase used to describe how people use morals to guide choices while surfing the Web and using the Internet.

One popular Web morality issue that is often debated is the practice of visiting Web sites while using an ad blocker program. Many sites rely on advertisement revenue and some believe it is morally wrong to surf and intentionally block ads as you are taking advantage of what the Web site has to offer without viewing the ad content.

Web ring. Also spelled "Webring," a series of Web sites linked together in a "ring" that by clicking through all of the sites in the ring the visitor will eventually come back to the originating site. All of the sites within the ring share a similar topic or purpose. There are Web rings on topics such as computer games and technology, hobbies such as quilting or stamp collecting, sports, traveling, pop culture, music, cars, etc.

Web rings are a way for sites to generate more traffic by encouraging users to visit the other sites within the ring. Sites in the ring typically have an icon or graphic that indicates that it is part of a specific Web ring and visitors have the option of choosing the "next" or "previous" site in the ring.

Web bug (web beacon) is used in combination with cookies, a *Web beacon* is an often-transparent graphic image, usually no larger than 1 pixel x 1 pixel, that is placed on a Web site or in an e-mail that is used to monitor the behavior of the user visiting the Web site or sending the e-mail. When the HTML code for the Web beacon points to a site to retrieve the image, at the same time it can pass along information such as the IP address of the computer that retrieved the image, the time the Web beacon was viewed and for how long, the type of browser that retrieved the image and previously set cookie values.

Web beacons are typically used by a third party to monitor the activity of a site. A Web beacon can be detected by viewing the source code of a Web page and looking for any IMG tags that load from a different server than the rest of the site. Turning off the browser's cookies will prevent Web beacons

from tracking the user's activity. The Web beacon will still account for an anonymous visit, but the user's unique information will not be recorded.

Server farm, also referred to as *server cluster*, *computer farm* or *ranch*. A *server farm* is a group of networked servers that are housed in one location. A server farm streamlines internal processes by distributing the workload between the individual components of the farm and expedites computing processes by harnessing the power of multiple servers. The farms rely on load-balancing software that accomplishes such tasks as tracking demand for processing power from different machines, prioritizing the tasks and scheduling and rescheduling them depending on priority and demand that users put on the network. When one server in the farm fails, another can step in as a backup.

From: http://www.webopedia.com/TERM/W/World_Wide_Web.html

Text 3. Live Support Software

Live support software (also called **live chat**, **live help**) is a popular term for online chat applications designed specifically to provide online assistance to users of a website. Such software is used to provide instant help to visitors on a website. Live chat is mainly used for text based communication, however software providers bundle services like voice, video, helpdesk, CRM systems along with text chat.

The system typically consists of 2 components:

1. A text box on the website.
2. An operator dashboard to allow the agent to respond to the chat.
3. The system is usually implemented by pasting a JavaScript code on the website of the user. The Javascript code uses cookies to track user activity on the site.

There are two types of chats:

1. Pro-active chat - In this case, the text box pop-ups on its own and shows a message to the visitor. This message is shown based on different criteria like the amount of time spent on the website, the pages visited, etc. The visitor can then choose to respond to the message displayed.
2. Broadcast- This is a chat initiated by the visitor.

Among the applications available, JavaScript, Java or Flash Player are used to run the application directly inside the browser. These online applications differ from classic software mostly because Website visitors don't have to install anything on their PCs and they can communicate freely with website's online live chat agents. There are also live support software that goes beyond basic text chat, and offer such advanced communication capabilities as

true VoIP (Voice over IP), application sharing, remote view, real-time website traffic monitoring, and remote form filling.

Typically live support applications will open a window that connects the user to an agent. Some software allows the users to be queued, so that one member of staff can deal with a customer and then automatically move on to the next customer. The customer's position in the queue is sometimes displayed.

Some live support applications are written in low-level languages (e.g., C++) and distributed as compiled software that must be installed on a server. Others are written in languages, such as PHP, and can be modified as desired. MySQL and Microsoft SQL Server are common database engines used.

From: https://en.wikipedia.org/wiki/Live_support_software

Unit 3. Chats And Conferences

Text 1. Chat rooms

A chat room is a Web site, part of a Web site, or part of an online service such as America Online, that provides a venue for communities of users with a common interest to communicate in real time. Forums and discussion groups, in comparison, allow users to post messages but don't have the capacity for interactive messaging. Most chat rooms don't require users to have any special software; those that do, such as Internet Relay Chat (IRC) allow users to download it from the Internet.

Chat room users register for the chat room of their choice, choose a user name and password, and log into a particular room (most sites have multiple chat rooms). Inside the chat room, generally there is a list of the people currently online, who also are alerted that another person has entered the chat room. To chat, users type a message into a text box. The message is almost immediately visible in the larger communal message area and other users respond. Users can enter chat rooms and read messages without sending any, a practice known as *lurking*.

Because chat room messages are spontaneous and instantly visible, there is a potential for abuse, which may or may not be intentional. Site hosts typically post a frequently asked questions (*FAQ*) list to guide users to appropriate chat room behavior, such as introducing yourself when you enter a room, making it clear when you are directing a question or response to a specific user, and reporting disruptive users, for example. Disruptive users may verbally abuse other chatters, monopolize the conversation, or even just disable

it by repeatedly typing the same word or phrase into the conversation, a practice (much frowned upon) known as *scrolling*.

Chat rooms can be found that focus on virtually any aspect of human endeavor or interest: there are current communities based on classic movies, Irish ancestry, baton twirling, and psychic readings, for example. Various sites, such as Yahoo, provide a directory of chat sites. Others, such as MSN Web Communities, guide users through the steps required to create their own chat room.

From: <http://searchsoa.techtarget.com/definition/chat-room>

Text 2. Video conferencing could increase shared decision-making in hospice care

While there is vast research on shared decision-making between patients and providers, little research exists on how providers and family caregivers reach mutual decisions -- a dynamic that is prominent in hospice care, a type of medical care given to patients near the end of their lives. Now, researchers at the University of Missouri have found that shared decision-making, although beneficial, could be enhanced in hospice care. The researchers recommend that health care workers employ measures such as video conferencing to help increase the likelihood of shared decision-making between patients and family caregivers.

"Patients in hospice care generally have less than six months to live, and some very important decisions need to be made during this time," said Debra Parker-Oliver, PhD, professor in the Department of Family and Community Medicine at the MU School of Medicine and lead researcher on the study. "Shared decision-making is critical to patient-centered care because it helps ensure patients will receive care that is in line with their preferences and values. It is a process where decisions are jointly made between providers and patients, or in most hospice care cases, family caregivers."

Parker-Oliver and Karla Washington, PhD, assistant professor in the Department of Family and Community Medicine at the MU School of Medicine and co-researcher on the study, reviewed video recordings of hospice team meetings that involved family caregivers. They found that shared decision-making occurs infrequently in hospice team meetings that involve family caregivers due to barriers such as time constraints, a lack of communication skills and unaddressed emotional needs. The researchers said hospice providers who want to include family caregivers in the decision-making process should consider using video conferencing to facilitate caregivers' participation.

"The quality of team meetings is enhanced when you have a visual image," Washington said. "It facilitates things like turn-taking and helps ensure meeting attendees are listening and engaged in the discussion."

Although researchers found that including family caregivers through video conferencing is a useful tool for shared decision-making, they say it does not guarantee shared decision-making will occur.

"Although shared decision-making is facilitated by having family caregivers participate in team meetings through video or Web conferencing, that alone does not mean shared decision-making will actually take place," Parker-Oliver said. "Specific steps need to be taken to ensure family caregivers participate in the decision-making process."

The study shows the need for more research on shared decision-making in hospice care, and the researchers believe that through more research, they can help hospice teams become more effective and engaged in more shared decision-making with patients' families.

Frm: <http://www.sciencedaily.com/releases/2015/10/151013112126.htm>

Text 4. Tely Breaks into Enterprise Video Conferencing with Focus on Huddle Spaces to Fuel Creativity

Tely Partners With Video Conference-as-a-Service Providers to Bring Affordable Video Conferencing to Large and Medium Businesses

REDWOOD CITY, CA--(Marketwired - Oct 27, 2015) - Tely today announced its vision to enable enterprises to deliver video collaboration to the growing millennial workforce with a new solution to video conferencing and collaboration. Tely is introducing the **Tely 200**, an affordable, simple to use video collaboration endpoint that integrates and connects with the cloud-based video service of your choice. Tely is also launching Tely Portal, a cloud based management platform that makes it easy for IT departments to deploy and manage the endpoints from the cloud. With the Tely 200, customers can easily share content and initiate a virtual meeting with a single click.

Workforce demands by millennial workers to increase flexible work styles have been met with employers shifting their working model to foster an environment that enables more visual collaboration. **According to Wainhouse Research**, 55 percent of conferencing managers are facing demands for video deployments from the next-gen workforce.

"Video conferencing has become a mainstream business tool," explains Ira M. Weinstein, senior analyst and partner at Wainhouse Research. "To support the collaboration needs of today's next-generation workers, organizations will need to deploy video conferencing in more meeting rooms

and spaces. This has increased the demand for solutions like the Tely 200 that provide a solid and standards-based video experience, with enterprise-grade centralized management capabilities, at a 'ready for scale' price point."

Delivering Enterprise-Quality Huddle Spaces -- Ready Out of the Box in Minutes

Companies are changing their workspaces and moving from the cubicle and walled offices to open space environments, to address the work styles of the millennial workforce. This creates a new way of working -- in a huddle space -- whether in a small conference room setting; add-on rooms, corner and communal spaces or other shared meeting spaces.

The Tely 200 offers several key benefits to address this growing need:

- **Simple and Intuitive User Interface** - instantly join a virtual meeting room with Microsoft Office 365 and Google Calendar Support. Customizable for any enterprise to simultaneously view video and share content on dual screens.
- **Huddle Space Collaboration Anytime, Anywhere** - integrated High-Definition 1080p camera with 85 degrees diagonal field of view, designed for Huddle Space collaboration that can be set up instantly and anywhere.
- **Integrates with Existing Cloud Video Solutions and Networks** - including **Acano, BlueJeans, Pexip, Videonor, Videxio, and Zoom**, to name a few.
- **Interoperates with Existing Enterprise Video Conferencing Solutions** - including Avaya, Cisco, LifeSize and Polycom.
- **Easy to Deploy and Centrally Manage** - using the Tely Portal, a cloud-based management offering with an intuitive browser-based interface, IT can deploy, configure and manage each Tely endpoint remotely.

"IT departments face a growing challenge deploying video collaboration technology across the enterprise to enable creative teams to collaborate more effectively," said Todd Abbott, president and chief executive officer, Tely. "The Tely 200 delivers enterprise quality video collaboration and is designed to connect with any cloud-based video service. With its form factor, price point and cloud-based management platform, the Tely 200 is optimized for deployment into the huddle space. This endpoint makes video collaboration available to the creative teams in any space, not just the executive conference rooms."

Pricing & General Availability . Tely 200 will be generally available in November 2015 to enterprise customers worldwide through Tely's channel partners at \$1,800 MSRP (includes one year of Tely Portal).

About Tely . Tely is dedicated to bringing simple high-definition video collaboration to more huddle spaces. Our cloud-optimized endpoints enable creative teams to easily share content and interact more effectively with each other, and with their customers, partners, suppliers through visual collaboration. Founded in 2010, Tely is a private company headquartered in Redwood City, California.

From: <http://finance.yahoo.com/news/tely-breaks-enterprise-video-conferencing-120000332.html>

Unit 4. Internet Security

Text 1. New security technology for the 'Internet of Things'

Washing machine, smoke detector, burglar alarm and refrigerator - all of those and many appliances more could in future be connected to the Internet. To ensure that the connected home does not turn into a security hazard, IT researchers at the Horst Görtz Institute at the Ruhr-Universität Bochum (RUB) have developed new protection technologies for the "Internet of Things", which they are now getting ready for the market. The Federal Ministry for Economic Affairs and Energy backs the start-up idea "PHYSEC" with approx. 650,000 euros under the umbrella of the programme "EXIST research transfer".

Fast, resource-efficient and secure

In the future, many household appliances will be gathering data in their home environment and communicate them through wireless connections. "This is why data security is of crucial importance," says project manager Christian Zenger. "Because **wireless** communication doesn't stop at the front door." Using a combination of digital encryption and analogue communication technologies, the start-up team from Bochum wants to enable security in the wireless communication between small devices. The technology is fast, energy-efficient and facilitates high security levels. A demonstration system that works effectively is already available.

Technology based on random number generator

The technology is based on a random number generator. It grants two parties that conduct wireless communication access to a synchronised sequence of random numbers. From this sequence cryptographic keys can be derived, for example. These keys are only shared by pairs of communication partners and not by all devices within the network. Thus, the problem associated with a single key shared by all devices has been solved: "Attacks may scale strongly, that means, for example, that an entire factory could become completely

hackable once one small sensor had been stolen and analysed," explains Zenger. This danger does not arise with the "PHYSEC" system. Moreover, the key changes regularly; thus, many advanced attacks become less effective and, ideally, inapplicable.

Integrating new appliances via mobile phone into the secured network

A mobile phone app will be available to include new devices into an already existing "Net of Things" secured by "PHYSEC". "All the user has to do is hold his Smartphone a few centimetres in front of a new device," says the researcher from Bochum. The app enables the authentic exchange of a unique cryptographic key that is exclusively assigned to the new device. "This is how future cyber-physical systems are connected to the network in a secure and user-friendly manner," says Zenger. "The entire process is very intuitive and does not have to be handled by an IT expert." The "PHYSEC" team plans to file a patent application for its technology.

The people involved in "PHYSEC" are Christian Zenger, PhD student at the Chair for Embedded Security, Dr Benedikt Driessen, who completed his PhD degree at RUB in 2013 and is currently on the payroll of "Infineon AG", Heiko Koepke, PhD student at the Chair for Controlling, and RUB student Jan-Felix Posielek.

From:<http://phys.org/news/2015-06-technology-internet.html>

Text 2. Kaspersky Internet Security for Mac

Kaspersky Internet Security for Mac delivers premium protection for your privacy, identity and children – plus our unique, award-winning Safe Money technology makes online banking & shopping safer than ever before on a Mac.

Protects Your Money – totally new technology for Mac

Whenever you're online banking, shopping or using a payment website, our unique Safe Money technology makes your online transactions safer than ever before. It automatically adds an extra layer of security that prevents online fraudsters from stealing your money, credit card number or bank account details. No other Mac security software offers this level of protection – and independent testing* recognizes Safe Money's innovative security features.

Blocks Network Attacks

Every computer – even Mac computers – can be subjected to network attacks. Every year, these attacks are getting more sophisticated and inflicting a wide range of damage – including crashing Mac computers, stealing information or damaging users' files. Our Network Attack Blocker detects

attacks and blocks the attacking devices – so they can't compromise your security or impair the performance of your Mac.

Delivers free updates – automatically

Whenever we introduce new features or new security technologies into Kaspersky Internet Security for Mac, you'll get them delivered to your Mac – without even having to click a button. Our new Silent Force technology automatically delivers all product updates and installs them on your Mac – so you won't ever have to worry about whether your Internet protection is up-to-date.

Safeguards children against online dangers

With the Internet holding so many dangers for children, we've ensured our award-winning Parental Control features make it easy to protect kids when they're online. Kaspersky Internet Security for Mac helps you defend children against sexual predators, block inappropriate content, prevent app store purchases, control access to games & social networking websites and prevent the disclosure of personal information that could affect your child's security or could expose other members of your family to financial loss or identity theft.

Prevents the spread of PC malware

Because Mac computers can be used to spread PC virus infections, Kaspersky Internet Security for Mac doesn't just provide Mac antivirus protection, it also prevents your Mac from passing on Windows or Linux malware to your family's, friends' or colleagues' PCs. So, as well as protecting your Mac from a wide range of threats, our award-winning security technologies also save you from the embarrassment of spreading malware to those around you.

Simplifies your security

With a free My Kaspersky account, you'll get easy-access tools that help you manage your security. Whenever you're online, you can check the security status of all your devices that are running Kaspersky Lab security software, activate specific security features and manage your licenses. Your My Kaspersky account also delivers news of our latest special offers and provides links to download free Kaspersky Lab products and services.

Fully compatible with your choice of OS X***

Whether you're running the latest version of OS X on your Mac – or you prefer to run a previous version – Kaspersky Lab has got you covered. Kaspersky Internet Security for Mac is fully compatible with all recent versions of OS X – including OS X 10.10.

From: <http://www.kaspersky.com/security-mac>

Text 3. Cyber Security Stocks Get Filip From Talk Hack Attack

By Sudip Kar-Gupta

LONDON (Reuters) - The hacking scandal at broadband provider TalkTalk has heightened interest in stocks and companies dealing in cyber security, with some fund managers betting on more growth in the sector.

British police said on Friday that they had arrested a second teenager in connection with the breach at TalkTalk, which may have led to the theft of personal data from among the company's more than 4 million customers.

TalkTalk was not the first such incident, but traders and investors said it should re-ignite interest in companies offering protection against hack attacks.

Market research firm Gartner has estimated that global spending on IT security is set to increase 8.2 percent in 2015 to \$77 billion. Corporations around the world will spend \$101 billion on information security in 2018, Gartner says.

That has caught the attention of financial markets. The ISPY exchange-traded-fund, which lets investors hold a basket of cyber security stocks - such as Cisco Systems and Sophos Group - has risen around 3 percent.

"As cyber crime continues to grow, governments and companies are prioritising cyber security as an essential investment. This is a sector we can expect to dominate headlines and corporate budgets," said Kris Monaco, the head of ISE ETF Ventures.

Others focused on some relatively small British stocks whose shares have risen, in contrast to those of TalkTalk whose stock has fallen 6 percent in the last week.

Falanx Group has climbed 15 percent over that same period. NCC Group and Corero Network Security - an offshoot of the former Corero software business - have risen 3 percent.

Corero's products include software that protects against attacks on Internet sites and domain addresses.

NCC has similar services, including one to test how vulnerable a company is to "phishing" - where internal emails are hacked by someone posing as an employee or outside contact - while Falanx has services monitoring clients' computer infrastructure for signs of suspicious activity.

John Blamire, a former British Army officer who is chief executive at Falanx, said customer interest had risen since the attack on TalkTalk.

"Incidents such as the one at TalkTalk actively brings attention to organizations such as ours," he said.

To be sure, stocks such as these would carry the usual risks associated with "small cap" stocks with a relatively small market valuation - less liquidity,

which can then make them more prone to a slump and harder to sell than bigger stocks.

Nevertheless, they have attracted some big-name investment houses, with Liontrust Asset Management holding a near 10 percent stake in NCC while Blackrock Investment Management has a near 3 percent holding in Corero. Both Liontrust and Blackrock declined to comment on those holdings.

Mark Slater, chief investment officer at Slater Investments, holds around 3 million NCC shares in his company's portfolio, and he expected NCC and others to continue to grow.

"The nature of the Internet makes it open to attack. These problems are not going to go away."

From: <http://news.yahoo.com/cyber-security-stocks-filip-talk-hack-attack-131206942--sector.html>

Unit 5. Graphics and Design

Text 1. Engineers unlock remarkable 3-D vision from ordinary digital camera technology

Modern digital cameras are equipped with an impressive array of functions -- from autofocus and image stabilization to panoramas and high-definition video. Recently a team of engineers from Duke University has unlocked a previously unrecognized 3D imaging capability of modern cameras by simply repurposing its existing components.

This new capability was successfully demonstrated in a proof-of-concept laboratory experiment using a small deformable mirror --a reflective surface that can direct and focus light. The research demonstrates how the equivalent technology in modern digital cameras, the image stabilization and focus modules, could be harnessed to achieve the same results without additional hardware.

The purpose of the experiment was to extract depth-of-field information from a "single shot" image - rather than traditional 3D imaging techniques that require multiple images- without suffering any trade-offs in image quality. When integrated into commercial cameras and other optical technologies, this visualization technique could improve core functions, like image stabilization, and increase the speed of autofocus, which would enhance the quality of photographs.

"Real scenes are in three dimensions and they're normally captured by taking multiple images focused at various distances," said Patrick Llull, Duke

Imaging and Spectroscopy Program (DISP), Duke University. "A variety of single-shot approaches to improve the speed and quality of 3D image capture has been proposed over the past decades. Each approach, however, suffers from permanent degradations in 2D image quality and/or hardware complexity."

The research team, led by David Brady, a professor at Duke, was able to overcome these hurdles, developing an adaptive system that may accurately extract 3D data while maintaining the ability to capture a full-resolution 2D image without a dramatic system change, such as switching out a lens.

Brady and his team present their findings in *Optica*, a journal from The Optical Society.

A New Path to the Third Dimension

Humans are able to see in three dimensions by a process known as parallax, in which the information received by each eye is slightly offset from the other. The brain is able to interpret and process these slightly divergent signals, recognizing how the apparent displacement as seen by each eye relates to different distances. This allows humans to perceive depth.

Traditional 3D imaging relies on virtually the same principle in which images and scenes are recorded with two slightly off-set lenses. When projected or processed, the original 3D appearance is restored. This recording process, however, requires twice the data as a 2D image, making 3D photography and video more bulky, expensive, and data intensive.

"We want to achieve the same results with the equipment people already have in their handheld cameras with no major hardware modifications," noted Lull.

Stabilization to Recover Information at Depth

Modern digital cameras, especially those with video capabilities, are frequently equipped with modules that take the jitter out of recordings. They do this by measuring the inertia or motion of the camera and compensate by rapidly moving the lens -- making multiple adjustments per second -- in the module. This same hardware can also change the image capture process, recording additional information about the scene. With proper software and processing, this additional information can unlock the otherwise hidden third dimension.

The first step, according to the researchers, is to enable the camera to record 3D information. This is achieved by programming the camera to performing three functions simultaneously: sweeping through the focus range with the sensor, collecting light over a set period of time in a process called integration, and activating the stabilization module.

As the optical stabilization is engaged, it wobbles the lens to move the image relative to a fixed point. This, in conjunction with a focal sweep of the sensor, integrates that information into a single measurement in a way that preserves image details while granting each focus position a different optical response. The images that would have otherwise been acquired at various focal settings are directly encoded into this measurement based on where they reside in the depth of field.

For the paper, the researchers used a comparatively long exposure time to compensate for the set-up of the equipment. To emulate the workings of a camera, a beam splitter was necessary to control the deformable lens: This extra step sacrifices about 75 percent of the light received. "When translated to a fully integrated camera without a beamsplitter, this light loss will not be an issue and much faster exposure times will be possible," noted Llull.

The researchers then process a single exposure taken with this camera and obtain a data-rich product known as a data cube, which is essentially a computer file that includes both the all-focused 2D image as well as an extra element known as a depth map. This depth map data, in effect, describes the focus position of each pixel of the image. Since this information is already encoded into the single measurement, it's possible to construct a depth map for the entire scene.

The final step is to process the image and depth map with a commercial 3D graphics engine, similar to those that render 3D scenes in video games and computer-generated imagery used in Hollywood movies. The resulting image can be used to determine the optimal focal setting for subsequent full-resolution 2D shots, as an autofocus algorithm does, but from only one image. Additionally, synthetic refocusing may be used on the resulting 3D imagery to display the scene as viewed at different depths by a human.

Though only performed in laboratory settings with surrogate technologies, the researchers believe the techniques they employed could be applied to basic consumer products. The result would be a more efficient autofocusing process, as well as the added third dimension to traditional photography.

"We have found a new path to extract 3D information from an otherwise 2D process. The benefits of this are dual functionality of tomographic imaging and full resolution 2D capture with little modification to existing systems," concluded Llull.

From: <http://www.sciencedaily.com/releases/2015/09/150917110004.htm>

Text 2. Purdue Polytechnic invites new students

Use your creativity to bring all kinds of ideas to life, from animation to production simulations, and from gaming to building designs. In Purdue's computer graphics program, you will turn your ideas (and ideas of others) into models, digital animations, interactive games and more.

Wherever people need to visualize a final product or another world, the skills of a computer graphics graduate can help.

In addition to a general computer graphics degree, you can develop more in-depth knowledge and skills in other areas:

- Animation
- Building Information Modeling/Construction Graphics
- Computer Gaming Development
- Information Visualization
- Interactive Multimedia Design
- User Experience/Mobile Computing/Human Computer Interaction
- Virtual Product Integration
- Web Design and Programming

Special features

- Take advantage of the flexible curriculum to specialize in an area based on your interests and talents
- Benefit from faculty experience in industrial careers
- Gain industry-standard experience in labs and facilities with the latest technologies
- Improve your career prospects with real-world research projects that allow you to work alongside faculty and for actual clients
- Two degrees in five years: earn your bachelor's and master's degrees in computer graphics technology in only five years with a special plan of study.

From: <https://polytechnic.purdue.edu/degrees/computer-graphics-technology>

Text 3. 10 Tips for Creating an Awesome Graphic Designer Portfolio by *Amber Neely*

Having a well thought out and organized portfolio is one of the most important things you can do if you are a graphic designer. Not only does a portfolio showcase your work, it also showcases your creativity and knowledge. Here are some tips to help you get started.

1. Include Enough Material

If you don't have enough material for a portfolio, then you shouldn't be as concerned with making a portfolio as you should be with creating more pieces to show potential employers or clients. You need to showcase that you have a strong understanding of the elements of graphic design. An ideal portfolio will consist of at least 15 pieces of work, but 25-30 is still entirely acceptable.

However, once you begin going over that amount, especially when it comes to complex designs, showcasing this all to a potential client or employer might be a little overwhelming. After all, you can always tell them that you have more pieces if they would like to take a look at them.

2. Only Include Pieces You're Proud Of

While it's important to have a lot of pieces for your portfolio, it's also important to only showcase the best of the best. If you aren't particularly proud of a piece you have included in your portfolio, take it out. There's no reason to keep in a piece that is below the quality of the rest, and potential employers or clients may see this as a warning signal that you might not be what they're looking for.

3. Include a Wide Variety of Projects

Clients are like snowflakes, there are no two alike. Okay, while that isn't entirely true, the concept still stands. Just because one potential client or employer might like more serious designs, that doesn't mean that the next person is completely opposed to whimsy. Include a wide variety of styles, colors, and different kind of projects that you know that you can do. This is crucial in a freelance market such as graphic design!

For example, your new employer will probably not be too terribly impressed if he thumbs through your portfolio and notices that you've designed five different logos that look remarkably alike. And clients probably won't be too terribly impressed if they see that you've made a great looking website, but it's included in your portfolio more than once or twice with nothing more but the color changed. So go ahead, showcase those buttons, badges, icons, web pages, logos and more. After all, variety is the spice of life!

4. If One is Good, Three are Better

This is one of the most important designer portfolio tips I can possibly give to you. Keeping one portfolio is a fantastic idea if you're looking to get hired. Keeping three portfolios is even better, as it gives you a chance to reach more people.

I know you might be thinking that keeping three portfolios is a bit much, but here's the logic behind it. Your first portfolio should be kept in a professional looking book or binder and it should be matted well (or at least

printed nicely, more on that below). The second portfolio should be either a nice PDF file or website-style gallery saved to a CD or a flash drive. Make several copies of this and keep them on hand for potential clients. This is sort of like handing out a business card, only a lot better. You can fit a lot of high quality images on a standard CD or a flash drive, and it gives you a chance to wow those potential clients with your thoughtfulness.

The third portfolio should be uploaded to the Internet. Yes, that's right, we're talking about getting your own website with a gallery of your best work. Not only is this a great way to reach clients you may never be able to reach in real life, it's one of the best ways to showcase your work how it is supposed to be seen. This portfolio can link to live website demos, moving graphics, Flash files, and more! So be sure to take advantage of having three portfolios.

5. Include Collaborations if at All Possible

If you've ever collaborated on a specific job with another graphic designer, a web designer, a concept artist, or anyone else, be sure to include the examples within your portfolio. This is especially crucial for those of you who are looking to get a job where you will be required to work well with others.

6. Include Formal Education Pieces (If Possible)

Not every employer or client cares about formal training, and graphic design is one of those fields where being self-taught is perfectly acceptable. Still, if you have had any formal training, it helps to showcase some of your final projects from your school days.

7. Professionally Print Your Portfolio (or Try Your Best to Fake It)

For your hard copy of your portfolio, you might want to think about getting it professionally printed, matted, and bound. However, instead of going for a book where you can't change out, try to find a high quality, attractive binder which you can rotate your work in and out of (more below!). Of course, if you've got access to a printer and a high quality, attractive binder, there is nothing stopping you from making your own portfolio.

8. Mind Your Matting & Page Colors

Like anything else in life, presentation counts. Make sure that in all three portfolios you pay attention to the colors you present your work on. For example, you don't want to showcase those really cool red icons you made on a website that is primarily red, right? They'd just blend right in. If you're not entirely sure what colors you should focus on for backgrounds and matting, stick with the classics—black, white and 50% gray.

9. Include Contact Information (and a Logo!)

No matter what portfolio you are showing someone, always make sure you have contact information and a logo (if you have one - and you should.

You are a graphic designer, after all!) displayed prominently somewhere. This is how you're going to get contacted by hiring employers and clients who need jobs done, so don't forget this. Ideally, you should include your name, company name (if applicable), email address, and phone number(s).

10. Rotate Material In and Out of Your Portfolio

Of course, as time goes on, you'll find that you come to like some of your older work a lot less than you had originally, and you'll probably want to replace it with something new. Not to mention, the more and more you design, chances are the better you'll get. So go ahead and switch around those pieces in your portfolio. After all, keeping your portfolio up to date is something potential employers will likely look for, so it's just the smart thing to do.

From:

<http://www.brighthub.com/multimedia/publishing/articles/120288.aspx>

Text 4. What Kind of Web Designer Should You Become?

The great thing about becoming a Web designer is that it can mean so many different things. Some Web designers do nothing but work in Photoshop all day, while others work on databases. It's possible to write for the Web or build the pages but not the design. And as always, you can freelance and do it all.

The Web is a great way to make money. If you are a writer, you can make money from Web pages you build, if you're an artist you can sell your designs or creations, or if you're a designer you can freelance as a Web designer/developer. All you need to make money on the Web is a computer and a website.

Web Design is All Hours

Working as a Web designer, especially for a business (small or large) often means that you need to be available at all hours to do work. When you have a job maintaining and building a corporate site, and a problem is fixed, the person finding the problem often wants it fixed immediately. And then there are the customers who want things done at the last minute. In order to complete their pages when they need them you work weekends and at night.

Whether you are just starting out as a Web designer or Web developer or are looking to become one, there are skills you need to know to be successful. The following list of technical skills is a list of the skills you need to be a good Web designer. They are listed in importance to getting a job as a Web designer, although some may be in higher demand than others.

The list includes information about the skill, where to learn more about it, training resources, and whether it's more useful to a Web designer or a Web developer.

1. HTML

HTML is the most important thing a Web designer or Web developer can learn. Even if you plan on using WYSIWYG editors for most of your career, knowing HTML will give you an understanding of how the Web works so that your designs will be more effective.

HTML is imperative to both Web designers and Web developers. Even Web designers who don't plan to do much work outside of a WYSIWYG editor should learn HTML so that they know the basis of their Web pages.

2. CSS

After HTML, CSS is the most important language Web designers can learn. It is what powers the designs and determines how a page will look.

CSS is imperative to Web designers. If you don't know CSS you won't be able to design cutting edge websites. CSS is useful to Web developers, but not as important. Web developers who know CSS will be able to make their applications interact more effectively with the design. More »

3. Design Sense

Having a good sense of design is important for Web designers. There is a lot more to it than simply knowing which colors you like. You should be aware of the elements of design as well as the basic design principles. My Weekly Web Design Class teaches design principles as they relate to Web design.

Web designers must know design. Web developers do not need this skill, unless they are working as a freelancer.

4. JavaScript and Ajax

JavaScript is the first interactive element of a website and Web developers should be comfortable in JavaScript before they learn any other languages. Once you understand how JavaScript connects with your website, then you can use it to extend applications and create Ajax websites.

Web designers don't need to learn JavaScript. Web developers should learn JavaScript. More »

5. PHP, ASP, Java, Perl, or C++

Programming Web pages starts with the language you use. There are many more options than the ones I list above, but these are some of the most popular and sought after. PHP is easily the leader, and if you choose only one language to learn, it should be PHP.

Web designers don't need to learn a programming language. Web developers must learn at least one and the more you know well, the more employable you will be.

6. MySQL Database

Learning how to build and maintain a database is essential to most Web applications. MySQL is the most popular database on the Web, but learning Access or SQL or another database will be helpful.

Web designers don't need to learn databases. Web developers would find knowing some database administration helpful.

7. Flash

Flash brings animation and vector graphics to Web pages. It can be used by both Web designers and Web developers to create interesting sites.

Web designers can learn Flash to round out their design and graphics knowledge. Web developers can learn Flash (and ActionScript) to round out their programming knowledge.

8. SEO

Search engine optimization, or SEO, is useful for anyone building websites. SEO is affected by the way the HTML is written, the image quality and content as well as many other things.

Both Web designers and Web developers will have a more desirable resume if they know SEO.

9. Web Server Administration

Knowing at least a little about the Web server your website is running on can help you solve problems and make your sites run better. Most Web designers feel they can ignore the server, but if you know how the server responds to things then you can build a better site.

Web designers don't need to know how to administer a server, but could benefit from knowing simple things like shell access. Web developers should learn more about the server so that they can troubleshoot their scripts and programs.

10. Project Management

Project management is a critical job skill for nearly anyone. By knowing how to manage a project, you can help keep it on track and that will endear you to every manager you work with.

Both Web designers and Web developers will benefit from knowing project management.

From: <http://webdesign.about.com/od/jobs/tp/web-designer-job-skills.htm>

Unit 6. Desktop Publishing

Text 1. Can You Still Make It in Desktop Publishing?

by Linda Richter

Can you still make a career in desktop publishing? Maybe not if you expect to churn out the letterhead, logos, and the traditional four-color, glossy-paged brochures that used to be the meat and potatoes of the local printing shop. But as some doors close in this field, other doors are opening.

- The Way Things Used to Be

A couple of decades ago—even less than that!—if someone wanted letterhead for his company or a new brochure for a specific program or event, you sketched out his ideas and then presented your design concept. The client would approve your work and then you would transform it into artwork with a message. He paid you an arm and at least part of a leg to get the finished product delivered to his office. Letterhead and logo design was so expensive that once something was settled on, it stayed the same for years.

Desktop publishers also arranged newspaper and magazine layout, formatted photos for marketing or advertising campaigns, or set out catalog design. Just about any printed thing in any home or office, a desktop publishing guru had a hand in it.

- From Yesterday to Today

Employability in this field has suffered not because of the economy but because of technology. Computer software more and more allows the average guy (or gal) to stumble through the creation of his own printed images and words.

In a converse twist, the same touches of technology offer inspiring new applications for products waiting to be designed. Who will say no to a website awirl with dynamic graphics?

These days, there are still jobs available for desktop publishers. However, instead of working at a print and design firm that supplies corporate clients with catalogs, brochures, or stationery, many artists will work directly for the same corporate clients, absorbed into the corporate structure to meet its design needs from within. Materials designed in-house come at a much lower cost for the hiring company. Sometimes that work alone will not keep a person employed full-time, so the savvy DTP person makes himself indispensable by assimilating and offering a variety of skills.

What about the people who foretell doom and gloom for the DTP industry? Are their worries valid? The following articles address those negative outlooks yet find a way to shine some light on the future.

Text 2. Desktop publishers

About 4 out of 10 work for newspaper, periodical, book, and directory publishers, while 1 out of 4 work in printing and related support activities.

Employment is expected to grow faster than the average for all occupations.

Most employers prefer to hire experienced desktop publishers; among persons without experience, opportunities should be best for those with certificates or degrees in desktop publishing or graphic design.

Nature of the Work

Using computer software, desktop publishers format and combine text, numerical data, photographs, charts, and other visual graphic elements to produce publication-ready material. Depending on the nature of a particular project, desktop publishers may write and edit text, create graphics to accompany text, convert photographs and drawings into digital images and then manipulate those images, design page layouts, create proposals, develop presentations and advertising campaigns, typeset and do color separation, and translate electronic information onto film or other traditional forms. Materials produced by desktop publishers include books, business cards, calendars, magazines, newsletters and newspapers, packaging, slides, and tickets. As companies have brought the production of marketing, promotional, and other kinds of materials in-house, they increasingly have employed people who can produce such materials.

Desktop publishers use a keyboard to enter and select formatting properties, such as the size and style of type, column width, and spacing, and store them in the computer, which then displays and arranges columns of type on a video display terminal or computer monitor. An entire newspaper, catalog, or book page, complete with artwork and graphics, can be created on the screen exactly as it will appear in print. Operators transmit the pages for production either into film and then into printing plates, or directly into plates.

Desktop publishing is a rapidly changing field that encompasses a number of different kinds of jobs. Personal computers enable desktop publishers to perform publishing tasks that would otherwise require complicated equipment and extensive human effort. Advances in computer software and printing technology continue to change and enhance desktop publishing work. Instead of receiving simple typed text from customers, desktop publishers get the material over the Internet or on a computer disk. Other innovations in the occupation include digital color page makeup systems, electronic page layout systems, and off-press color proofing systems. In addition, because most materials today often are published on the Internet, desktop publishers may

need to know electronic publishing technologies, such as Hypertext Markup Language (HTML) and may be responsible for converting text and graphics to an Internet-ready format.

Typesetting and page layout have been affected by the technological changes shaping desktop publishing. Increasingly, desktop publishers are using computers to do much of the typesetting and page-layout work formerly done by prepress workers, posing new challenges for the printing industry. The old “hot type” method of text composition—which used molten lead to create individual letters, paragraphs, and full pages of text—is nearly extinct. Today, composition work is done primarily with computers. Improvements in desktop-publishing software also allow customers to do much more of their own typesetting.

Desktop publishers use scanners to capture photographs, images, or art as digital data that can be either incorporated directly into electronic page layouts or further manipulated with the use of computer software. The desktop publisher then can correct mistakes or compensate for deficiencies in the original color print or transparency. Digital files are used to produce printing plates. Like photographers and multimedia artists and animators, desktop publishers also can create special effects or other visual images using film, video, computers, or other electronic media.

Desktop publishers often perform writing and editing tasks as well as page layout and design. For example, in addition to laying out articles for a newsletter, desktop publishers may be responsible for editing content they receive or for writing original content themselves. A desktop publisher’s writing and editing responsibilities vary widely from employer to employer. Small firms typically need desktop publishers to perform a wide range of tasks, while desktop publishers at large firms specialize in a certain part of the publishing process.

Depending on the establishment employing these workers, desktop publishers also may be referred to as publications specialists, electronic publishers, DTP operators, desktop publishing editors, electronic prepress technicians, electronic publishing specialists, image designers, typographers, compositors, layout artists, and web publications designers.

Working Conditions

Desktop publishers usually work in clean, air-conditioned office areas with little noise. They generally work an 8-hour day, 5 days a week. Some workers work night shifts, weekends, and holidays.

Desktop publishers often are subject to stress and the pressures of short deadlines and tight work schedules. Like other workers who spend long hours

working in front of a computer monitor, they may be susceptible to eyestrain, back discomfort, and hand and wrist problems.

Training, Other Qualifications, and Advancement

Most workers qualify for jobs as desktop publishers by taking classes or completing certificate programs at vocational schools, universities, and colleges or through the Internet. Programs range in length, but the average certificate program takes approximately 1 year. However, some desktop publishers train on the job to develop the necessary skills. The length of on-the-job training varies by company. An internship or part-time desktop-publishing assignment is another way to gain experience as a desktop publisher.

Students interested in pursuing a career in desktop publishing may obtain an associate degree in applied science or a bachelor's degree in graphic arts, graphic communications, or graphic design. Graphic arts programs are a good way to learn about desktop publishing software used to format pages; assign type characteristics; and import text and graphics into electronic page layouts to produce printed materials such as advertisements, brochures, newsletters, and forms. Applying this knowledge of graphic arts techniques and computerized typesetting usually is intended for students who may eventually move into management positions, while 2-year associate degree programs are designed to train skilled workers. Students also develop finely tuned skills in typography, print media, packaging, branding and identity, Web site design, and motion graphics. The programs teach print and graphic design fundamentals and provide an extensive background in imaging, prepress operations, print reproduction, and emerging media. Courses in other aspects of printing also are available at vocational-technical institutes, industry-sponsored update and retraining programs, and private trade and technical schools.

Although formal training is not always required, those with certificates or degrees will have the best job opportunities. Most employers prefer to hire people who have at least a high school diploma and who possess good communication skills, basic computer skills, and a strong work ethic. Desktop publishers should be able to deal courteously with people because, in small shops, they may have to take customers' orders. They also may have to add, subtract, multiply, divide, and compute ratios to estimate job costs. Persons interested in working for firms using advanced printing technology need to know the basics of electronics and computers.

Desktop publishers need good manual dexterity, and they must be able to pay attention to detail and work independently. Good eyesight, including visual acuity, depth perception, a wide field of view, color vision, and the ability to focus quickly also are assets. Artistic ability often is a plus. Employers also

seek persons who are even tempered and adaptable—important qualities for workers who often must meet deadlines and learn how to operate new equipment.

Workers with limited training and experience may start as helpers. They begin with instruction from an experienced desktop publisher and advance on the basis of their demonstrated mastery of skills at each level. All workers should expect to be retrained from time to time to handle new, improved software and equipment. As workers gain experience, they advance to positions with greater responsibility. Some move into supervisory or management positions. Other desktop publishers may start their own company or work as independent consultants, while those with more artistic talent and further education may find opportunities in graphic design or commercial art.

Employment

Desktop publishers held about 34,000 jobs in 2004. About 4 out of 10 worked for newspaper, periodical, book, and directory publishers, while 1 out of 4 worked in printing and related support activities; the rest worked in a wide variety of industries.

Firms in the publishing industry publish newspapers, periodicals, books, directory and mailing lists, and greeting cards. Printing and related support activities firms print a wide range of products—newspapers, books, labels, business cards, stationery, inserts, catalogs, pamphlets, and advertisements—while business form establishments print material such as sales receipts and business forms and perform support activities such as data imaging and bookbinding. Establishments in printing and related support activities typically perform custom composition, platemaking, and related prepress services. (A separate statement on prepress technicians and workers appears elsewhere in the *Handbook*.) Other desktop publishers print or publish materials in-house or in-plant for business services firms, government agencies, hospitals, or universities, typically in a reproduction or publications department that operates within the organization.

The printing and publishing industries are two of the most geographically dispersed industries in the United States, and desktop publishing jobs are found throughout the country. However, most jobs are in large metropolitan cities.

Job Outlook

Employment of desktop publishers is expected to grow faster than average for all occupations through 2014, as more page layout and design work is performed in-house using computers and sophisticated publishing software. Desktop publishing is replacing much of the prepress work done by

compositors and typesetters, enabling organizations to reduce costs while increasing production speeds. Many new jobs for desktop publishers are expected to emerge in commercial printing and publishing establishments. However, more companies also are turning to in-house desktop publishers, as computers with elaborate text and graphics capabilities have become common, and desktop publishing software has become cheaper and easier to use. In addition to employment growth, many job openings for desktop publishers also will result from the need to replace workers who move into managerial positions, transfer to other occupations, or leave the labor force.

Printing and publishing costs represent a significant portion of a corporation's expenses, and firms are finding it more profitable to print their own newsletters and other reports than to send them out to trade shops. Desktop publishing reduces the time needed to complete a printing job and allows commercial printers to make inroads into new markets that require fast turnaround.

Most employers prefer to hire experienced desktop publishers. As more people gain desktop-publishing experience, however, competition for jobs may increase. Among persons without experience, opportunities should be best for those with computer backgrounds who are certified or who have completed postsecondary programs in desktop publishing or graphic design. Many employers prefer graduates of these programs because the comprehensive training they receive helps them learn the page layout process and adapt more rapidly to new software and techniques.

Earnings

Earnings for desktop publishers vary according to level of experience, training, location, and size of firm. Median annual earnings of desktop publishers were \$32,340 in May 2004. The middle 50 percent earned between \$24,660 and \$42,070. The lowest 10 percent earned less than \$19,460, and the highest 10 percent earned more than \$52,460 a year. Median annual earnings of desktop publishers in May 2004 were \$36,040 in printing and related support services and \$29,040 in newspaper, periodical, book, and directory publishers.

Related Occupations

Desktop publishers use artistic and editorial skills in their work. These skills also are essential for artists and related workers; commercial and industrial designers; news analysts, reporters, and correspondents; prepress technicians and workers; public relations specialists; and writers and editors.

From: http://www.edinformatics.com/careers/desktop_publishers.htm

Text 4. Desktop Publishing: History, Present and Future

The History of DTP

Although hot metal typesetting and manual publishing techniques had long been replaced by phototypesetting, it was not until the mid 1980's that design and publishing was truly brought 'in-house'.

Although the first laser printers were built by Canon, it was Hewlett-Packard's *LaserJet* desktop laser printer, developed in 1984, combined with the Apple Macintosh computer and Adobe's PostScript page description language and Aldus's PageMaker software, that is generally acknowledged as the cornerstones of DTP.

The Macintosh, with its easy to use graphics user interface (GUI), allowed non-computer literate designers to simulate their normal working environment with its *desktop as metaphor* approach.

Many design companies and printers have remained *loyal* to Apple and standardized on the Macintosh. However, with the release of Windows 95 and it's successors, it is now just as possible to use the same software tools on a Windows-based PC as it is on a Mac. Whilst there used to be much debate as to the advantages of Apple versus Windows for graphic designers, especially around the areas of color accuracy and prepress, it is now generally accepted that, for the most part, the choice of computing platform is now more of a preference, than a requirement.

Desktop publishing software

In 1985 Aldus, a company later bought by Adobe, released the first desktop publishing software. Called PageMaker, it allowed designers to layout pages in WYSIWYG mode, rather than having to type in arcane typesetting code commands.

Although PageMaker was the first professional desktop publishing layout tool, it was soon usurped by a company called Quark, who had developed their own layout package called QuarkXpress. One major advantage of QuarkXpress was its plugin system, known as Xtensions, which allowed publishing companies to purchase add-on technology to suit their particular workflow or industry.

In recent years – well after Adobe had purchased Aldus – Adobe released InDesign, which has been steadily challenging and even overtaking Quark's dominance of the DTP industry. Adobe also uses software plug-ins for many of its applications.

Apart from layout applications, other desktop publishing software tools were introduced that allowed publishers to take on increasing amounts of the design and production workload. High resolution drum scanners – and later desktop scanners – alongside Adobe Photoshop, soon put paid to the need for enormous film cameras.

PostScript and desktop publishing

Adobe's PostScript software allowed the designers' creations to be output accurately to a PostScript enabled device, such as the Apple Laserwriter (the first PostScript enabled desktop laser printer). PostScript was now also being built into high end imagesetters, which allowed for printers and pre-press bureaus to output press quality film, directly from a publishers digital files.

PostScript technology was now also being built into fonts and other DTP publishing tools, such as vector drawing applications like Adobe Illustrator. Indeed it is only recently that PostScript font technology has begun to be replaced by other formats such as OpenType fonts.

DTP myths and misdemeanors

Desk-top publishing has often been criticized by graphic designers as being responsible for lowering design standards. The reasons for this are often related to the ease with which DTP has made it for amateur 'designers' to produce published documents. Indeed, the term 'desktop' has been criticized as somewhat misleading.

Many classically trained graphic designers point to increasing reliance by businesses on untrained in-house staff to produce everything from newsletter, to designing logos, stationary and even mass distribution brochures and promotional material. The point made is that, whilst DTP technology may allow more and more untrained people to produce publications, it matters little if the documents produced are badly designed and fail to achieve their purpose.

The number of programs coming under the banner of 'desktop publishing' has also risen and can sometimes include applications as diverse as PowerPoint, Microsoft's Publisher and Serif's PagePlus. Indeed, many word processing programs now claim to include desktop publishing *features*.

Many printers and pre-press bureaus also complain of receiving incorrectly formatted files from designers who have been taught how to use dtp software to produce layouts, but have not been taught how to process those documents properly for offset-litho commercial printing.

The plethora of *non-professional* DTP software tools has also led to some printers raising their hands in despair. With many of these tools not supporting basic print production formats, such as CMYK color separation.

The availability of color desktop printers has also led to some inexperienced designers sending 'desktop proofs' along with their artwork, without realizing that the colors can often not be matched when printed on a commercial printing press. In much the same way, the colors reproduced on a DTP computer monitor will rarely match those produced when the job is printed.

The future of desktop publishing

The design and publishing business is constantly changing. But most recent changes have yet to be as dramatic as those brought about by the events of the mid 1980s. Computers are constantly getting faster, allowing for more graphics intensive procedures to be performed on the 'desktop' by designers. Digital commercial printing machines have reduced the price of short-run full color printing. Albeit perhaps at the cost of quality. And complete on-screen electronic proofing (generally PDF driven) is now commonplace, speeding up the whole production process for non-color critical work.

But perhaps the most dramatic development in desktop publishing has been the web. When companies began to realize that an effective web presence was a crucial marketing tool, many graphic designers eagerly jumped aboard the web design ship. And WYSIWYG web design tools, such as Freeway, Dreamweaver and GoLive, have provided designers with an inroad into the once technically exclusive world of web design, in much the same way that QuarkXpress and Pagemaker opened up the publishing market in the mid-eighties.

Of course, this has sometimes raised many of the same questions of professionalism as were raised by the incorrect use of DTP print publishing tools. Many web developers, who were used to hand coding web sites, have complained that WYSIWYG web design software applications create *bloated* or non-compliant code.

The ongoing interaction between the printed design world and the interactive digital world will no-doubt continue. The overlap with interactive television technologies has already begun, as has desktop video, design for mobile phones and PDAs. It's going to be interesting.

From: <http://www.designtalkboard.com/design-articles/desktoppublishing.php>

Unit 7. Multimedia

Text 1. Multimedia Journalism: The Age of New Technology and New Opportunities

by Lorraine Lee

Multimedia journalism holds great promise in helping journalists do their job more effectively and in engaging readers. This potential partly lies in multimedia journalism's ability to generate more direct interaction, discussion, exploration and analysis of issues among journalists and readers.

Online interactions based on articles published on the Internet have become instant, paving the way for a changing relationship between journalists and readers, and offering opportunities for readers to be more engaged with what they are reading. Print journalists used to have very little interaction with readers. Journalists would write the story, and readers would read it and then move on to another article, as did the journalists. If a reader had something to say, she would write a "letter to the editor" and hope to get her comment published.

Today many reporters have their contact information at the end of online articles, opening up the lines of communication. It is no longer just a one-way conversation, but a dialogue. The ability to more easily communicate with editors and reporters is important to online

Blogs

Blogs have been around for about ten years and become more popular over time, becoming almost an expected presence in many newspapers. Blogs present another opportunity for increased reader engagement and satisfaction, giving reporters another outlet for reporting the news or expressing their informed opinion on a topic, while allowing readers to comment and read others' comments. Most online newspapers have "official" blogs, but blogs can be created by anyone who has Internet access. In The New York Times, blogs range from "The Caucus," in which the Times' politics staff covers the latest news in the presidential election, to "The Pour," in which Eric Asimov discusses "the pleasure, culture and business of wine, beer and spirits."

Monitoring blogs

There are difficult issues though regarding the most effective way to monitor blogs. The opportunities offered by blogs are severely limited by the bookend problems of too much or inappropriate censorship, on the one end, and senseless ranting, on the other end. Even with blogs on news sites there is usually some sort of comment filtering system to avoid people breaking out into fights and to maintain a level of civility. When dealing with blogs, newspapers

are facing three main problems: 1) how to make sure the most opinionated people commenting aren't turning off more moderately opinionated people; 2) how to most effectively filter comments; and 3) whether comments should be filtered at all. The major problem, according to Mark Glaser in the article "Traditional Media Ready to Elevate the Conversation Online – with Moderation" (2008), is: "How do you harness the audience's knowledge and participation without the forums devolving into a messy online brawl that requires time-intensive moderation?"

Currently there is no set or uniform way in which newspapers are dealing with this issue, although some have come up with various techniques. The New York Times, for example, has a feature in which readers can recommend other readers' comments. There are also "Editor's Selections," which allow editors to choose which comments they think are "worthy" of being profiled in some way. By doing this, the New York Times is letting readers decide what they think are the "best" comments. If readers are skeptical about allowing other readers decide what is "good," they can also look at "Editor's Selections" or just look through all the comments themselves.

In the same article, Jonathan Landman, deputy managing editor for digital journalism at the New York Times, said positive and negative reinforcement is the way to make blog-commenting successful. This suggestion makes much sense, as it is human nature for people to want to feel "special" or feel that they may be more knowledgeable about certain subjects than another person. People – and in this case it becomes especially true for readers – like to be rewarded for their hard work and the time they took to comment.

"Blog comments should absolutely be monitored using technological tools and also human intervention. Trash (i.e. slander, hatred, etc.) should not be published," Day wrote. "For my blogs, I generally do not allow comments to run until I have moderated them. Obviously I do not edit comments. They either run or they don't."

Newspapers need to work towards having comments of quality. Although newspapers are seeking high-quality comments, who has the right to decide which comments are appropriate or "of high quality"? The "who" usually consists of editors or readers who provide rating feedback. However, when deciding what is "high quality," there is always the risk of too much censorship. Readers may rate others' comments poorly because they disagree with others' views, or the readers themselves don't understand the issue and thus can't "grade" appropriately. On the other hand, the potential for inappropriate censorship existed even with print. Readers never knew how many comments may have been submitted but not published.

Chances are that if a comment shows understanding of the issue at hand and is written in a logical, balanced and convincing manner, then it will be viewed that way by other readers. If a standard is set, then a majority of those who comment will match that standard. If someone doesn't adhere to the standards, readers will be able to notice them right away. Also, readers have to have some faith in editors' ability to view the comments in a balanced way (or objectively) and that any comments they're filtering are probably best for the reader, either because the comment is illogical, the person doesn't understand the issue, or there is unnecessary profanity.

An example of "high quality commenting" is seen with the blog IndyMoms, which targets moms in Indiana. According to the article "IndyMoms Draws Busy Parents with Discussion, Niche Content" by Rich Gordon, 10 "discussion leaders" were hired, or rather, moms who were paid \$25 a week to "initiate and participate in discussions on the site" (p. 2). In the article, Jennifer Gombach, a brand manager in the Indianapolis Star's marketing department, was quoted on the role of these discussion leaders:

"They often start discussions that are at a higher sophistication level than some other posters. They kind of set the tone from the get-go."

In addition, Elpha Riche, who was hired by the Star, was quoted in the article saying that knowing which topics are heated or controversial helps beforehand. She said in the article:

"Sometimes I'll go in and say, 'OK, everyone, let's take a breather. Step away from the computer and think before you type.' If it's not something you would say to a room full of people you just met, you should think twice about posting it to our forum."

This mindset needs to become the norm among bloggers. By having this mindset, readers can present more logical comments that don't yell out "you have to believe what I believe, and I'm going to keep arguing until you do."

However, some blogs are not worth monitoring. Cheré Coen, who was Readership Editor at The Bakersfield Californian and whose job was to make the newspaper more reader-friendly, wrote in an email interview about unofficial blogs:

"Now, blogs are another story. As a journalist, I cringe when I hear about people accepting things like blogs and unofficial stories as news," she wrote. "One big difference is you know you're getting some form of professionalism with print as opposed to sites that aren't part of the mainstream media."

Videos

Videos have become an important storytelling tool of multimedia journalism and have potential for growing readership. They are visually

stimulating and bring people in a story to life. Use of news videos has grown significantly over the past 12 to 18 months, according to the American Journalism Review (2008). In addition, video consumers – which can include those who visit sites like YouTube – generally tend to be younger than the overall population. According to “The Video Explosion” (2008) in the American Journalism Review, the audiences attracted to videos “have higher incomes and more education” (2008, p. 5). The article reported that the Nielsen Co. reported that 129 million Americans have access to broadband, and that a report made by the Pew Internet and American Life Project in July shows that 57 percent of all online viewers watch or download videos. The number increases to 74 percent for broadband users. Based on these numbers, it seems that having videos accompanying articles is bound to attract more readers, especially the younger generation, which is crucial in contributing to increased newspaper readership.

In the same article, an author named Gene Weingarten (Washington Post) wrote a story about Joshua Bell, “one of the world's most esteemed classical violinists” (2008), impersonating a street performer, whom the public ignored. The article ran in the print version of the paper with photos, but video clips were added to the online version of the story. Weingarten was quoted in the article saying that his story was more effective online with the video, although this isn't necessarily always the case. His definition of effective seemed to stem from the fact that the story reached more people than it would have without the video, including those in Beijing.

Frame grabs are also a new part of journalism and have arisen from video. Frame grabs are still shots taken from a video camera, able to be put on print as seen with the San Jose Mercury News or the Detroit Free Press, or online. They serve as a new, creative way to display information and add to multimedia journalism. David Leeson, who was interviewed in “The Video Explosion” (2008), started shooting video for the Dallas Morning News in 2000, and said in the article that he believes a journalist will soon win a Pulitzer Prize in photography from frame grabs. Videos play an important role in journalism, in particular online journalism, and are becoming a form of interactivity that is continually gaining popularity.

Other interactive features

Although videos are one of the most prominent forms of multimedia, others include sound clips, timelines, maps, and whatever else newspapers can create. Interactive features like maps are another way to attract readers to a story – while having readers read the actual story is ideal, as researched in my first two papers, they often don't have the time. Interactive features

accompanying articles allow the reader to get quick information about what happened and help grab their attention. A good example of an interactive map was seen in the New York Times regarding the Virginia Tech tragedy; the map had 16 slides that showed different areas of campus and the killer's path, as well as descriptions of different scenes and facts.

D. JOURNALISTS' CHANGING ROLE

These new ways of storytelling are pushing journalists beyond reporting the story in the conventional way. They now must add whatever supplemental material they can gather, as well as present the story in such a way that all the multimedia aspects of the story mesh together well. Also, stories do not have to be just an article anymore – they can be things like graphics or slideshows that stand alone. Integration of multimedia features requires tighter integration and smoother transition from text to multimedia features to sidebars to pull-out boxes, and more. This is all very taxing on the people who have to layout and design the online page, as well as gather the information, and journalists have to coordinate more closely to enable this.

Multimedia journalism has created opportunity for journalists, but it requires them, no matter what age, to learn new skills.

From: <http://www.sensibletalk.com/journals/lorrainekee/200808/57/>

Text 2. Multimedia in Education

By Abhaya Asthana

The multimedia technologies that have had the greatest impact in education are those that augment the existing curriculum, allowing both immediate enhancement and encouraging further curriculum development. For example, the WWW serves as a storehouse of information that individual learners can search for subject matter content that specifically fits their learning agendas. Multimedia applications for computers have been developed for single computing platforms such as the PC, Apple Mac and games machines.

The Elements of Multimedia in Education

It is very tempting to use the latest computer wizardry to represent information and develop computer enhanced learning materials. However, the instructional design of these systems should be based on a careful examination and analysis of the many factors, both human and technical, relating to visual learning. When is sound more meaningful than a picture? How much text is too much? Does the graphic overwhelm the screen? For a student, this allows them to test all of their skills gained in every subject area. Students must be able to

select appropriate multimedia tools and apply them to the learning task within the learning environment in order for effective learning to take place.

A *Multimedia Learning* environment involves a number of components or elements in order to enable learning to take place. Hardware and software are only part of the requirement. As mentioned earlier, multimedia learning integrates five types of media to provide flexibility in expressing the creativity of a student and in exchanging ideas (See Figure 1).

Text

Out of all of the elements, text has the most impact on the quality of the multimedia interaction. Generally, text provides the important information. Text acts as the keystone tying all of the other media elements together. It is well written text that makes a multimedia communication wonderful.

Sound

Sound is used to provide emphasis or highlight a transition from one page to another. Sound synchronized to screen display, enables teachers to present lots of information at once. This approach is used in a variety of ways, all based on visual display of a complex image paired with a spoken explanation (for example, art – pictures are ‘glossed’ by the voiceover; or math – a proof fills the screen while the spoken explanation plays in the background). Sound used creatively, becomes a stimulus to the imagination; used inappropriately it becomes a hindrance or an annoyance. For instance, a script, some still images and a sound track, allow students to utilize their own power of imagination without being biased and influenced by the inappropriate use of video footage. A great advantage is that the sound file can be stopped and started very easily.

Video

The representation of information by using the visualization capabilities of video can be immediate and powerful. While this is not in doubt, it is the ability to choose how we view, and interact, with the content of digital video that provides new and exciting possibilities for the use of digital video in education. There are many instances where students, studying particular processes, may find themselves faced with a scenario that seems highly complex when conveyed in purely text form, or by the use of diagrams and images. In such situations the representational qualities of video help in placing a theoretical concept into context.

Video can stimulate interest if it is relevant to the rest of the information on the page, and is not ‘overdone’. Video can be used to give examples of phenomena or issues referred to in the text. For example, while students are reading notes about a particular issue, a video showing a short clip of the author/teacher emphasizing the key points can be inserted at a key moment;

alternatively, the video clips can be used to tell readers what to do next. On the other hand, it is unlikely that video can completely replace the face-to-face lecture: rather, video needs to be used to supplement textual information.

One of the most compelling justifications for video may be its dramatic ability to elicit an emotional response from an individual. Such a reaction can provide a strong motivational incentive to choose and persist in a task.

The use of video is appropriate to convey information about environments that can be either dangerous or too costly to consider, or recreate, in real life. For example: video images used to demonstrate particular chemical reactions without exposing students to highly volatile chemicals, or medical education, where real-life situations can be better understood via video.

Animation

Animation is used to show changes in state over time, or to present information slowly to students so they have time to assimilate it in smaller chunks. Animations, when combined with user input, enable students to view different versions of change over time depending on different variables.

Animations are primarily used to demonstrate an idea or illustrate a concept. Video is usually taken from life, whereas animations are based on drawings. There are two types of animation: Cel based and Object based. Cel based animation consists of multiple drawings, each one a little different from the others. When shown in rapid sequence, for example, the operation of an engine's crankshaft, the drawings appear to move. Object based animation (also called slide or path animation) simply moves an object across a screen. The object itself does not change. Students can use object animation to illustrate a point – imagine a battle map of Gettysburg where troop movement is represented by sliding arrows.

Graphics

Graphics provide the most creative possibilities for a learning session. They can be photographs, drawings, graphs from a spreadsheet, pictures from CD-ROM, or something pulled from the Internet. With a scanner, hand-drawn work can be included. Standing commented that, “the capacity of recognition memory for pictures is almost limitless”. The reason for this is that images make use of a massive range of cortical skills: color, form, line, dimension, texture, visual rhythm, and especially imagination.

From: <http://encyclopedia.jrank.org/articles/pages/6821/Multimedia-in-Education.html>

Text 3. Pope Francis Accepts Donation of Terason uSmart 3200T Ultrasound System for Vatican

BURLINGTON, Mass.--(BUSINESS WIRE)--

Pope Francis personally accepted the donation of a Terason uSmart 3200T portable ultrasound system after the papal mass in front of an audience of over 60,000. General Manager Jeffrey Sirek handed over the innovative new technology on behalf of Terason directly to the Holy Father in an effort to further support the medical capabilities offered at the Vatican Medical Center.

As an industry pioneer, Terason is committed to delivering unprecedented customer satisfaction and quality products with the latest in computer technology and developments in ultrasound imaging available today. This commitment further expands to improving healthcare around the world, providing diagnostic capabilities to those otherwise unable to receive care.

At the time of the offering, Mr. Sirek explained to the Holy Father how this system was designed to provide the highest quality of care, “The uSmart 3200T system is specifically designed for emergency medicine and critical care diagnoses in hospital settings and remote areas. Its unique features easily allow for maximum utilization to service the elderly, very sick and difficult to reach patients. Additionally, the system will assist physician users in early detection to develop a course of action to avoid more serious diseases.”

Terason was honored that our uSmart 3200T was chosen as the ultrasound system of choice to support the Vatican, and a new synergistic collaboration and commitment to providing quality healthcare worldwide has commenced. Terason will continue to strive to exceed expectations and industry standards, and provide customers with the latest advancements in portable ultrasound.

About

Terason

Terason, a division of Teratech Corporation began in 1994, drawing upon technology developed at MIT’s Lincoln Laboratory. Dr. Alice Chiang, CEO and Chairman of the Board, founded the company to apply developments in the fields of radar, sonar, and telecommunications technologies to the demanding requirements of battlefield ultrasound. Recognizing that decades of breakthrough research for the Department of Defense could be applied to the challenges of mainstream ultrasound imaging, she formed the Terason division. With initial key patents protecting the integrated circuit technology she developed at MIT, Dr. Chiang dedicated Terason to the development of a micro-miniaturized commercial ultrasound system.

Today, we continue to revolutionize ultrasound with developments in high-performance portable systems. The new proprietary uSmart products provide exceptional imaging capability and the advanced features and

functionality users have come to expect from Terason. These complete ultrasound solutions optimize workflow, enhance clinical efficacy, and increase productivity for everyday clinical needs.

From: <http://finance.yahoo.com/news/pope-francis-accepts-donation-terason-205900341.html>

Unit 8. Web Design

Text 1. New Technologies on Affordable Web Designing

by Robert K Mosley

Any business today would require an up-to-date website to showcase its products and services while sharing many related and interesting information. Hence, it is important to keep the business website relevant with fresh content and design. However, this could be a costly affair for businesses that are not performing well in their operations. Nevertheless, they still need to go about sourcing for affordable web designing to ensure their market competitiveness.

CSS websites

Web businesses may want to consider allocating a fair budget for maintaining their website every year. With the progressive technology moving quite fast, more new web designing features are coming onto the market to attract more web traffic.

One of such web designs is CSS design which is a new website technology. An external file is used instead of the normal table for the site layout. This option offers a more consistent outlook via various web browsers such as Safari, Firefox and Internet Explorer. The loading is faster due to less codes on each page.

CSS websites allow a global site change with one file edit instead of individual page edits. This feature enhances the website quickly.

PHP websites

Another new technology in the market to make web designing more affordable is PHP websites. This web designing technology offers the creation of a dynamic database driven site such as a completely e-commerce online store, blog or a community site.

PHP websites allow a safe keeping of visitors' information for a quick login for repeated visits. Comments are also allowed by the visitors to feedback on the site or products and services. However, PHP sites may load slower than the standard HTML sites. Hence, PHP web design services may be cheaper.

Flash websites

Flash websites allow an awesome site layout with the best of technology features. There can be flashing of information, auto uploading of videos, pop up

windows and animations. However, some web visitors may not be so thrilled about all these flashing and movement of contents on the screen.

It is the web owner's choice of web design for their site; affordability is very relative as there is a plethora of creative and desperate web designers who would offer what is required for the desired fee.

A quality website design need not be expensive if one knows the exact requirements for the website. There is more than enough modern technologies with the right skills and creativity to design a good website without burning the pocket.

The Author is An SEO Expert at Seoflicks.com. Are you looking for the best and affordable SEO Services? They are ready to provide you the best seo packages, that suit your business needs.

From: http://EzineArticles.com/expert/Robert_K_Mosley/1464868

Text 2. Web Designing – New Technologies, Easier Methods

Web designing is something that encompasses different disciplines in the production of websites. The different disciplines include web interface design, graphic design, search engine optimizing, and design for user experience and so on. people work in teams to handle the different aspects to creating a website.

However with the advancing technologies, web designing is becoming easier than it previously used to be. Applications such as HTML, java is providing platforms for easy creation of websites.

Websites are quite important in today's life. Everybody loves the internet and most of the information we gather about different things are from the internet. These informations are available in the websites. In order to make things easier for the viewer, the user interface needs to be at such a level that the information can be acquired in a jiffy.

Even with all the technologies available, a common person needs to have proper knowledge in this field in order to design and launch a website on the internet. The **graphic design company in California** can help a layman with the launch of a new website. Thus it is not a big issue if someone does not know the details as website development California is there to help you out.

Service Provides:

The **Zonic Digital Inc** is a professional digital marketing company which provides various services in order to help the customers with web designing and website launch. Different types of techniques and skills are needed for the successful launch of a website.

- Communication and Marketing Design

- User interactive design
- Layout of the pages
- Code quality
- Motion graphics
- Typography

There are two main jobs involved in the whole process: the **web developer and the web designer**. The web designers look out for the visual aspects and the extent of knowledge varies with the kind of work done by the team.

Other jobs are also available such as

- **Marketing specialists** to help to maintain the presence of the website using strategic solutions to target viewers towards the site. **Promotional and marketing techniques** are used.

- Writers who research and provide the correct words to be incorporated in the website so that they are found when people search the internet
- Graphic designers who create logos, buttons and other visuals
- Copywriter who creates the written content of the page to make it more appealing.

Professional companies help you with all the aspects of the website design. It may sound simple but the whole procedure takes time and hard work. More the complicate of the design, more time and skills it takes.

From: <http://www.gozonic.com/blog/web-designing-new-technologies-easier-methods/>

Text 3. 3 next-generation design tools you need to know

Oct 29, 2015

A guide to the next generation of design tools that take web design to another level.

Web design tools haven't evolved at the rate web design trends have been shifting. Are we seriously still spending hours learning to hand-code new design trends that will die out before we master them?

In this article, we'll explore some of the best next-gen web design tools and highlight the standout features in each of them. Let's get started.

01. Macaw

Macaw has been around for a few years and it is gaining popularity as a next generation design tool now. Its tagline "Stop writing code, start drawing it" says it all. Macaw's interface and functionality is similar to other image editors

you've been using up till today with one major difference – it writes beautiful HTML and CSS for you in the backend.

It's like having your own personal programmer (one that doesn't take a coffee break every half hour).

Behind the scenes, Macaw has two awesome engines doing all the work. (Think: Wizard of Oz.)

- Stream, a real-time layout engine enables you to manipulate elements as you would in any old image editor and takes care of the calculations. The war between designers and layouts is over.

- Alchemy, the design-to-code engine, takes it from there and converts the designs to HTML and CSS code that is tailored to be responsive.

Features like responsive, flexible grids and sophisticated typography controls make Macaw a truly next-gen design tool. And then it's got the visual access to new CSS features that we're all familiar with. You can set breakpoints for use on multiple devices and play around with its positioning controls that give remarkable results.

Macaw is not just a web design tool; it's a web developer buddy that won't judge you for not knowing the basics of web programming. Do what you love. Design. And leave all of the coding nonsense to this next-gen web design miracle.

02. Sketch 3

Sketch 3 surpasses the tools you've become accustomed to like Illustrator and Photoshop. It's evident that the tool was meant for web design but its interface and thoroughness make it a viable option for all sorts of designing.

Sketch 3 is developed exclusively for the Mac taking advantage of Quartz, Retina, Auto Save and Versions.

The next-gen web design tool excels in assisting designers create organized, logical projects with artboards, pages, groups, layers and symbols. To make it even better for your particular design needs, you can integrate your Sketch 3 installation with a host of plugins.

The tool's one of a kind vector Boolean operation make it easy for web designers to create complex shapes and leverage the extensive layer styles it has to offer. Sketch 3 provides a fully vector-based workflow from start to finish fully loaded with reusable elements and native text rendering.

With Sketch 3, you'll be able to import SVGs and expand and edits its layers. Masking, pixel perfect spacing and exporting your designs has never been easier. Sketch 3 is intuitive and it's intelligent.

Sketch 3 has been used to create several distinguished design projects, such as Google's Pixate and Fleet Feet. The design tool has also gained

recognition as the best tool for wireframing and interface design – in case you needed another reason to try it out.

03. Adobe Muse

Last year, we published a similar article and talked a little about Adobe Muse. There wasn't much to say back then when it didn't have any competition. Muse is no longer the only 800-pound gorilla in the room. Adobe's latest Project Comet is soon to follow in its footsteps.

Adobe Muse also sings the same paean we've been hearing all too much, "Create gorgeous, custom websites without writing code".

Though it's a big statement to make, we've seen that developers have kept busy for the last year integrating the once new-kid-on-the-block with in-browser editing update, Creative Cloud add-ons, SVG import and text synchronization across desktop and mobile.

Adobe Muse enables designers to access thousands of fonts from Adobe Typekit, high-quality images from Adobe Stock and build sites with unlimited functionality. It takes care of the heavy lifting of converting design to code under the hood while providing a platform you're familiar with and features and shortcuts that you've come to love.

Final thoughts

Web design is an ever trending field and after two long decades of waiting, we finally have the tools we hoped for to bring our designs to life on multiple devices. The next generation of web design tools is versatile and enable us web designers to bring out the stroke of genius we've been suppressing for far too long.

The time has come to leave Photoshop, Illustrator (and whatever else you've been using) behind and plunge into the next generation.

From: <http://www.creativebloq.com/web-design/next-generation-tools-you-need-know-101517442>

Text 4. Senior Web Developer Wanted

Senior web developer is a member of a distributed agile software development team, primarily responsible for the design of a web interface of a complex multi-tier web-based system.

Successful candidate is a self-motivated individual with a good combination of technical and personal skills, able to work in a fast-paced environment as a part of a diverse development team.

Senior web developer assumes full responsibility for his/her part of the solution including understanding requirements, maintaining product quality,

communicating with peers and other stakeholders to ensure the overall success of the team effort.

The Senior web developer will be part of the Schlumberger Software Technology organization, responsible for the Schlumberger digital technology initiatives. As the oil and gas industry's leading supplier of technology, integrated project management, and information solutions to customers' worldwide, Schlumberger digital technology development and management plays a key role in driving the oilfield service industry's digital technology transformation

Responsibilities

- * Understand system purpose, architecture, requirements and applicable quality standards
- * Web solution development using HTML5, CSS, AngularJS and ASP.Net
- * Development of a server-side functionality directly related to the web front-end using ASP.Net and C#

Qualifications

- * Bachelor's degree in Computer Science or similar.
- * Min 2-3 years of experience in the field of web design
- * Knowledge of Responsive web design principles
- * Knowledge of Agile methodologies and Test-Driven Development
- * Experience with Application Lifecycle Management using Microsoft TFS
- * Technical experience should preferably include key technologies employed in the solution development such as:
 - + HTML5 and CSS
 - + JavaScript
 - + AngularJS
 - + ASP.Net
 - + .Net and C#
 - + TFS and MSBuild
- * Domain knowledge in Oilfield industry is preferred
- * Candidates must be able to legally work and reside in the US, without sponsorship.

Schlumberger is an equal employment opportunity employer. Qualified applicants are considered without regard to race, color, religion, sex, national origin, age, disability, status as a protected veteran or other characteristics protected by law.

From:

http://www.rigzone.com/jobs/postings/871350/Senior_Web_Developer.asp

Unit 9. Software Design and Programming Languages

Text 1. Software in 2020 and Beyond By 2020

The old paradigm of software programs developed for a single hardware platform or operating system will be obsolete. Programs will be developed without basic knowledge of their runtime targets. Commodity computing systems will range from smart phones to the cloud, each of these platforms featuring hardware parallelism and hardware heterogeneity. The efficiency of applications on all platforms will highly depend on the ability of computing systems providers (from the smart phone manufacturer to the cloud manufacturer) to provide software technology that tailors applications to the underlying hardware at deployment and run time. The challenge will be to allow portability of both functionality and performance on the whole range of hardware platforms. The providers currently develop and simulate systems (software and hardware) in a mixed and integrated development environment. Another important aspect that needs improvement is the art of reaching solutions where hardware and software are as independent as possible. A better environment for understanding the consequences of different implementation alternatives would also be of great value in answering questions about what should be developed in software, in hardware or as a service. Whilst it is difficult to predict the precise operating environment for software in 2020 and beyond, it is to be expected that:

- An increasing reliance on software-driven artefacts will require that the software as infrastructure; i.e., software that is «always-on».

- Most software will run on distributed, heterogeneous and highly parallelised systems.
- Such systems will have to operate in environments which are open-ended and only partially observable.
- Requirements will change during the lifetime of the software requiring that it is evolvable and adaptable.
- Complexity will increase dramatically for each new project.
- Integration and testing of legacy software, open source and other third party software are issues in dire need of new levels of understanding.
- Software components will be combined in such a way that the resulting solution will provide new functionality emerging out of existing software components and services.
- Software quality will be increasingly important.

The required tool chain includes a target independent static compiler analysis and optimization platform, a dynamic run-time code optimisation infrastructure and a run-time workload deployment system to adapt the application to underlying hardware as well as tools supporting software auditing, simulation and testing. We might expect to see new programming or modelling languages which include adaptation mechanisms as «first-class citizens». Tools should have high level check functions – at the design level or system rather than the code level – and support instant feedback to the user, e.g. by simulation. Developing an understanding for cost efficient quality assurance should also be high on the agenda. The software should be developed for minimizing maintenance efforts, e.g. with possibility to upgrade continuously, in the field, sometimes decades after its initial deployment. Our understanding of software functionality must improve to a state where we have development environments supporting expressiveness, formalism and consistency to allow the software intensive systems to do exactly – and only – what it is designed to do. 12 In addition to this operational-level tool chain, novel software engineering management methods are urgently needed to reduce the still overly high rates of failure and cost overruns of large-scale software-intensive projects, especially but not only in the public sector:

- Novel methods will be required for the estimation of project cost and time in the dramatically more complex settings described above. This includes different kinds of risk assessment and methods for dealing with them: staffing issues in a globalized world in an aging Europe; frequent ex-post changes of plan due to competitive pressure or political context changes or new technological options; financing problems in a volatile financial setting; new business models for bringing software-intensive systems to the market.

- Requirements-level monitoring concepts must be extended by explicit consideration of risk aspects and early warning signals. It will be necessary that these concepts and related tools can be handled on the user side, as prosumer settings become increasingly important.

- Methods to stop unsuccessful projects gracefully, and more importantly, to recover failed but critical projects without excessive costs need to be linked to the technical quality and flexibility goals mentioned above.

From: <http://cordis.europa.eu/fp7/ict/docs/istag-soft-tech-wgreport2012>

Text 2. 10 programming languages that could shake up IT

by Neil McAllister

Do we really need another programming language? There is certainly no shortage of choices already. Between imperative languages, functional

languages, object-oriented languages, dynamic languages, compiled languages, interpreted languages, and scripting languages, no developer could ever learn all of the options available today.

And yet, new languages emerge with surprising frequency. Some are designed by students or hobbyists as personal projects. Others are the products of large IT vendors. Even small and midsize companies are getting in on the action, creating languages to serve the needs of their industries. Why do people keep reinventing the wheel?

The answer is that, as powerful and versatile as the current crop of languages may be, no single syntax is ideally suited for every purpose. What's more, programming itself is constantly evolving. The rise of multicore CPUs, cloud computing, mobility, and distributed architectures have created new challenges for developers. Adding support for the latest features, paradigms, and patterns to existing languages -- especially popular ones -- can be prohibitively difficult. Sometimes the best answer is to start from scratch.

Here, then, is a look at 10 cutting-edge programming languages, each of which approaches the art of software development from a fresh perspective, tackling a specific problem or a unique shortcoming of today's more popular languages. Some are mature projects, while others are in the early stages of development. Some are likely to remain obscure, but any one of them could become the breakthrough tool that changes programming for years to come -- at least, until the next batch of new languages arrives.

Experimental programming language No. 1: Dart

JavaScript is fine for adding basic interactivity to Web pages, but when your Web applications swell to thousands of lines of code, its weaknesses quickly become apparent. That's why Google created Dart, a language it hopes will become the new vernacular of Web programming.

Like JavaScript, Dart uses C-like syntax and keywords. One significant difference, however, is that while JavaScript is a prototype-based language, objects in Dart are defined using classes and interfaces, as in C++ or Java. Dart also allows programmers to optionally declare variables with static types. The idea is that Dart should be as familiar, dynamic, and fluid as JavaScript, yet allow developers to write code that is faster, easier to maintain, and less susceptible to subtle bugs.

You can't do much with Dart today. It's designed to run on either the client or the server (a la Node.js), but the only way to run client-side Dart code so far is to cross-compile it to JavaScript. Even then it doesn't work with every browser. But because Dart is released under a BSD-style open source license,

any vendor that buys Google's vision is free to build the language into its products. Google only has an entire industry to convince.

Experimental programming language No. 2: Ceylon

Gavin King denies that Ceylon, the language he's developing at Red Hat, is meant to be a "Java killer." King is best known as the creator of the Hibernate object-relational mapping framework for Java. He likes Java, but he thinks it leaves lots of room for improvement.

Among King's gripes are Java's verbose syntax, its lack of first-class and higher-order functions, and its poor support for meta-programming. In particular, he's frustrated with the absence of a declarative syntax for structured data definition, which he says leaves Java "joined at the hip to XML." Ceylon aims to solve all these problems.

King and his team don't plan to reinvent the wheel completely. There will be no Ceylon virtual machine; the Ceylon compiler will output Java bytecode that runs on the JVM. But Ceylon will be more than just a compiler, too. A big goal of the project is to create a new Ceylon SDK to replace the Java SDK, which King says is bloated and clumsy, and it's never been "properly modernized."

That's a tall order, and Red Hat has released no Ceylon tools yet. King says to expect a compiler this year. Just don't expect software written in "100 percent pure Ceylon" any time soon.

Experimental programming language No. 3: Go

Interpreters, virtual machines, and managed code are all the rage these days. Do we really need another old-fashioned language that compiles to native binaries? A team of Google engineers -- led by Robert Griesemer and Bell Labs legends Ken Thompson and Rob Pike -- says yes.

Go is a general-purpose programming language suitable for everything from application development to systems programming. In that sense, it's more like C or C++ than Java or C#. But like the latter languages, Go includes modern features such as garbage collection, runtime reflection, and support for concurrency.

Equally important, Go is meant to be easy to program in. Its basic syntax is C-like, but it eliminates redundant syntax and boilerplate while streamlining operations such as object definition. The Go team's goal was to create a language that's as pleasant to code in as a dynamic scripting language yet offers the power of a compiled language.

Go is still a work in progress, and the language specification may change. That said, you can start working with it today. Google has made tools and compilers available along with copious documentation; for example,

the Effective Go tutorial is a good place to learn how Go differs from earlier languages.

Experimental programming language No. 4: F#

Functional programming has long been popular with computer scientists and academia, but pure functional languages like Lisp and Haskell are often considered unworkable for real-world software development. One common complaint is that functional-style code can be difficult to integrate with code and libraries written in imperative languages like C++ and Java.

Enter F# (pronounced "F-sharp"), a Microsoft language designed to be both functional and practical. Because F# is a first-class language on the .Net Common Language Runtime (CLR), it can access all of the same libraries and features as other CLR languages, such as C# and Visual Basic.

F# code resembles OCaml somewhat, but it adds interesting syntax of its own. For example, numeric data types in F# can be assigned units of measure to aid scientific computation. F# also offers constructs to aid asynchronous I/O, CPU parallelization, and off-loading processing to the GPU.

After a long gestation period at Microsoft Research, F# now ships with Visual Studio 2010. Better still, in an unusual move, Microsoft has made the F# compiler and core library available under the Apache open source license; you can start working with it for free and even use it on Mac and Linux systems (via the Mono runtime).

Experimental programming language No. 5: Opa

Web development is too complicated. Even the simplest Web app requires countless lines of code in multiple languages: HTML and JavaScript on the client, Java or PHP on the server, SQL in the database, and so on.

Opa doesn't replace any of these languages individually. Rather, it seeks to eliminate them all at once, by proposing an entirely new paradigm for Web programming. In an Opa application, the client-side UI, server-side logic, and database I/O are all implemented in a single language, Opa.

Opa accomplishes this through a combination of client- and server-side frameworks. The Opa compiler decides whether a given routine should run on the client, server, or both, and it outputs code accordingly. For client-side routines, it translates Opa into the appropriate JavaScript code, including AJAX calls.

Naturally, a system this integrated requires some back-end magic. Opa's runtime environment bundles its own Web server and database management system, which can't be replaced with stand-alone alternatives. That may be a small price to pay, however, for the ability to prototype sophisticated, data-driven Web applications in just a few dozen lines of code. Opa is open source

and available now for 64-bit Linux and Mac OS X platforms, with further ports in the works.

Experimental programming language No. 6: Fantom

Should you develop your applications for Java or .Net? If you code in Fantom, you can take your pick and even switch platforms midstream. That's because Fantom is designed from the ground up for cross-platform portability. The Fantom project includes not just a compiler that can output bytecode for either the JVM or the .Net CLI, but also a set of APIs that abstract away the Java and .Net APIs, creating an additional portability layer.

There are plans to extend Fantom's portability even further. A Fantom-to-JavaScript compiler is already available, and future targets might include the LLVM compiler project, the Parrot VM, and Objective-C for iOS.

But portability is not Fantom's sole *raison d'être*. While it remains inherently C-like, it is also meant to improve on the languages that inspired it. It tries to strike a middle ground in some of the more contentious syntax debates, such as strong versus dynamic typing, or interfaces versus classes. It adds easy syntax for declaring data structures and serializing objects. And it includes support for functional programming and concurrency built into the language.

Fantom is open source under the Academic Free License 3.0 and is available for Windows and Unix-like platforms (including Mac OS X).

Experimental programming language No. 7: Zimbu

Most programming languages borrow features and syntax from an earlier language. Zimbu takes bits and pieces from almost all of them. The brainchild of Bram Moolenaar, creator of the Vim text editor, Zimbu aims to be a fast, concise, portable, and easy-to-read language that can be used to code anything from a GUI application to an OS kernel.

Owing to its mongrel nature, Zimbu's syntax is unique and idiosyncratic, yet feature-rich. It uses C-like expressions and operators, but its own keywords, data types, and block structures. It supports memory management, threads, and pipes.

Portability is a key concern. Although Zimbu is a compiled language, the Zimbu compiler outputs ANSI C code, allowing binaries to be built only on platforms with a native C compiler.

Unfortunately, the Zimbu project is in its infancy. The compiler can build itself and some example programs, but not all valid Zimbu code will compile and run properly. Not all proposed features are implemented yet, and some are implemented in clumsy ways. The language specification is also expected to change over time, adding keywords, types, and syntax as necessary. Thus,

documentation is spotty, too. Still, if you would like to experiment, preliminary tools are available under the Apache license.

Experimental programming language No. 8: X10

Parallel processing was once a specialized niche of software development, but with the rise of multicore CPUs and distributed computing, parallelism is going mainstream. Unfortunately, today's programming languages aren't keeping pace with the trend. That's why IBM Research is developing X10, a language designed specifically for modern parallel architectures, with the goal of increasing developer productivity "times 10."

X10 handles concurrency using the partitioned global address space (PGAS) programming model. Code and data are separated into units and distributed across one or more "places," making it easy to scale a program from a single-threaded prototype (a single place) to multiple threads running on one or more multicore processors (multiple places) in a high-performance cluster.

X10 code most resembles Java; in fact, the X10 runtime is available as a native executable and as class files for the JVM. The X10 compiler can output C++ or Java source code. Direct interoperability with Java is a future goal of the project.

For now, the language is evolving, yet fairly mature. The compiler and runtime are available for various platforms, including Linux, Mac OS X, and Windows. Additional tools include an Eclipse-based IDE and a debugger, all distributed under the Eclipse Public License.

Experimental programming language No. 9: haXe

Lots of languages can be used to write portable code. C compilers are available for virtually every CPU architecture, and Java bytecode will run wherever there's a JVM. But haXe (pronounced "hex") is more than just portable. It's a *multiplatform* language that can target diverse operating environments, ranging from native binaries to interpreters and virtual machines.

Developers can write programs in haXe, then compile them into object code, JavaScript, PHP, Flash/ActionScript, or NekoVM bytecode today; additional modules for outputting C# and Java are in the works. Complementing the core language is the haXe standard library, which functions identically on every target, plus target-specific libraries to expose the unique features of each platform.

The haXe syntax is C-like, with a rich feature set. Its chief advantage is that it negates problems inherent in each of the platforms it targets. For example, haXe has strict typing where JavaScript does not; it adds generics and type inference to ActionScript; and it obviates the poorly designed, haphazard syntax of PHP entirely.

Although still under development, haXe is used commercially by its creator, the gaming studio Motion Twin, so it's no toy. It's available for Linux, Mac OS X, and Windows under a combination of open source licenses.

Experimental programming language No. 10: Chapel

In the world of high-performance computing, few names loom larger than Cray. It should come as no surprise, then, that Chapel, Cray's first original programming language, was designed with supercomputing and clustering in mind.

Chapel is part of Cray's Cascade Program, an ambitious high-performance computing initiative funded in part by the U.S. Defense Advanced Research Project Agency (DARPA). Among its goals are abstracting parallel algorithms from the underlying hardware, improving their performance on architectures, and making parallel programs more portable.

Chapel's syntax draws from numerous sources. In addition to the usual suspects (C, C++, Java), it borrows concepts from scientific programming languages such as Fortran and Matlab. Its parallel-processing features are influenced by ZPL and High-Performance Fortran, as well as earlier Cray projects.

One of Chapel's more compelling features is its support for "multi-resolution programming," which allows developers to prototype applications with highly abstract code and fill in details as the implementation becomes more fully defined.

Work on Chapel is ongoing. At present, it can run on Cray supercomputers and various high-performance clusters, but it's portable to most Unix-style systems (including Mac OS X and Windows with Cygwin). The source code is available under a BSD-style open source license.

From:<http://www.infoworld.com/article/2618168/application-development/10-programming-languages-that-could-shake-up-it.html>

Text 3. NASA seeks programmer fluent in 60-year-old languages to work on Voyager

By Ryan Whitwam Oct. 30, 2015

After decades with the Voyager program, NASA engineer Larry Zottarelli is retiring. That means there's a job opening at the storied Jet Propulsion Laboratory, but it won't be the right fit for just any engineer. Applicants should have a can-do attitude, good communication skills, and extensive knowledge of 60-year-old programming languages.

We're talking about the Voyager 1 and 2 spacecraft here, which were launched in the 1970s. That's before the personal computer revolution sent programming languages into overdrive. There was no C, Java, or Python in those days. Instead, Voyager runs on assembly language (about as low level coding as you can get), as well as higher level languages including Fortran and COBOL, which were created in the late 1950s. You need to understand these archaic programming languages to work on the Voyager spacecrafts as they leave the solar system.

Both COBOL and Fortran are still in use today, but they aren't exactly popular choices with the younger generations of programmers. They sit at positions 21 and 22 according to the TIOBE index. Assembly language also isn't something many younger developers would focus on today unless specifically asked to as part of their job, and even if they did, assembly language is different for every computer architecture with each having its quirks.

The core software running the Voyager probes was last overhauled in 1990, shortly after the Neptune flyby. JPL introduced a number of looping protocols that lets the spacecraft operate more or less autonomously. NASA continues to send up new sequences every three months or so, but it's getting harder to communicate with the Voyager probes 12 billion miles away. Only the massive Canberra antenna of the Deep Space Network is able to send data to the Voyager probes these days.

Whoever takes over the programming duties on Voyager will have to work on tightening up its energy usage. Both spacecrafts are getting old, but have enough power to run for at least another decade. After that, it will depend on what systems can be optimized and what can be shut down to save power. JPL managers aren't expecting a young college grad to show up with intimate knowledge of programming languages from 60 years ago, but finding an engineer in their 50s (rather than 70s) who understands assembly languages would be great.

From: <http://www.geek.com/science/nasa-seeks-programmer-fluent-in-60-year-old-languages-to-work-on-voyager-1638276/>

Unit 10. Java

Text 1. Java pro learns middleware engineer role on the fly for TCI

After 15 years as a software engineer and Java developer, Bernard Mesa joined TCI as a database administrator and middleware engineer. Both roles

were new to him and to TCI, a K-12 textbook publishing company in Rancho Cordova, Calif.

"I just got plunged into the fire and learned on the fly," Mesa said. "There were bumps and bruises along the way, but I learned what I needed to get and keep everything up and running."

In this time of rapid technology change, both software pros and their employers are hungry for modern skill sets. From his own experience, Mesa believes that adaptability is the most important skill any software pro can offer today. It's also an ability IT employers should seek in candidates, in his opinion.

"Being able to adapt and adapt quickly has been my most valuable talent," said Mesa. After all, he said, "I didn't come into TCI knowing how to use Jitterbit Harmony or Amazon RDS,EC2 and S3."

As a manager who hires software pros, Mesa looks for people who can solve problems. "Programmers, designers – it doesn't matter who they are, it doesn't matter what skills they came with originally, if they know how to think logically and solve problems, I want them." he said.

That's not to say that Mesa's Java development skills have been put aside. If TCI's tech team needs a formula or small script written, he does it. "The other developers can, but they'd have to go learn it," Mesa said. "We work with NetSuite, Salesforce and Jitterbit, and each has its own variant of JavaScript. I know what the constraints are for that, but they'd have to learn it."

From: <http://searchsoa.techtarget.com/video/Java-pro-learns-middleware-engineer-role-on-the-fly-for-TCI>.

Text 2. What is Java? Isn't it a coffee drink?

Yes, but that's not what we're talking about here. The Java computer language is known as a high level programming language. It was developed by Sun Microsystems in 1995, and was intended for mobile devices to be able to "talk" to each other.

So what is Java used for? The goal of the Java programming language was to make it so that a developer who programmed on one computer could run his/her code on another machine, even if the two machines were nothing alike. With other programming languages, such as C++, the same code is interpreted differently on different machines. Programming on Windows usually meant the program would not work on a Mac. This is not true with Java.

How can Java accomplish this? Java has what is called the Java Virtual Machine. This is literally a virtual computer that starts up that runs the Java programs. Because this virtual machine is the same on all computers that have Java installed, any Java program will work on any of those computers. This interdependency makes Java a fantastic programming language for cross-platform environments (Windows machines, Macs, Linux machines, etc). So what is Java used for then? Quite simply to make it easy to write software that works on any kind of machine!

Java is an object-oriented language. This was a rather old programming paradigm by the time it was released, but a lot of the industry didn't really catch on until after Java's release. Before object oriented programming the standard was procedural programming. This is the style I learned first, and let me just say I am glad that object-oriented exists today.

What Java was primarily used for and the original focus of the Java computer language has really been Internet applications, so it is much easier to write a program to work on the web than with most other languages. Javascript, JSP (Java Server Pages), and Java working together can create powerful web applications. Java applets are relatively easy to put up on the web. Of course, you can also use Java to create programs that don't run on the web.

I think that Java is a great computer language to learn. I am certainly glad I learned it, and I know for a fact that Java is THE language to learn if you're just starting out. There's just too much potential with Java that is so easy to unlock. It's no wonder high schools have switched to Java as their language of choice when teaching computer science!

From: <http://www.java-made-easy.com/what-is-java.html>

Text 3. What is Java technology and why do I need it?

Java is a programming language and computing platform first released by Sun Microsystems in 1995. There are lots of applications and websites that will not work unless you have Java installed, and more are created every day. Java is fast, secure, and reliable. From laptops to datacenters, game consoles to scientific supercomputers, cell phones to the Internet, Java is everywhere!

Is Java free to download?

Yes, Java is free to download. Get the latest version at java.com.

If you are building an embedded or consumer device and would like to include Java, please contact Oracle for more information on including Java in your device.

Why should I upgrade to the latest Java version?

The latest Java version contains important enhancements to improve performance, stability and security of the Java applications that run on your machine. Installing this free update will ensure that your Java applications continue to run safely and efficiently.

More technical information

What will I get when I download Java software?

The Java Runtime Environment (JRE) is what you get when you download Java software. The JRE consists of the Java Virtual Machine (JVM), Java platform core classes, and supporting Java platform libraries. The JRE is the runtime portion of Java software, which is all you need to run it in your Web browser.

What is Java Plug-in software?

The Java Plug-in software is a component of the Java Runtime Environment (JRE). The JRE allows applets written in the Java programming language to run inside various browsers. The Java Plug-in software is not a standalone program and cannot be installed separately.

I have heard the terms Java Virtual Machine and JVM. Is this Java software?

The Java Virtual Machine is only one aspect of Java software that is involved in web interaction. The Java Virtual Machine is built right into your Java software download, and helps run Java applications.

Java is the foundation for virtually every type of networked application and is the global standard for developing and delivering embedded and mobile applications, games, Web-based content, and enterprise software. With more than 9 million developers worldwide, Java enables you to efficiently develop, deploy and use exciting applications and services.

From laptops to datacenters, game consoles to scientific supercomputers, cell phones to the Internet, Java is everywhere!

Why Software Developers Choose Java

Java has been tested, refined, extended, and proven by a dedicated community of Java developers, architects and enthusiasts. Java is designed to enable development of portable, high-performance applications for the widest range of computing platforms possible. By making applications available across heterogeneous environments, businesses can provide more services and boost end-user productivity, communication, and collaboration—and dramatically reduce the cost of ownership of both enterprise and consumer applications. Java has become invaluable to developers by enabling them to:

- Write software on one platform and run it on virtually any other platform
- Create programs that can run within a web browser and access available web services
- Develop server-side applications for online forums, stores, polls, HTML forms processing, and more
- Combine applications or services using the Java language to create highly customized applications or services
- Write powerful and efficient applications for mobile phones, remote processors, microcontrollers, wireless modules, sensors, gateways, consumer products, and practically any other electronic device

From: <https://java.com/en/about/>

Text 4. Getting Started with Java Generics

November 4, 2015 by Manoj Debnath

Java generics was introduced (as a new feature in J2SE 5) to leverage the general model of programming. Generics improves code clarity and compactness, and adheres to one of the basic principle of Software Engineering—code reusability. To put it simply, imagine a sorting function that sorts four distinct arrays such as—an integer array, double array, character array, and string array. Instead of writing a bunch of overloaded functions, we can achieve the same result with the help of a single generic method. Similarly, say, with a single generic class we can implement the *Stack* data structure and have a polymorphous utility with variety of data types. This is an exceptional capability and can be quite helpful in situations where we generally use boilerplate code to logically mean the same thing. Java generics provides the necessary syntactic element to make a generic interface to our polymorphic needs. The article takes up some of the key aspects of Java generics with relevant examples to delineate the idea.

Java Generics and the Object Class

The oddity of Java generics is in its syntax that, upon inception, led to revamp the Java core API structure, especially in retrospect to housekeep backward compatibility (version prior to J2SE 5). Generics can be applied to create generic methods as well as classes and interfaces. The Java Language Specification specifies generics as parameterized types; this means the types that enable us to create classes, interfaces, methods, and their operable data are specified as parameters. If we emphasize that generics is the only means to create a sense of a general method of coding in Java, our argument simply falls

short of a ratiocinate judgment. The reason is, we can easily create classes and methods that behave as generics with the help of an *Object* class reference type. *Object* is the default or implicit superclass of any and every class in Java. So, by virtue of the basic object-oriented principle, it can reference any subtype. But, there is a significant difference with respect to generics. It added the element of type safety that was lacking with the *Object* classes. Due to this functionality, the explicit typecasting that was required in the process of translating *Object* and the type of operable data is absent—it became implicit and automatic.

From: <http://www.developer.com/java/data/getting-started-with-java-generics.html>

Unit 11. Jobs in information technologies

Text 1. The 6 hottest new jobs in IT

by Robert Strohmeier

IT job seekers have real reason to hope. No fewer than 10,000 IT jobs were added to payrolls in May alone, according to the Bureau of Labor statistics, reflecting a steady month-over-month increase since January. And in a June survey by the IT jobs site Dice.com, 65 percent of hiring managers and recruiters said they will hire more tech professionals in the second half of 2011 than in the previous six months.

But which jobs have the greatest growth potential -- and stand the best chance of withstanding outsourcing or another economic downturn?

To find those hottest of hot jobs, we've scoured listings on IT hiring sites like Dice and Modis and talked with IT execs about the skills they're looking for in the year to come. Our sources point to a cluster of new job titles created to make IT more agile, more social -- and more tightly intertwined with business.

Our results are not scientific. The six job titles you see here have actually been listed, but we didn't choose them based on frequency of appearance or random sample polling. Instead, we picked them because we think they answer the real needs of businesses that want to prepare for the future. In short, we expect they will pay well, have staying power, and truly influence the organization either now or in the future. When's the last time you heard that about a job in IT?

Hot IT job No. 1: Business architect

The notion that IT is separate from business has faded into antiquity. Upper management recognizes that technology is not just integral to success, but actually drives the way companies pursue their business goals. To help merge technology and business processes, a new breed of enterprise architect -- known as the business architect -- is emerging.

"Business architecture is about making sure the whole business holds together," says Forrester Research analyst Alex Cullen, who researches IT strategy and organizational planning. "It's a role built around business planning, pointing out opportunities to utilize IT more effectively" in sales, customer service, and other key areas.

Unlike the traditional enterprise architect, whose role is to organize technology to meet business goals, the business architect is a member of the business organization, reporting to the CEO and fashioning high-level company strategy with technology in mind. The successful business architect has a deeper knowledge of the company's business model and workflow than the average enterprise architect. Think MBA with an IT focus.

"Business managers want to choose the technology that best meets their needs and to have the freedom to walk away from that technology to move on to the next thing," says Cullen. In a world where execs will one day have the power to provision cloud-based resources for a new business initiative by clicking through a couple of configuration screens, the need for enterprise architects who are glorified implementers will wane. The job of the business architect is to arm managers with the knowledge they need to choose wisely.

In some organizations, enterprise architects with the right experience and disposition may simply take on the business architect role, whether or not they change titles. Nonetheless, says Cullen, "If you want to know about a hot role for 2012, it's definitely business architect."

Hot IT job No. 2: Data scientist

Big data -- that is, the glut of unstructured or semi-structured information generated by Web clickstreams, system logs, and other event-driven activities -- represents a huge opportunity. Buried in that mountain of data may be invaluable nuggets about customer behavior, security risks, potential system failures, and more. But when you're talking terabytes that double in volume every 18 months, where do you start? That's where the data scientist comes in.

On the business side, data scientists can open up new opportunities by uncovering hidden patterns in unstructured data, such as customer behavior or market cycles. On the dev side, a data scientist can use deep data trends to optimize websites for better customer retention. Within the IT department, a

skilled data scientist can spot potential storage cluster failures early or track down security threats through forensic analysis.

"There's now an intellectual consensus in business that the only way to run an enterprise is to use analytics with data scientists to find opportunities," says Norman Nie, CEO of Revolution Analytics, which produces the first commercial application to bring the R data analysis programming language into the business world. Because of the immense opportunity for strategic insight buried in all that data, says Nie, "corporations now have an unlimited demand for people with background in quantitative analysis."

The R programming language is just one tool in the data scientist's toolbox. Others range from business analytics software from established providers like SAS Institute to IBM's new InfoSphere platform to analytics technology acquired in EMC's recent acquisitions of Greenplum and Isilon Systems. Just last May, EMC Greenplum hosted the first ever Data Scientist Summit.

According to Nie, data science jobs will require workers with a spectrum of skills, from entry-level data cleaners to the high-level statisticians, yielding a range of opportunities for newcomers to the field. As the business world gets increasingly social, the demand for people to plumb the depths of all that social networking clickstream data will only increase. The cliché going around is that "data is the new oil." A career in refining that raw material sounds like a good bet.

Hot IT job No. 3: Social media architect

Social Web tools and services are now entering business at every level, from back-office IT communications to top-floor business collaboration, partner-connected workflow, and public-facing customer support. As the complexity of social business grows, companies need specialists to make it all work.

Social media no longer means just Facebook and Twitter. IBM, Jive, and Yammer are now the companies to watch, offering social tools for public and private clouds that redefine the role of social media for business. This creates a demand for IT pros with the specialized knowledge to build secure communities within a business network and between businesses and customers.

"In 2010, we saw the growth of a new middleware layer to protect intellectual property while opening things up with social tools," says IDC analyst Michael Fauscette, who researches social business trends. "You're starting to see that kind of thing because companies want the benefits of the social Web without the risks of putting their business in the hands of [Facebook and Twitter]."

In the enterprise, says Fauscette, social tools need to work together securely while offering transparency to the business. The clickstream data and other user intelligence that these tools produce need to be accessible and searchable inside the business, yet impenetrable from outside the business.

In large companies, a given company's social infrastructure tends to include multiple social platforms. Designing an infrastructure in which all these apps can work together will require IT pros focused explicitly on social business.

Because social business is still in its infancy, the range of emerging job titles varies widely, but at least they've matured beyond the generalized, marketing-centered monikers like "social media strategist" and "social media manager" that first appeared. In our conversations with analysts, leaders at IT job sites, and socially driven companies, we've seen an array of more specialized titles, ranging from director of social business technology to director of enterprise collaboration strategy to, most commonly, social media architect.

What these titles have in common is an emphasis on the technology itself, as distinct from the purely strategic business concentration common to social media titles of the past. These are roles that report under the CIO's org chart and bring practical IT expertise to bear on tangible business functions. Regardless of the precise title, says IDC's Fauscette, "There will be more demand over the next 18 to 24 months or so, as more systems are deployed."

Hot IT job No. 4: Mobile technology expert

"Mobile is the biggest factor changing IT right now," says Stewart Tan, vice president of information risk management and security at Accretive Solutions. "Building mobile apps, architecting mobile strategies, and securing those devices" are the top concerns facing the enterprise today.

Based on the listings showing up on IT employment sites, Tan's words sound almost like an understatement. One of the most common new titles we've run across on IT job sites sounds more like a general cry for help than an actual job listing. In response to the flood of new mobile devices, companies are desperately seeking "mobile technology experts" to bring order to the chaos.

If you have serious IT experience deploying and managing fleets of BlackBerry, Android, and iOS devices, there's ample work ahead. The listings we've reviewed consistently seek people evaluate mobile platforms for enterprise use, research and draft device specifications, and support users and developers within the enterprise.

Hot IT job No. 5: Enterprise mobile developer

While mobile application development has been a fast-growing tech arena for years, IT job sites are seeing a rise in listings for creators of enterprise mobile apps. "Companies are looking for ways to make sense of mobile data, develop apps, and ensure security compliance," says Alice Hill, managing director of IT job site Dice.com.

In some organizations, the programming skills required depend on what's native to the platform: Objective-C for the iPhone, or Java for Android or BlackBerry. But thanks to HTML5, there's also a movement toward mobile Web development that crosses mobile platforms. If you're not already schooled in Objective-C or Java, acquiring deep HTML5 expertise has the dual benefit of a shorter learning curve and greater versatility, though you may still need to learn the quirks of individual mobile platforms.

What distinguishes enterprise dev positions from general mobile dev jobs is their focus on compliance and security, according to Stewart Tan of Accretive Solutions, an executive search firm and consultancy. "Building mobile apps, architecting mobile strategies, and securing those devices" are the top concerns facing the enterprise today.

Hill points to the overflowing demand for mobile app developers on Dice.com, noting that postings for Android developers have now surpassed those for iPhone developers. Nonetheless, listings for BlackBerry developers still abound, reflecting RIM's tenacious ability to hang on to enterprise customers.

Hot IT job No. 6: Cloud architect

Ask IT managers whether they're "in the cloud," and they'll tell you they always have been. To them, "cloud" is just a trendy way of saying "data center." But with business executives and investors now tuned into the cloud concept, demand is growing for IT pros who can lead the charge to deliver on the increased efficiency and agility promised by the private cloud.

"There's so much positive momentum toward cloud integration," says Ron Gula, CEO of Tenable Network Security. "People who can really identify the architecture from a simplicity point of view are going to be in demand."

In our searches of tech job listings, we turned up dozens of calls for cloud architects, with the majority originating from enterprise IT organizations. Most of these listings call for familiar skills and certs associated with networking, virtualization, and SAN design. Without question, the more advanced your understanding of virtualization networking and management, the better your

chances. The ability to explain how your private cloud will increase visibility into IT costs is a big plus.

In addition to establishing and managing a private cloud infrastructure, Gula says cloud architects will increasingly need to be experts in choosing public cloud services. "When you get into the nuances of SLAs, you become less of an IT person and more of a lawyer," says Gula. The ultimate goal is the hybrid cloud, where cloud architects and business management decide which cloud services make the most sense to run internally and which should be farmed out on a pay-per-use basis.

Gula says any business depending on outside companies for significant chunks of cloud infrastructure needs a cloud expert capable of taking on the odious challenge of deciphering the terms of a license agreement to assess the veracity of any service provider's guarantee. These skills will prove critical in risk management, which, according to both Hill of Dice.com and Ripaldi of Modis, is another rapidly growing IT field.

More changes to IT jobs on the horizon. Naturally, these six emerging roles represent just a sampling of what IT pros can expect to see in the coming months. One big trend to watch for is the increasing specificity of IT job functions.

"What we're seeing with these emerging job positions is a splintering of monolithic tech functions into more granular definitions. Enterprise skills used to be all-encompassing, just like an MD was once enough in the medical world. Today tech roles are being sliced more finely," says Dice.com's Hill. "We see it happening already in even relatively new areas like mobile. For tech professionals, it's clear that in order to be recognized for your skills, a solid base is a good start, but specificity is key."

So if you have a broad background and are looking to make a change, a resume tailored to the job you want to pursue -- plus a little supplemental training and experience if you can swing it -- can pay off. Another piece of advice: Get cracking now. Surges in IT hiring like this one don't happen that often.

From: <http://www.infoworld.com/article/2621728/it-careers/the-6-hottest-new-jobs-in-it.html>

Text 2. Interview About Technology: Get In-Depth On IT With Bill Stock

Reviewed by Laurel Gray on Oct 19, 2012

We had the chance to conduct an interview about technology with IT consultant and former online IT student, Bill Stock. Bill now serves as an IT

consultant, working on various projects from web development to database management. Read his story here:

1) What is your current job, and what has been your employment history to date?

Currently I am self-employed as a technology consultant. I provide network engineering and development services to companies. I started in technology when I was still in high school through an internship program. The internship opportunity led to a position within the school district in their technology department. At that time the school district was just implementing a district-wide network and we rolled out all the servers, computers and network equipment to connect all district locations and classrooms. After the school district, I worked for four years with a consulting company providing technology consulting services to businesses, which led me to working as a self-employed consultant. I also took a position for a few years as the Technology Manager for a financial institution in Arizona.

2) How did your education prepare you for your current career? Where did you receive your education?

I received my bachelor's degree from the University of Phoenix. The classes and subject matter at UOP provided a foundation of knowledge in technology and how it can be used in business. Outside of formal education, I pursued certifications from Cisco and Microsoft to provide the depth of knowledge in specific areas. These educational experiences helped me to understand the role of technology and how technology can benefit organizations.

3) What advice would you give students thinking about pursuing a degree in technology?

Students should know that there are many different areas of technology, from telecommunications to database management; and from information security to mobile application development. Prospective students should evaluate the areas of technology that interest them the most and pursue classes related to that focus. I would also let them know that real world experience is very important in technology and to look for internships or entry-level jobs in technology. The internship I took through my school and my first jobs were some of the best learning experiences I could have asked for.

4) What area of technology excites you the most?

I really enjoy seeing where technology benefits businesses and people. Whether it is business IT or software development there is a satisfaction in seeing people use a solution you put together.

5) What characteristics work well with a technology worker?

Technology is constantly evolving and changing and this provides opportunities to constantly learn new and exciting things. This is partially what drew me to the technology field is that there is always something new to learn. I think technology workers should enjoy leaning as technology changes. Additionally I think good problem-solving skills and the ability to come up with new creative solutions are important in technology workers.

6) Have you ever taken any online classes? If so, what was your experience? I took most of my college classes online through University of Phoenix Online. I had a great experience with online classes and I think online learning will continue to become a bigger part of how we learn. At the time I was taking my classes through UOP I was also working full time and would travel around going to different offices and I would have to work different hours. The online classes allowed me to obtain my degree while working where I wouldn't have been able to show up regularly to a classroom.

From: <http://www.besttechnologydegrees.com/interview-about-technology/>

Text 3. Computer and Information Technology Occupations

Computer and information research scientists invent and design new approaches to computing technology and find innovative uses for existing technology. They study and solve complex problems in computing for business, medicine, science, and other fields. Annual pay \$102,190.

Computer network architects design and build data communication networks, including local area networks (LANs), wide area networks (WANs), and intranets. These networks range from a small connection between two offices to a multinational series of globally distributed communications systems. Annual pay \$91,000.

Computer programmers write code to create software programs. They turn the program designs created by software developers and engineers into instructions that a computer can follow. Annual pay \$74,280.

Computer support specialists provide help and advice to people and organizations using computer software or equipment. Some, called computer network support specialists, support information technology (IT) employees within their organization. Others, called computer user support specialists, assist non-IT users who are having computer problems. Annual pay \$48,900.

Computer systems analysts study an organization's current computer systems and procedures and design information systems solutions to help the organization operate more efficiently and effectively. They bring business and information technology (IT) together by understanding the needs and limitations of both. Annual pay \$79,680.

Database administrators (DBAs) use specialized software to store and organize data, such as financial information and customer shipping records. They make sure that data are available to users and are secure from unauthorized access. Annual pay \$77,080.

Information security analysts plan and carry out security measures to protect an organization's computer networks and systems. Their responsibilities are continually expanding as the number of cyberattacks increase. Annual pay \$86,170.

Computer networks are critical parts of almost every organization. Network and computer systems administrators are responsible for the day-to-day operation of these networks. Annual pay \$72,560.

Software developers are the creative minds behind computer programs. Some develop the applications that allow people to do specific tasks on a computer or other device. Others develop the underlying systems that run the devices or control networks. Annual pay \$93,350.

Web developers design and create websites. They are responsible for the look of the site. They are also responsible for the site's technical aspects, such as performance and capacity, which are measures of a website's speed and how much traffic the site can handle. They also may create content for the site. Annual pay \$62,500.

From: <http://www.bls.gov/ooh/computer-and-information-technology/home.htm>.

Unit 12. Communication systems

Text 1. Automatic call distributor

In telephony, an **automatic call distributor (ACD)** or **automated call distribution system**, is a device or system that distributes incoming calls to a specific group of terminals or agents based on the customers selection, customers telephone number, selected incoming line to the system, or time of day the call was processed. It is often part of a computer telephony integration (CTI) system

Routing incoming calls is the task of the ACD system. ACD systems are often found in offices that handle large volumes of incoming phone calls from callers who have no need to talk to a specific person but who require assistance from any of multiple persons (e.g., customer service representatives) at the earliest opportunity.

The system consists of hardware for the terminals and switches, phone lines, and software for the routing strategy. The routing strategy is a rule-based set of instructions that tells the ACD how calls are handled inside the system. Typically this is an algorithm that determines the best available employee or employees to respond to a given incoming call. To help make this match, additional data are solicited and reviewed to find out why the customer is calling. Sometimes the caller's caller ID or ANI is used; more often a simple IVR is used to ascertain the reason for the call.

Originally, the ACD function was internal to the Private Branch Exchange of the company. However, the closed nature of these systems limited their flexibility. A system was then designed to enable common computing devices, such as server PCs, to make routing decisions. For this, generally the PBX would issue information about incoming calls to this external system and receive a direction of the call in response.

An additional function for these external routing applications is to enable CTI. This allows improved efficiency for call center agents by matching incoming phone calls with relevant data on their PC via screen pop.

A common protocol to achieve this is CSTA; however, almost every PBX vendor has its own flavor of CSTA, and CSTA is quite hard to program because of its complex nature. Various vendors have developed intermediate software that hides these complexities and expedites the work of programmers.

Also, these protocols enable call centers consisting of PBXs from multiple vendors to be treated as one virtual contact center. All real-time and historical statistical information can then be shared amongst call center sites.

One of the first large and separate ACDs was a modified 5XB switch used by New York Telephone in the early 1970s to distribute calls among hundreds of 4-1-1 information operators.

- There are multiple choices for distributing incoming calls from a queue.
- Linear Call Distribution – Calls are distributed in order, starting at the beginning each time.
- Circular/Rotary Call Distribution – Calls are distributed in order, starting with the next in order.
- Uniform Call Distribution – Calls are distributed uniformly, starting with the person who has handled the fewest calls.

- Simultaneous Call Distribution – Calls are presented to all available extensions simultaneously.
- Weighted Call Distribution – Calls are distributed according to a configurable weighting, such as differing skill sets within customer service representatives.

From: https://en.wikipedia.org/wiki/Automatic_call_distributor

Text 2. The Importance of Communication in the Modern World

As technologies such as the Internet and cell phones have become more prevalent across the world, global communication has become more important. Cellular phones, social media and global television news have all made important contributions to society as a whole, underscoring the importance of communication in contemporary life.

Business

- As globalization increases worldwide, communication becomes increasingly more important to businesses. A generation ago, businesses needed to mail important documents; now they can simply email them. Employees can use their laptops to work from any location in the world while still maintaining constant contact with their colleagues. Firms can partner with international offices across the planet and work efficiently, all due to their ability to communicate easily and instantly.

Politics

- Politically, communication has become more important than ever. The participants in the 2011 protests across the Middle East relied on websites such as Facebook and Twitter to quickly and efficiently disseminate information about meetings and security situations. This ease in communication allowed messages to spread beyond the ability of governments to suppress them. As a result, protesters in Tunisia and Egypt were able to topple regimes that had more money and military power.

Social

- The ability to use communication technologies to stay in touch with a social circle has greatly expanded. People can text or call friends from anywhere in the world and to anywhere in the world. Technologies such as Internet calling with programs like Skype allow people to keep in touch with their families abroad without expensive long-distance calls. This ability to communicate allows people to be more mobile geographically without sacrificing social connections, giving people a wider range of living options.

Cultural

- Cultural globalization relies on communication to disseminate ideas across the globe, altering the composition of societies across the planet. People in America can use websites such as Youtube to watch Indian Bollywood music videos and see non-American news from organizations such as the BBC or Al-Jazeera. This cultural communication exchange gives people across the globe exposure to other cultural practices and modes of thought.

From:http://www.ehow.com/info_8689255_importance-communication-modern-world.html

Text 3. The Importance of Modern Technology

by Neal Litherland

Modern technology has become so entrenched in the idea of a modern society that the two are nearly inseparable. Developing countries try to get better utilities, more vehicles, faster computers, as well as Internet and cell phone providers because that's what makes a modern society. Modern technology must be implemented in order to accomplish the feats required of a modern society.

Health

One of the biggest benefits of modern technology is that human longevity and health have improved because of its application. As understanding of the body and its functions improves, and as new tools to help heal it (lasers, sonograms, enhanced medication, and nonintrusive surgical tools, just to name a few) are created, life lasts longer. Not only does life extend, but people can live more comfortably, and recover from wounds and diseases that even a half a century ago would have been fatal. In many cases these people live full, productive lives.

Communication

Modern technology has revolutionized how people communicate. Since World War II, telecommunications and mass media have been growing by leaps and bounds. Radio, telephone, satellite communication, cellular technology, wireless Internet ... in the modern day two people can chat via a computer when they're on opposite sides of the planet. Communication has shrunk the world, bringing people from all cultures and backgrounds into contact with each other.

Resources

Modern technology allows resources to be expanded and for previously unused ones to be tapped into. If electricity is the lifeblood of a modern society,

for instance, modern technology allows it to be harnessed in new ways. Coal-fired plants and gas-driven turbines are old, but serviceable. Wind and tidal generators use modern technology to harness forces on a scale that our ancestors would have thought impossible. Modern technology has also provided ways to grow more food, transport more people and make more products for a growing society.

Knowledge

What modern technology really represents is an increase in knowledge and how people can use it. Modern technology is usually the direct result of discovery and experimentation. Technology is defined as the scientific method being used to achieve a commercial or industrial goal. So to create technology, a bigger base of knowledge and understanding must be created from which to draw on. As improvements are made to technology, so too are improvements made to the pool of knowledge.

The Big Picture

Technology is also the application of knowledge, science and tools in ways that accomplish tasks more effectively. A simple look at how technology has become interwoven into modern life can show its importance. Technology allows many businesses to function properly, allows many people to work from home and helps companies around the world communicate. Modern technology builds prosthetic limbs, creates inventive surgeries and grows more food for a rapidly growing population. It creates more efficient vehicles and allows humanity to expand its knowledge even further.

From: http://www.ehow.com/about_5403995_importance-modern-technology.html

Unit 13. Networks

Text 1. Understanding Networking Jobs

If you're planning on entering the field of networking (and this book is designed as a good start for that), it's important to have some understanding of the various networking jobs that you're likely to encounter and what they typically require. Of course, actual job requirements will vary widely between companies and for different established networks. Also, companies may have different entry level opportunities through which you can enter a networking career. That said, the following descriptions are broad overviews of some key jobs.

Network administrators are responsible for the operations of a network or, in larger companies, for the operations of key parts of the network. In a smaller company that has only one network administrator, duties include the following:

- Creating, maintaining, and removing user accounts
- Ensuring that necessary backups are made on a regular basis
- Managing the “keys” to the network, such as the administrative accounts and their passwords
- Managing network security policies
- Adding new networking equipment, such as servers, routers, hubs, and switches, and managing that equipment
- Monitoring the network, its hardware, and its software for potential problems and for utilization levels for planning network upgrades
- Troubleshooting network problems

In larger firms, individual jobs may cover just one or two of the aforementioned bullets. In these cases, the level of expertise in that more narrow set of responsibilities would be expected to be much higher. Network administrators may also be called system administrators, local area network (LAN) administrators, and other variations on that theme. Typically, you should have several years’ experience performing network-related duties with a similar network for this job. Certifications such as the Microsoft Certified Solutions Associate/Expert/Master (MCSA/MCSE/MCSM), one of the appropriate Cisco certifications, or one of the appropriate CompTIA certifications can reduce the amount of experience that an employer will require. Employers usually consider these certifications important because they clearly establish that a candidate meets minimum requirements for the networking system in question.

Network engineers are more deeply involved in the bits and bytes of a network. They are expected to be expert in the network operating systems with which they work, especially in the network’s key hardware, such as its hubs, routers, switches, and so forth. Network engineers are also usually the troubleshooters of last resort, who are brought in to diagnose and fix the most vexing problems that surpass the ability of the network administrator to resolve. Aside from often holding a degree in electrical engineering or computer science, network engineers typically have at least five years’ experience running and troubleshooting complex networks. Also, network engineers typically carry certifications from networking equipment companies, such as Cisco’s well-regarded certification program.

Network architects (sometimes also called network designers) usually work for companies that sell and support networks or for organizations with large networks that are constantly changing and expanding. Essentially, network architects design networks. They need to combine important qualities to be successful. They must know the business requirements that the network needs to meet and have a thorough current understanding of all of the networking products available, as well as how those products interact. Network architects are also important when growing a sophisticated network and helping to ensure that new additions to the network don't cause problems elsewhere in the network.

There are a wide variety of **other network-related jobs**, including some that do not involve working directly with the network, such as the job of database administrator. Organizations employ e-mail administrators, webmasters, web designers, network support technicians, and so on. In fact, a dizzying number of different jobs are available in the networking field. If you've chosen to enter the field of networking, it would make sense to spend time browsing job ads for the various networking jobs and to get a sense of what these different types of jobs require. Once you find one that reflects your interests, you can then analyze what additional skills, classes, or certifications you may need to enter one of those jobs. Many opportunities are available. The important thing is to get started and pursue your objectives.

Text 2. Basic Terminology to Describe Networking Speeds

The business of networking is almost entirely about moving data from one point to another. Accordingly, one of the most important things that you need to understand about any network connection is how much data it can carry. Broadly, this capacity is called *bandwidth*, which is measured by the amount of data that a connection can carry in a given period of time. The most basic measurement of bandwidth is *bits per second*, abbreviated as *bps*. Bandwidth is how many bits the connection can carry within a second. More commonly used are various multiples of this measurement, including thousands of bits per second (Kbps), millions of bits per second (Mbps), or billions of bits per second (Gbps).

A closely related measurement that you will also see bandied about is *hertz*, which is the number of cycles being carried per second. Hertz is abbreviated as *Hz*. Just as with *bps*, it is the multiples of hertz that are talked about the most, including thousands of hertz (KHz, or kilohertz), millions of hertz (MHz, or megahertz), and billions of hertz (GHz, or gigahertz). For

example, a microprocessor running at 2.2 GHz is running at 2.2 billion cycles per second. The electricity in the United States runs at 60 Hz; in Europe, the frequency is 50 Hz. Hertz and bits per second are essentially the same and are sometimes intermixed. For example, Thin Ethernet cable is said to run at 10 MHz and also to carry 10 Mbps of bandwidth.

Text 3. Computer Network Security

Network security consists of the policies adopted to prevent and monitor authorized access, misuse, modification, or denial of a computer network and network-accessible resources. Network security involves the authorization of access to data in a network, which is controlled by the network administrator. Users choose or are assigned an ID and password or other authenticating information that allows them access to information and programs within their authority. Network security covers a variety of computer networks, both public and private, that are used in everyday jobs; conducting transactions and communications among businesses, government agencies and individuals. Networks can be private, such as within a company, and others which might be open to public access. Network security is involved in organizations, enterprises, and other types of institutions. It does as its title explains: It secures the network, as well as protecting and overseeing operations being done. The most common and simple way of protecting a network resource is by assigning it a unique name and a corresponding password.

Security management for networks is different for all kinds of situations. A home or small office may only require basic security while large businesses may require high-maintenance and advanced software and hardware to prevent malicious attacks from hacking and spamming.

Network Security Concept

Network security starts with authenticating, commonly with a username and a password. Since this requires just one detail authenticating the user name - i.e., the password - this is sometimes termed one-factor authentication. With two-factor authentication, something the user 'has' is also used (e.g., a security token or 'dongle', an ATM card, or a mobile phone); and with three-factor authentication, something the user 'is' also used (e.g., a fingerprint or retinal scan).

Once authenticated, a firewall enforces access policies such as what services are allowed to be accessed by the network users. Though effective to prevent unauthorized access, this component may fail to check potentially harmful content such as computer worms or Trojans being transmitted over the

network. Anti-virus software or an intrusion prevention system (IPS) help detect and inhibit the action of such malware. An anomaly-based intrusion detection system may also monitor the network like Wireshark traffic and may be logged for audit purposes and for later high-level analysis.

Communication between two hosts using a network may be encrypted to maintain privacy.

Honeypots, essentially decoy network-accessible resources, may be deployed in a network as surveillance and early-warning tools, as the honeypots are not normally accessed for legitimate purposes. Techniques used by the attackers that attempt to compromise these decoy resources are studied during and after an attack to keep an eye on new exploitation techniques. Such analysis may be used to further tighten security of the actual network being protected by the honeypot. A honeypot can also direct an attacker's attention away from legitimate servers. A honeypot encourages attackers to spend their time and energy on the decoy server while distracting their attention from the data on the real server. Similar to a honeypot, a honeynet is a network set up with intentional vulnerabilities. Its purpose is also to invite attacks so that the attacker's methods can be studied and that information can be used to increase network security. A honeynet typically contains one or more honeypots.

Types of Attacks

Networks are subject to attacks from malicious sources. Attacks can be from two categories: "Passive" when a network intruder intercepts data traveling through the network, and "Active" in which an intruder initiates commands to disrupt the network's normal operation.

Types of attacks include:

- Passive
- Network
- Wiretapping
- Port scanner
- Idle scan
- Active
- Denial-of-service attack
- DNS spoofing
- Man in the middle
- ARP poisoning
- VLAN hopping
- Smurf attack
- Buffer overflow

- Heap overflow
- Format string attack
- SQL injection
- Phishing
- Cross-site scripting
- CSRF
- Cyber-attack

From: https://en.wikipedia.org/wiki/Network_security

Unit 14. Video games

Text 1. The Impact of Video Games

Video games are a unique form of entertainment because they encourage players to become a part of the game's script. Although video games have been available for more than 30 years, today's sophisticated video games require players to pay constant attention to the game. Players engage on deeper level—physically and emotionally—than people do when watching a movie or TV.

Impact of Video Games on Adolescents

Today 97% of teens in the U.S. play video games, and sales of games are growing. The domestic video game industry brings in nearly \$12 billion a year. This popular form of media has both positive and negative effects on children.

The most widely acknowledged "positive" impact is that video games may help children improve their manual dexterity and computer literacy. Ever-improving technology also provides players with better graphics that give a more "realistic" virtual playing experience.

This quality makes the video game industry a powerful force in many adolescent lives. When a video game is “pro-social” and rewards players for building a town or helping others, children tend to show more empathy and helpfulness in their daily lives, according to a 2014 study by Douglas Gentile, Ph.D., associate professor of psychology at Iowa State University.

However, studies also show that video games with violent content are linked to more aggressive behavior in teens. This is a concern because most of the popular video games contain violence.

Part of the increase in aggressive behavior is linked to the amount of time children are allowed to play video games—and daily media use by children is increasing significantly.

A 2010 survey by the Kaiser Family Foundation found that youth age 8 to 18 devote seven-and-a-half hours a day to entertainment media. Less than half of the kids surveyed said their parents have rules about the shows and games they can watch or play.

In interactive video games, players are encouraged to identify with and role play their favorite characters. Players move up in game levels as their character masters skill and wins. In a video game about stock cars, winning may mean winning the race. But in many of the popular games, players move up levels by winning fights or battles. Players directly benefit from engaging in acts of violence.

Gentile & Anderson (2003) state that playing video games may increase aggressive behavior because violent acts are continually repeated throughout the video game. This method of repetition has long been considered an effective teaching method in reinforcing learning patterns.

Research has also found that, controlling for prior aggression, children who played more violent video games during the beginning of the school year showed more aggression than other children later in the school year. (Pediatrics, Nov. 2008)

Because of the popularity of video games, completely eliminating them from your child's life might be difficult. However, you can decrease the negative impact that they have on your child. Here are a few tips:

- Know the rating of the video games your child plays (see below).
- Do not install video game equipment in your child's bedroom.
- Set limits on how often and how long your child is allowed to play video games.
- Monitor all of your child's media consumption—video games, television, movies, and the Internet.
- Supervise your child's Internet use - there are now many "video games" available for playing online.
- Take the time to discuss with your children the games they are playing or other media they are watching. Ask your children how they feel about what they observe in these video games, television programs or movies. This is an opportunity to share your feelings and grow closer with your child.
- Share with other parents information about certain games or ideas for helping each other in parenting.

From: <http://www.pamf.org/parenting-teens/general/media-web/videogames.html>

Text 2. Educational video games

An **educational video game** is a video game that provides educational value to the player. Edutainment describes an intentional merger of video games and educational software into a single product (and could therefore also comprise more serious titles sometimes described under children's learning software). In the narrower sense used here, the term describes educational software which is primarily about entertainment, but tends to educate as well and sells itself partly under the educational umbrella. Normally software of this kind is not structured towards school curricula and does not involve educational advisors.

There can be also defined strategy war games that include historical references, like the *Total War* franchise or the *Age of Empires* trilogy and an in-game encyclopaedia like *Civilization*. These games often integrate education without being explicitly educational.

These are games which were originally developed for adults or older children and which have potential learning implications. For the most part, these games provide simulations of different kinds of human activities, allowing players to explore a variety of social, historical and economic processes.

Examples:

- City-building games such as the *SimCity* series and *Caesar* (1993–2006) invite players to explore the social, practical and economic processes involved in city management;
- Empire-building games such as the *Civilization* series (1991–2013) and the *Europa Universalis* series (2000–2014) help players to learn about history and its political, economic and military aspects;
- Railroad management games such as *Railroad Tycoon* (1990–2003) and *Rails Across America* (2001) illuminate the history, engineering and economics of railroad management.
- Geography games such as *PlaceSpotting* (2008–2009) help players to find locations on earth according to some hints.

The games have been enthusiastically received in some educational circles and are mentioned into academic literature.[1].

A new category was recently started by *Bot Colony* (2013), that can be used to practice English dialogue by conversing with intelligent robots as part of an adventure game

When someone plays a video game, they are challenged mentally with a problem. Through playing they will discover many different ways to solve problems they will come across. Often, players will find that they require these

skills later on in the game as well, and thus are required to maintain and hone their skills for later use. Video games typically provide instant rewards for succeeding in solving a problem. This is in contrast to classroom environments where students wait for graded tests and are only rewarded occasionally with report cards to report their progress. Video games can instantly tell a student of failure or success and often this can be used to develop skills along the way. Thus, video games can be used as an alternative to a classroom setting, while still maintaining levels of difficulty that foster learning in a gamer.

If a game is successful, gamers will take the time to develop knowledge about all aspects of the game, and thus the game will be played for a long time with great attention to it. This is the main goal of the developers, to create a game that will capture the attention of the player in such a way that he or she will want to keep playing.

Barriers to the use of games

Many teachers have reservations about using video games. One study^[8] asked teachers who had some experience using games in class why they didn't do it more often. Six general categories of factors were identified as problem areas:

- **Inflexibility of curriculum:** Teachers find it difficult to integrate games with the already-set curriculum present in classrooms. It can be difficult to locate a game that is educational as well as fun. And many teachers have no experience in using games to teach.
- **Psychological issues:** Gaming can promote student addiction as well as physical problems. Students may also lose their desire to learn in the traditional setting. It can also remove teacher control and result in "excessive competition."
- **Students' lack of readiness:** Students have varying levels of skill and computer literacy, which may be affected by their socioeconomic status. It takes time to teach them the rules of games, and games are harder for them to understand than traditional audiovisuals.
- **Lack of supporting materials:** Teachers do not have access to supporting text or work for students to do alongside games.
- **Fixed class schedules:** Teachers have time constraints and their school may not allow them to use games.
- **Limited budgets:** Computer equipment, software, and fast Internet connections are expensive and difficult for teachers to obtain.

Some teachers were more concerned about some problems than others. Male teachers were less concerned about limited budgets, fixed class hours, and

the lack of supporting materials than were female teachers. Inexperienced teachers were more worried about fixed class schedule.

From: https://en.wikipedia.org/wiki/Video_games_in_education

Text 3. Can Video Games Be Used in Health Care?

by Richard N. Landers

There are few topics so hotly debated on the Internet as the value of video games. Are they the next generation's artistic advance, as film was for the last, or are they a blight that makes children overly aggressive and dangerous?

This is certainly one of the biggest weaknesses in the current (small) research literature in psychology. Much gaming research de-emphasizes play (i.e. *fun*), which takes away much of its value – entertainment as a way to increase motivation to learn. Edutainment lacking play is not edutainment – it's just education, and should be treated as such.

Kato continues by describing several interesting applications of video games in health care studied already. Note that I use the word “developed” to indicate that the study was developed by researchers (in contrast to commercially available games):

1. Video games have a positive effect on side effects associated with cancer treatment, including nausea, vomiting, anxiety, and pain associated with chemo (which started with research on the Atari 800 XL!).

2. Video games decreased anxiety of children about to receive general anesthesia – as effectively as medication.

3. Video games can be used in physical therapy to restore hand-eye coordination and muscle control (and are much more interesting than traditional physical therapy). One study even used wheelchair maneuvers to race in *Need for Speed II* and *Power Boat Racer*!

4. A video game called *SnowWorld* was developed and used successfully to reduce self-reported pain in people with chronic pain from burns.

5. A video game called *Packy and Marlon* was developed and used successfully to teach children how to manage their insulin levels.

6. Video games called *Brokie the Brontosaurus* and *SpiroGame* were developed and used successfully to teach children about asthma and control their breathing.

7. Several video games have been developed to better help children deal with voiding dysfunction (urinating or defecating when not otherwise desired, often triggered by irritable bowel syndrome).

8. A video game called *Re-Mission* was developed and used successfully to increase cancer treatment compliance in adolescents (taking their proscribed medications correctly).

9. A number of studies have linked surgical skill with video game use, and though most of this research is correlational, there is one 5-week controlled experiment that showed playing *Half-Life* improved surgical skill on a simulator.

10. A video game called the *Oncology Game* was developed and used successfully to increase oncology patient management knowledge in medical students.

11. A video game of a board game was developed and used successfully to increase breast problem management skills in medical students.

12. Video game called *Burn Center* and *Pulse!!* were developed to simulate “mass casualty disaster scenario and the National Naval Medical Center.

So overall – I was pleasantly surprised to find quite a lot of research here! And I was especially pleased to find that a fair amount was used for training adults (medical students and surgeons). Apparently video game research is alive and well, at least in this domain. The medical domain is much more skill-based than most others, so this makes sense to me. If anyone could use video games for good, it would be medicine. And after this read, I’m certainly excited to see what’s next!

From: <http://neoacademic.com/2010/10/04/can-video-games-be-used-in-health-care-vg-series-part-510/>

Unit 15. Newest technologies

Text 1. Hot New Technologies That Will Change Everything

by *Christopher Null*, PCWorld

The Next Big thing? The memristor, a microscopic component that can "remember" electrical states even when turned off. It's expected to be far cheaper and faster than flash storage. A theoretical concept since 1971, it has now been built in labs and is already starting to revolutionize everything we know about computing, possibly making flash memory, RAM, and even hard drives obsolete within a decade.

Since the dawn of electronics, we've had only three types of circuit components--resistors, inductors, and capacitors. But in 1971, UC Berkeley

researcher Leon Chua theorized the possibility of a fourth type of component, one that would be able to measure the flow of electric current: the memristor. Now, just 37 years later, Hewlett-Packard has built one.

What is it? As its name implies, the memristor can "remember" how much current has passed through it. And by alternating the amount of current that passes through it, a memristor can also become a one-element circuit component with unique properties. Most notably, it can save its electronic state even when the current is turned off, making it a great candidate to replace today's flash memory.

Memristors will theoretically be cheaper and far faster than flash memory, and allow far greater memory densities. They could also replace RAM chips as we know them, so that, after you turn off your computer, it will remember exactly what it was doing when you turn it back on, and return to work instantly. This lowering of cost and consolidating of components may lead to affordable, solid-state computers that fit in your pocket and run many times faster than today's PCs.

Someday the memristor could spawn a whole new type of computer, thanks to its ability to remember a range of electrical states rather than the simplistic "on" and "off" states that today's digital processors recognize. By working with a dynamic range of data states in an analog mode, memristor-based computers could be capable of far more complex tasks than just shuttling ones and zeroes around.

32-Core CPUs From Intel and AMD

If your CPU has only a single core, it's officially a dinosaur. In fact, quad-core computing is now commonplace; you can even get laptop computers with four cores today. But we're really just at the beginning of the core wars: Leadership in the CPU market will soon be decided by who has the most cores, not who has the fastest clock speed.

What is it? With the gigahertz race largely abandoned, both AMD and Intel are trying to pack more cores onto a die in order to continue to improve processing power and aid with multitasking operations. Miniaturizing chips further will be key to fitting these cores and other components into a limited space. Intel will roll out 32-nanometer processors (down from today's 45nm chips) in 2009.

Nehalem and Swift Chips Spell the End of Stand-Alone Graphics Boards

When AMD purchased graphics card maker ATI, most industry observers assumed that the combined company would start working on a CPU-GPU fusion. That work is further along than you may think.

What is it? While GPUs get tons of attention, discrete graphics boards are a comparative rarity among PC owners, as 75 percent of laptop users stick with good old integrated graphics, according to Mercury Research. Among the reasons: the extra cost of a discrete graphics card, the hassle of installing one, and its drain on the battery. Putting graphics functions right on the CPU eliminates all three issues.

Chip makers expect the performance of such on-die GPUs to fall somewhere between that of today's integrated graphics and stand-alone graphics boards--but eventually, experts believe, their performance could catch up and make discrete graphics obsolete. One potential idea is to devote, say, 4 cores in a 16-core CPU to graphics processing, which could make for blistering gaming experiences.

Wireless Power Transmission

Wireless power transmission has been a dream since the days when Nikola Tesla imagined a world studded with enormous Tesla coils. But aside from advances in recharging electric toothbrushes, wireless power has so far failed to make significant inroads into consumer-level gear.

What is it? This summer, Intel researchers demonstrated a method--based on MIT research--for throwing electricity a distance of a few feet, without wires and without any dangers to bystanders (well, none that they know about yet). Intel calls the technology a "wireless resonant energy link," and it works by sending a specific, 10-MHz signal through a coil of wire; a similar, nearby coil of wire resonates in tune with the frequency, causing electrons to flow through that coil too. Though the design is primitive, it can light up a 60-watt bulb with 70 percent efficiency.

64-Bit Computing Allows for More RAM

In 1986, Intel introduced its first 32-bit CPU. It wasn't until 1993 that the first fully 32-bit Windows OS--Windows NT 3.1--followed, officially ending the 16-bit era. Now 64-bit processors have become the norm in desktops and notebooks, though Microsoft still won't commit to an all-64-bit Windows. But it can't live in the 32-bit world forever.

What is it? 64-bit versions of Windows have been around since Windows XP, and 64-bit CPUs have been with us even longer. In fact, virtually every computer sold today has a 64-bit processor under the hood. At some point Microsoft will have to jettison 32-bit altogether, as it did with 16-bit when it launched Windows NT, if it wants to induce consumers (and third-party hardware and software developers) to upgrade. That isn't likely with Windows 7: The upcoming OS is already being demoed in 32-bit and 64-bit versions. But limitations in 32-bit's addressing structure will eventually force everyone's

hand; it's already a problem for 32-bit Vista users, who have found that the OS won't access more than about 3GB of RAM because it simply doesn't have the bits to access additional memory.

Google's Desktop OS

In case you haven't noticed, Google now has its well-funded mitts on just about every aspect of computing. From Web browsers to cell phones, soon you'll be able to spend all day in the Googleverse and never have to leave. Will Google make the jump to building its own PC operating system next?

What is it? It's everything, or so it seems. Google Checkout provides an alternative to PayPal. Street View is well on its way to taking a picture of every house on every street in the United States. And the fun is just starting: Google's early-beta Chrome browser earned a 1 percent market share in the first 24 hours of its existence. Android, Google's cell phone operating system, is hitting handsets as you read this, becoming the first credible challenger to the iPhone among sophisticated customers.

Gesture-Based Remote Control

We love our mice, really we do. Sometimes, however, such as when we're sitting on the couch watching a DVD on a laptop, or when we're working across the room from an MP3-playing PC, it just isn't convenient to drag a hockey puck and click on what we want. Attempts to replace the venerable mouse--whether with voice recognition or brain-wave scanners--have invariably failed. But an alternative is emerging.

What is it? Compared with the intricacies of voice recognition, gesture recognition is a fairly simple idea that is only now making its way into consumer electronics. The idea is to employ a camera (such as a laptop's Webcam) to watch the user and react to the person's hand signals. Holding your palm out flat would indicate "stop," for example, if you're playing a movie or a song. And waving a fist around in the air could double as a pointing system: You would just move your fist to the right to move the pointer right, and so on.

Curtains for DRM

Petrified of piracy, Hollywood has long relied on technical means to keep copies of its output from making the rounds on peer-to-peer networks. It hasn't worked: Tools to bypass DRM on just about any kind of media are readily available, and feature films often hit BitTorrent even before they appear in theaters. Unfortunately for law-abiding citizens, DRM is less a deterrent to piracy than a nuisance that gets in the way of enjoying legally obtained content on more than one device.

What is it? It's not what it is, it's what it isn't--axing DRM means no more schemes to prevent you from moving audio or video from one form of media to

another. The most ardent DRM critics dream of a day when you'll be able to take a DVD, pop it in a computer, and end up with a compressed video file that will play on any device in your arsenal. Better yet, you won't need that DVD at all: You'll be able to pay a few bucks for an unprotected, downloadable version of the movie that you can redownload any time you wish.

Cell Phones Are the New Paper

Log in to your airline's Web site. Check in. Print out your boarding pass. Hope you don't lose it. Hand the crumpled pass to a TSA security agent and pray you don't get pulled aside for a pat-down search. When you're ready to fly home, wait in line at the airport because you lacked access to a printer in your hotel room. Can't we come up with a better way?

What is it? The idea of the paperless office has been with us since Bill Gates was in short pants, but no matter how sophisticated your OS or your use of digital files in lieu of printouts might be, they're of no help once you leave your desk. People need printouts of maps, receipts, and instructions when a computer just isn't convenient. PDAs failed to fill that need, so coming to the rescue are their replacements: cell phones.

Applications to eliminate the need for a printout in nearly any situation are flooding the market. Cellfire offers mobile coupons you can pull up on your phone and show to a clerk; Tickets.com now makes digital concert passes available via cell phone through its Tickets@Phone service. The final frontier, though, remains the airline boarding pass, which has resisted this next paperless step since the advent of Web-based check-in.

From: <http://www.pcworld.com/article/152683/tech.html>

Text 2. Fitter, healthier, more efficient?

Connected and wearable devices such as the Fitbit or Intel's Basis Peak feature sophisticated apps that could potentially succeed where conventional health campaigns have failed.

They say prevention is better than cure, but despite greater awareness of what makes a healthy lifestyle, prevention of serious illness remains hard to achieve and we are still largely reliant on cures to keep us healthy.

The UK Government has spent millions on awareness campaigns to get us to drink less, exercise more and eat better in an effort to reduce the load on the National Health Service. Yet rates of cancer, heart disease and other serious diseases continue to rise. There is concern that the current warnings are falling on deaf ears and that a new approach is required. Fortunately, an unexpected opportunity to change the public's way of thinking has arisen in the last few years.

The advent of connected and wearable devices such as the **Fitbit** or **Intel's Basis Peak** that feature sophisticated apps that can monitor your heart and exercise routines could potentially succeed where conventional health campaigns have failed.

These devices and apps are making diet, exercise and health monitoring fun – almost cool. It appears that many people like being able to check their heart rate, see how many miles they have run or how well they slept the night before. They talk about and share the results. And slowly they start to change their behaviour for the better.

Perhaps more importantly however, the data that these devices and apps generate could be used to reduce disease in the wider population, so that those without access to this kind of smart technology can also benefit. The challenge is harnessing the data.

This small part of the growing **Internet of Things (IoT)** phenomenon could have a huge social impact if, with consumer consent, developers, health organisations and the government can find a way of using the data wearable devices collect for preventative healthcare. By analysing the data of thousands of individuals gathered over a long period of time, medical professionals could be able to determine the early signs of conditions and treat them, or even prevent them before they occur.

The good news is there have been some tentative steps to harness the power of IoT to improve the health of the nation. The UK government recently called upon start-ups and entrepreneurs to sign up to a funding contest to find “the next big technology idea” in digital health.

We know that technology has already benefitted the NHS in some ways. For example, we are beginning to see a greater use of digital medical records, digitised self-sign-ins and electronic referral systems. However, there is still a long way to go and it is fair to say it's not yet a revolution.

As you stare at your smartphone patiently waiting to see the doctor you may think that an IoT enabled future for the NHS is fanciful. But the growing wearable movement, and that smartphone in your hand that says so much about you, is a reminder of the potential of the IoT for better, more targeted healthcare.

From: <http://www.techworld.com/wearables/fitter-healthier-more-efficient-3627507/>

Text 3. The Future of Facial Recognition Technology (FRT) in Law Enforcement

The growing digitisation of police forces around the world has resulted in an increased use of new technologies. The deployment of Facial Recognition Technology (FRT) in police forces all over the globe is in its very early stages as there are several technological, social, and legislative issues to contend with. This article takes a look at facial recognition technology in the United Kingdom's security sector before commenting on the wider global implications.

Together with society in general, the security industry is also becoming increasingly digitised. The law enforcement segment continues to evolve as Big Data innovations offer potential step-change benefits to the way security agencies and police forces operate. Urbanisation and the concept of Safe Cities, the increasing use of smart devices, demand for more mobility, need for collaboration, and the ability to "do more with less" are all key factors driving the adoption of new technologies in this segment. Wearable security devices such as body-worn cameras are starting to gain traction in the law enforcement segment, while new analytical software is helping law enforcement agencies gain a better understanding of their operating environment. One key piece of this growing drive for improved situational awareness is the use of Facial Recognition Technology (FRT). As part of a significant security research programme, Frost & Sullivan has engaged with end users in the security industry and police forces in the United Kingdom to assess the market penetration and enduser adoption of FRT.

The adoption of FRT by police forces in the United Kingdom is driven by various end-user perception factors linked to cost benefits and influenced by budget availability and political intentions. However, FRT adoption is also deeply affected by external socio-political pressures—principally those concerning legal constraints and privacy issues. It is important to contextualise technology adoption within the macro-environment, especially in terms of socio-political perception and legality in the case of FRT adoption in the law enforcement sector, as these socio-political forces will continue to shape the future agenda for FRT development. It is also essential to assess the current state of FRT adoption and the reality of the outcomes that FRT delivers to end users. This will help increase the understanding of what developments are needed in the next few years to help police forces overcome the challenges associated with adopting FRT technology. Finally, it is imperative to look at possible future developments, which will provide an indication of where the FRT market is headed.

From: <http://finance.yahoo.com/news/future-facial-recognition-technology-frt-194800352.html>

Text 4. Artists are putting an end to forgery by signing their work with synthetic DNA

The production of synthetic DNA is already being pioneered to store massive amounts of data in incredibly small units, but what about tiny amounts of incredibly valuable, unique data? In a new application aimed at the art world, synthetic DNA is being used to prevent forgeries and maintain artist legitimacy in response to the increasing thievery occurring in the international art community. As forgers become even more cunning in developing untraceable methods of art replication, artists of the original pieces are willing to place a high price on high-tech authentication processes. A technological solution that employs synthetic DNA in addition to an artist's unique signatures is currently in development at the Global Center for Innovation at the State University of New York at Albany (GCI), and has received \$2 million in funding from art insurance specialists at the ARIS Title Insurance Corporation. **Related:** Apple may soon collect your DNA as part of a new ResearchKit program The GCI was already pioneering technologies in bioengineering, encryption, and nanotechnology when it set out to conquer artist authentication with synthetic DNA two years ago. The synthetic DNA had to be nearly invisible so that it didn't disrupt the artwork, and also had to be durable enough to withstand environmental factors over prolonged periods of time. And while developing the technology itself proved challenging, researchers at the GCI were also charged with creating a solution that would please artists who might not be inclined to add tiny tech markers to their masterpieces. Tampering was also a concern for the research team, since many more apparent applications of synthetic DNA would be too vulnerable to tech-savvy forgers or art "hackers" once the technology was inlaid in a painting or other artwork. Implanting a microscopic sample of the artist's personal DNA, for example, would present immense safety and privacy issues for the individual artist and would be far too easily stolen or replicated. Synthetic DNA used for artist authentication is bioengineered to be unique to each work of art, or, in theory, any item that merits high-tech verification. Art industry professionals would be equipped with scanners to access a database of information tied to each synthetic DNA marker, verifying the legitimacy of a piece and its owner history, and even assuring new buyers that the piece wasn't stolen or tampered with in any way throughout its history. "We hope there will be financial benefits from creating

the intellectual property and the process becomes a gold standard in the industry,” Robert R. Jones, president of the State University of New York, Albany, told the New York Times. Artists and art owners will be able to tag art pieces with those specific DNA codes without disrupting or devaluing the work in any way. The GCI team predicts that DNA tags would cost the artist about \$150 each, a price that they expect artists will be willing to pay in order to bring authenticity and assurance back into the industry side of the art world. The synthetic DNA penetrates the art at a molecular level, so its application or removal won’t impact the work in any way.

From:<http://sports.yahoo.com/photos/production-synthetic-dna-already-being-photo-193848423.html>

Unit 16. Future computers

Text 1. Molecular computers

Molecular computing is a generic term for any computational scheme which uses individual atoms or molecules as a means of solving computational problems. Molecular computing is most frequently associated with DNA computing, because that has made the most progress, but it can also refer to quantum computing or molecular logic gates. All forms of molecular computing are currently in their infancy, but in the long run are likely to replace traditional silicon computers, which suffer barriers to higher levels of performance.

A single kilogram of carbon contains 5×10^{25} atoms. Imagine if we could use only 100 atoms to store a single bit or perform a computational operation. Using massive parallelism, a molecular computing weighing just a kilogram could process more than 10^{27} operations per second, more than a billion times faster than today’s best supercomputer, which operates at about 10^{17} operations per second. With so much greater computational power, we could achieve feats of calculation and simulation unimaginable to us today.

Different proposals for molecular computers vary in the principles of their operation. In DNA computing, DNA serves as the software whereas enzymes serve as the hardware. Custom-synthesized DNA strands are combined with enzymes in a test tube, and depending on the length of the resulting output strand, a solution can be derived. DNA computation is extremely powerful in its potential, but suffers from major drawbacks. DNA computation is non-universal, meaning that there are problems it cannot, even in principle, solve. It can only return yes-or-no answers to computational problems. In 2002,

researchers in Israel created a DNA computer which could perform 330 trillion operations per second, more than 100,000 times faster than the speed of the fastest PC at the time.

Another proposal for molecular computing is quantum computing. Quantum computing takes advantage of quantum effects to perform computation, and the details are complicated. Quantum computing depends upon supercooled atoms locked in entangled states with one another. A major challenge is that as the number of computational elements (qubits) increases, it becomes progressively more difficult to insulate the quantum computer from matter on the outside, causing it to decohere, eliminating quantum effects and restoring the computer to a classical state. This ruins the calculation. Quantum computing may yet be developed into practical applications, but many physicists and computer scientists remain skeptical.

An even more advanced molecular computer would involve nanoscale logic gates or nanoelectronic components conducting processing in a more conventional, universal, and controlled manner. Unfortunately, we currently lack the manufacturing capability necessary to fabricate such a computer. Nanoscale robotics capable of placing each atom in the desired configuration would be necessary to realize this type of molecular computer. Preliminary efforts to develop this type of robotics are underway, but a major breakthrough could take decades.

From: http://nanotech.academic.ru/903/molecular_computer

Text 2. How will you make use of computer or internet in the future?

Humans are generally unable to predict the future, but it is probably safe to assume that

a) Computerized equipment will become smaller, more powerful, and more closely embedded into everyday devices. Recent design studies show glasses and table tops with integrated computers, for example.

b) Computerized equipment will become increasingly connected through networking technologies, and linked to the Internet in a suitable form. This will increasingly include devices not commonly "connected" today. Design studies included refrigerators which display a list of content and monitor use-by dates, exposing that data through built-in web servers. Domestic air conditioning units or central heating and boiler equipment are other examples for such equipment.

c) Connected devices will interact not just with the human, but also with each other. For example, in order to shape the electric load profile (which can affect the cost of electricity), larger local consumers of electricity can negotiate

use of electric power. In this example, the dish washer and the washing machine can negotiate such that only one enables the water heater at any given time, thus reducing peak electricity demand.

d) It will be increasingly difficult to understand and control in which way data is used, stored, or made available to others. This will lead to a surge of technology focused on privacy (e.g. encryption technologies) in an attempt to prevent misuse. It is plausible that opposition will increase at the same time, causing a growing number of people to withdraw or actively limit their exposure to the digital world.

From:http://www.answers.com/Q/How_will_you_make_use_of_computer_or_internet_in_the_future

Text 3. How Quantum Computers Work

by Kevin Bonsor and Jonathan Strickland

The massive amount of processing power generated by computer manufacturers has not yet been able to quench our thirst for speed and computing capacity. In 1947, American computer engineer **Howard Aiken** said that just six electronic digital computers would satisfy the computing needs of the United States. Others have made similar errant predictions about the amount of computing power that would support our growing technological needs. Of course, Aiken didn't count on the large amounts of data generated by scientific research, the proliferation of personal computers or the emergence of the Internet, which have only fueled our need for more, more and more computing power.

Will we ever have the amount of computing power we need or want? If, as **Moore's Law** states, the number of transistors on a microprocessor continues to double every 18 months, the year 2020 or 2030 will find the circuits on a microprocessor measured on an atomic scale. And the logical next step will be to create **quantum computers**, which will harness the power of atoms and molecules to perform memory and processing tasks. Quantum computers have the potential to perform certain calculations significantly faster than any silicon-based computer.

Scientists have already built basic quantum computers that can perform certain calculations; but a practical quantum computer is still years away. In this article, you'll learn what a quantum computer is and just what it'll be used for in the next era of computing.

You don't have to go back too far to find the origins of quantum computing. While computers have been around for the majority of the 20th

century, quantum computing was first theorized less than 30 years ago, by a physicist at the Argonne National Laboratory. **Paul Benioff** is credited with first applying quantum theory to computers in 1981. Benioff theorized about creating a quantum Turing machine. Most digital computers, like the one you are using to read this article, are based on the **Turing Theory**. Learn what this is in the next section.

Defining the Quantum Computer

The Turing machine, developed by **Alan Turing** in the 1930s, is a theoretical device that consists of tape of unlimited length that is divided into little squares. Each square can either hold a symbol (1 or 0) or be left blank. A read-write device reads these symbols and blanks, which gives the machine its instructions to perform a certain program. Does this sound familiar? Well, in a **quantum** Turing machine, the difference is that the tape exists in a quantum state, as does the read-write head. This means that the symbols on the tape can be either 0 or 1 or a **superposition** of 0 and 1; in other words the symbols are both 0 and 1 (and all points in between) at the same time. While a normal Turing machine can only perform one calculation at a time, a quantum Turing machine can perform many calculations at once.

Today's computers, like a Turing machine, work by manipulating bits that exist in one of two states: a 0 or a 1. Quantum computers aren't limited to two states; they encode information as quantum bits, or **qubits**, which can exist in superposition. Qubits represent atoms, ions, photons or electrons and their respective control devices that are working together to act as computer memory and a processor. Because a quantum computer can contain these multiple states simultaneously, it has the potential to be millions of times more powerful than today's most powerful supercomputers.

This superposition of qubits is what gives quantum computers their inherent **parallelism**. According to physicist **David Deutsch**, this parallelism allows a quantum computer to work on a million computations at once, while your desktop PC works on one. A 30-qubit quantum computer would equal the processing power of a conventional computer that could run at 10 **teraflops** (trillions of floating-point operations per second). Today's typical desktop computers run at speeds measured in gigaflops (billions of floating-point operations per second).

Quantum computers also utilize another aspect of quantum mechanics known as **entanglement**. One problem with the idea of quantum computers is that if you try to look at the subatomic particles, you could bump them, and thereby change their value. If you look at a qubit in superposition to determine its value, the qubit will assume the value of either 0 or 1, but not both

(effectively turning your spiffy quantum computer into a mundane digital computer). To make a practical quantum computer, scientists have to devise ways of making measurements indirectly to preserve the system's integrity. Entanglement provides a potential answer. In quantum physics, if you apply an outside force to two atoms, it can cause them to become entangled, and the second atom can take on the properties of the first atom. So if left alone, an atom will spin in all directions. The instant it is disturbed it chooses one spin, or one value; and at the same time, the second entangled atom will choose an opposite spin, or value. This allows scientists to know the value of the qubits without actually looking at them.

<http://computer.howstuffworks.com/quantum-computer2.htm>

Text 4. Today's Quantum Computers

Quantum computers could one day replace silicon chips, just like the transistor once replaced the vacuum tube. But for now, the technology required to develop such a quantum computer is beyond our reach. Most research in quantum computing is still very theoretical.

The most advanced quantum computers have not gone beyond manipulating more than 16 qubits, meaning that they are a far cry from practical application. However, the potential remains that quantum computers one day could perform, quickly and easily, calculations that are incredibly time-consuming on conventional computers. Several key advancements have been made in quantum computing in the last few years. Let's look at a few of the quantum computers that have been developed.

1998

Los Alamos and MIT researchers managed to spread a single qubit across three nuclear spins in each molecule of a liquid solution of **alanine** (an amino acid used to analyze quantum state decay) or **trichloroethylene** (a chlorinated hydrocarbon used for quantum error correction) molecules. Spreading out the qubit made it harder to corrupt, allowing researchers to use entanglement to study interactions between states as an indirect method for analyzing the quantum information.

2000. In March, scientists at Los Alamos National Laboratory announced the development of a 7-qubit quantum computer within a single drop of liquid. The quantum computer uses nuclear magnetic resonance (NMR) to manipulate particles in the atomic nuclei of molecules of trans-crotonic acid, a simple fluid consisting of molecules made up of six hydrogen and four carbon atoms. The NMR is used to apply electromagnetic pulses, which force the particles to line

up. These particles in positions parallel or counter to the magnetic field allow the quantum computer to mimic the information-encoding of bits in digital computers.

Researchers at IBM-Almaden Research Center developed what they claimed was the most advanced quantum computer to date in August. The 5-qubit quantum computer was designed to allow the nuclei of five fluorine atoms to interact with each other as qubits, be programmed by radio frequency pulses and be detected by NMR instruments similar to those used in hospitals (see How Magnetic Resonance Imaging Works for details). Led by Dr. Isaac Chuang, the IBM team was able to solve in one step a mathematical problem that would take conventional computers repeated cycles. The problem, called **order-finding**, involves finding the period of a particular function, a typical aspect of many mathematical problems involved in cryptography.

2001. Scientists from IBM and Stanford University successfully demonstrated **Shor's Algorithm** on a quantum computer. Shor's Algorithm is a method for finding the prime factors of numbers (which plays an intrinsic role in **cryptography**). They used a 7-qubit computer to find the factors of 15. The computer correctly deduced that the prime factors were 3 and 5.

2005. The Institute of Quantum Optics and Quantum Information at the University of Innsbruck announced that scientists had created the first **qubyte**, or series of 8 qubits, using **ion traps**.

2006. Scientists in Waterloo and Massachusetts devised methods for quantum control on a 12-qubit system. Quantum control becomes more complex as systems employ more qubits.

2007. Canadian startup company D-Wave demonstrated a 16-qubit quantum computer. The computer solved a sudoku puzzle and other pattern matching problems. The company claims it will produce practical systems by 2008. Skeptics believe practical quantum computers are still decades away, that the system D-Wave has created isn't scaleable, and that many of the claims on D-Wave's Web site are simply impossible (or at least impossible to know for certain given our understanding of quantum mechanics).

If functional quantum computers can be built, they will be valuable in factoring large numbers, and therefore extremely useful for decoding and encoding secret information. If one were to be built today, no information on the Internet would be safe. Our current methods of encryption are simple compared to the complicated methods possible in quantum computers. Quantum computers could also be used to search large databases in a fraction of the time that it would take a conventional computer. Other applications could

include using quantum computers to study quantum mechanics, or even to design other quantum computers.

But quantum computing is still in its early stages of development, and many computer scientists believe the technology needed to create a practical quantum computer is years away. Quantum computers must have at least several dozen qubits to be able to solve real-world problems, and thus serve as a viable computing method.

From: <http://computer.howstuffworks.com/quantum-computer3.htm>

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