ПРЕДИСЛОВИЕ

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Целью данного учебно-методического пособия является развитие навыков чтения оригинальной литературы по специальности, что подразумевает расширение терминологического словаря, совершенствование навыков просмотрового и поискового чтения, системное развитие коммуникативных способностей студентов, а также расширение их кругозора.

Пособие состоит из 2 частей. Часть 1 включает тексты и систему упражнений, которые обеспечивают плавный переход от несложных к более трудным текстам на основе единой терминологии и общей тематики и снимают психологический барьер, возникающий при работе с оригинальной литературой. Часть 2 включает оригинальные статьи по компьютерным специальностям. Статьи отобраны из материалов конференций по компьютерным технологиям и Интернета и отражают как современный уровень их развития, так и структуру научно-технического текста.

Разделы рекомендуется изучать в том порядке, в каком они представлены в учебно-методическом пособии. Упражнения, нацеленные на закрепление и совершенствование элементарных навыков профессиональной речи и устного реферирования, связаны с подготовкой к чтению оригинальной литературы, ее аннотирования и реферирования, а также развитием профессиональной устной речи.

Данное пособие может быть использовано как для аудиторных занятий под руководством преподавателя, так и для самостоятельной работы студентов и магистрантов с последующим обсуждением прочитанного в аудитории.

PART I

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UNIT 1
INFORMATION TECHNOLOGY

Information Technology (IT) is "the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware." IT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit and retrieve information, securely. Several industries are associated with information technology, including computer hardware, software, electronics, semiconductors, Internet, telecom equipment, e-commerce and computer services. Recently it has become popular to broaden the term to include the field of electronic communication so that people tend to use the abbreviation ICT (Information and Communication Technology).

Humans have been storing, retrieving, manipulating and communicating information since the Sumerians in Mesopotamia developed writing in about 3000 BC, but the term *information technology* in its modern sense first appeared in 1958 in an article published in the *Harvard Business Review*; authors Harold J. Leavitt and Thomas L. Whisler commented that "the new technology does not yet have a single established name. We shall call it information technology (IT)."

Included in Information Technology:
• all computers with a human interface;
• all computer peripherals which will not operate unless connected to a computer or network;
• all voice, video and data networks and the equipment, staff and purchased services necessary to operate them;
• all technology services provided by vendors or contractors;
• operating costs associated with providing information technology;
• all costs associated with developing, purchasing, licensing or maintaining software.

Excluded from Information Technology:
• audio-visual equipment which can be operated as a standalone piece of equipment, such as televisions, tape recorders, VCRs, video cameras, and overhead projectors. Stand-alone video editing equipment is excluded;
• copy machines and fax machines;

• licenses or subscriptions to electronic information provided to users in lieu of books or magazines;

• data entry services.

Computer professionals are often called IT specialists, and the division of a company or university that deals with software technology is often called the IT department. IT professionals perform a variety of duties that range from installing applications to designing complex computer networks and information databases. A few of duties that IT specialists perform may include data management, networking, engineering computer hardware, database and software design, as well as the management and administration of entire systems. Since we live in the "information age", information technology has become a part of our everyday lives.

One of the first and largest applications of computers is keeping and managing business and financial records. Large companies keep the employment records of all their workers in large databases that are managed by computer programs. Computers have also become very important in modern factories. Computer-controlled robots now do tasks that are hot, heavy, or hazardous. Robots are also used to do routine, repetitive tasks in which boredom or fatigue can lead to poor quality work.

Information technology plays an important role in medicine. For example, a scanner takes a series of pictures of the body by means of computerized axial tomography (CAT) or magnetic resonance imaging (MRI). A computer then combines the pictures to produce detailed three-dimensional images of the organs.

Using supercomputers, meteorologists predict future weather by using a combination of observation of weather conditions from many sources, a mathematical representation of the behavior of the atmosphere and geographic data.

Computer-aided design and computer-aided manufacturing programs, often called CAD/CAM, have led to improved products in many fields, especially where designs tend to be very detailed. Computer programs make it possible for engineers to analyze designs of complex structures such as power plants and space stations.

Ex. 1. Answer the questions.

1.What does IT deal with? 2. How has the term been recently broadened? 3. When did the term *information technology* first appear? 4. What is included in Information Technology? 5. What is excluded from the definition? 6. What is the IT department? 7. What are the duties that IT professionals perform? 8. What is the largest application of computers?

Ex. 2. Discuss the role of IT in (1) business, (2) medicine, (3) science

and engineering.

Ex. 3. Give Russian equivalents of the following expressions:

software, hardware, store, application, digital, convert, implementation, securely, transmit, network, database, retrieve, term, integrate, department.

Ex. 4. Translate these words and word combinations into English:

разработка, дорогостоящее оборудование, хранить, разрабатывать детально, программное обеспечение, обрабатывать, применение, надежный, база данных, аппаратное обеспечение, взаимодействовать, право доступа, автоматизация, предприятие, средства массовой информации, предсказывать, трехмерный, исследование, устройство.

Ex. 5. Translate into English.

Сегодня ИТ – одна из наиболее динамично развивающихся областей науки и техники. Мы можем встретить применение ИТ повсюду. Они настолько глубоко интегрированы в повседневную жизнь каждого человека, что мы порой не замечаем их присутствия. Большое значение ИТ приобретают в работе средств массовой информации, среди которых особенно выделяется Интернет.

С момента своего появления компьютеры сильно изменились, и сейчас ИТ включает множество компонентов, которые 5-10 лет назад не считались составляющими ИТ. Например: интернет; мобильные телефоны, при помощи которых вы отправляете или получаете текстовые с общения; устройства, позволяющие узнать ваше местоположение с помощью спутника.

Почему ИТ так распространены и разнообразны? В основе ИТ лежит информация. В основе человеческого общения – обмен информацией, поэтому ИТ так же разнообразны, как человеческие отношения. ИТ – неизбежность современного общества: кто лучше обрабатывает информацию, тот лучше ориентируется в мире.

Jobs in IT

Ex. 1. Read the list of IT jobs. Which one is in demand nowadays? Which one is the most popular? Could you enlarge the list?

IT support technician, software developer, database administrator, network administrator, helpdesk officer, technical analyst, security officer, website developer, network architect, data storage consultant, network engineer, IT trainer, systems analyst, test engineer, infrastructure engineer, computer hardware engineer, computer system maintenance engineer, SPSS analyst, Java Software engineer.

Ex. 2. Fill in the blanks with the names of the IT specialities:

software engineer, hardware engineer, help desk technician, computer security specialist, blog administrator, DTP operator, webmaster, network administrator.

1. A … designs and develops IT devices. 2. A …writes computer programs. 3. A …edits and deletes posts made by contributors to a blog. 4. A …uses page layout software to prepare electronic files for publication. 5. A …manages the hardware and software that comprise a network. 6. A …designs and maintains websites. 7. A …works with companies to build secure computer systems. 8. A …helps end-users with their computer problems in person, by email or over the phone.

Ex. 3. Read this team introduction. Complete the descriptions 1-4 with the IT jobs in the box.

Hi! I'm Sylvia. I create usernames and passwords and I set firewalls. This is Isabelle. Her job is to plan and design the network. And this is Andrew. His job is to make sure all of the computers work properly. Finally, Mark and Latika. Their area is data processing. We all work for the university. Our offices are in building 8.

database analyst   network administrator
IT support officer   network architect

1. Sylvia is a … . 2. Isabelle is a … . 3. Andrew is an … . 4. Mark and Latika are…

Ex. 4. (Listening 1) Listen to three people talking about their jobs. Complete these job descriptions.

1.   Karl

Job: software … .

Responsibilities: he designs and computer games.

2.   Heba

Job: analyst … .

Responsibilities: he … computer problems.

3.   Wojtek

Job: database … .

Responsibilities: he analyses and … electronic data.

Ex. 5. (Listening 2) Listen to four people on a training course introducing themselves and talking about their jobs. Which job does each person do?

Speaker 1 .... Speaker 3 ....
Speaker 2 .... Speaker 4 ....

Ex. 6. In pairs, read the two job advertisements and name the most important qualities and abilities (1-10) for each job. Add more to the list if you can. Which three things do you think are most important for each job?

1. SENIOR PROGRAMMER required by DIGITUMUK, a leading supplier of business systems to the insurance industry. You will be able to work on the full range of software development activities – analysis, design, coding, testing, debugging and implementation. At least two years' experience of COBOL or C++ is necessary. As we are active in Europe, fluency in French. Italian or another European language is desirable. Don't miss this opportunity to learn new skills and develop your career.

Send your CV to CHRIS SCOTT, PERSONNEL

MANAGER, DIGITUM-UK, 75 PARKSHILL STREET,

LONDON SW14 3DE. You can visit our website at www.digitum-uk.com

2. DTP operator required for a Leading financial magazine.

We are looking for a bright, competent QuarkXPress operator with at least three years' experience in design and layout. Skills in Photoshop, Freehand or Illustrator an advantage. Ability to work in a team and to tight deadlines is vital. Please apply in writing, with CV and samples of your work, to Tom Parker, Production Manager, Financial Monthly, Stockton Street, London EClA 4WW. Or apply online.

	Senior programmer	DTP operator
1 logical reasoning		
2 patience and tenacity		
3 being good with figures		
4 imagination		
5 self-discipline		
6 accuracy		
7 leadership skills		
8 efficiency		
9 creativity		
10 drawing skills		

Ex. 7. Look at the on-line profile for Charles Graham. Which of the jobs above is most appropriate for him?

Charles Graham 22 years old. Professional summary. I graduated in 2004 with A levels in English, Art and Maths, and went on to do a course in graphic design and page layout at Highland Art School. Since 2006 I've been a graphic designer for PromoPrint, a company specializing in publishing catalogues and promotional material, and have used Adobe InDesign and other DTP software.

Ex. 8. A letter of application. Read the letter of application and answer these questions.

1. Which job is Sarah Brown applying for? 2. Where did she see the advertisement? 3. How long has she been working as a software engineer? 4. What type of programs has she written? 5. When did she spend three months in Spain?

Dear Mr Scott,

I am writing to apply for the position of Senior Programmer, which was advertised on 28th March in The Times. I graduated in May 2002 and did a work placement with British Gas as part of my degree. Before taking my present job, I worked for a year with NCR. I stayed in this job (I) … March, 2004. (2) … the last three years I have been working as a software engineer for Intelligent Software. I have designed four programs in COBOL for commercial use, and (3) … January I have been writing programs in C for use in large retail chains. These have been very successful and we have won several new contracts in the UK and Europe on the strength of my team's success. Two years (4) … I spent three months in Spain testing our programs and also made several visits to Italy, so I have a basic knowledge of Spanish and Italian. I now feel ready for more responsibility and more challenging work, and would welcome the opportunity to learn about a new industry. I enclose my curriculum vitae. I will be available for an interview at any time. I look forward to hearing from you.

Yours sincerely, Sarah Brown.

Ex. 9. Look at the HELP box and then complete the letter with for, since, ago or until.

HELP box: FOR, SINCE, AGO, UNTIL

• We use FOR to refer to a period of time. *I've lived in Liverpool for five years.*

• We use SINCE to refer to a point in time. *I've been unemployed since May 2005.*

• We use AGO with the past simple to say when something happened. We put AGO after the time period. *I got married five years ago.*

• We use UNTIL to mean up to a certain time. *I stayed at high school until I was 18.*

People in Computing

There is a wide range of jobs in computing and different titles are sometimes given to the same type of job. Jobs mentioned in this unit include:

• A Webmaster – a person who administers a Web server.

• A help-desk troubleshooter – a person who works as part of a telephone service that helps users solve problems that occur on computer systems.

• An applications programmer – a person who writes applications programs (computer programs designed to be used for a particular purpose e.g. word-processors, spreadsheets or database programs).

• A security specialist – a person who tests the security of networks systems and advises customers how to introduce and maintain security policies including:

a) setting up secure password systems (secret codes used to control access to a network system)

b) installing firewalls (a combination of hardware and software used to control the data going into and out of a network)

c) keeping out hackers (skilled programmers who attempt to gain unauthorized access to network systems)

d) dealing with viruses (programs written with the purpose of causing damage or causing a computer to behave in an unusual way).

• A systems programmer – a person who specializes in writing systems software (a program or set of programs that are used to control the basic functions of a computer system e.g. operating system programs).

Being employed in any of these jobs requires the person to have particular formal qualifications, personal qualities and technical skills. Qualifications mentioned in this unit include:

a) standard grades in Maths. This is a basic level school qualification in mathematics;

b) HNC in Computing. This is a Higher National Certificate in computing including the study of hardware (the physical components of a computer system) and software (programs and data). This is a college qualification that can usually be obtained by a period of part-time study;

c) HND in Computing Support. This is a Higher National Diploma in installing, maintaining and troubleshooting (to find and fix faults in a system) computing systems and training users. This is a higher college qualification than an HNC but not as high as a University degree. It usually requires a period of full-time study.

An IT (Information Technology) support engineer is a professional who provides help for computer users by designing, building and maintaining information technology systems (systems and equipment such as computers for dealing with information). A support engineer might start out in their career by working on a help-desk (a telephone service for helping users solve problems that occur on computer systems).

An IT manager manages projects, technology and people. An IT systems manager is responsible for developing and implementing computer software that supports the operations of the business.

Off-the-shelf systems are ready-made systems that are purchased from systems suppliers. In-house systems are developed by the employees of the company. A university degree is usually required but not necessarily in computing science (the study of computers and their use). The best qualification for becoming a manager is experience.

A systems analyst studies systems in an organization and decides how to computerize them (change the system into one controlled by computers). They analyze requirements and report on options for using information technology (the study and practice of techniques or use of equipment for dealing with information).

A software engineer/designer produces the programs which control the internal operations of computers. They use program libraries (sets of programmed functions that are made available for use by any program) to produce programs. They also design, test and improve programs for a variety of purposes including computer-aided design and manufacture (the production of technical designs and the production of goods using machines controlled by computers).

A computer services engineering technician is responsible for installation, maintenance and repair of computers and peripherals (associated equipment). They install, test, troubleshoot, upgrade (add components to improve the features or performance of a system) and carry out routine maintenance on hardware, ranging from personal computers (a computer designed to be used by one person at a time) to mainframes (the largest and most powerful type of computer, usually operated by a team of professionals).

A network support person or computer engineer maintains the link between PCs (personal computers) and workstations (powerful desktop computers used by power users for work that requires a lot of processing e.g. graphic design) connected in a network (a number of computers and peripheral devices connected together). They use telecommunications (technology concerned with communications over long distances), software, electronic skills and knowledge of networking software to troubleshoot systems. This may involve work with the controlling software, on the wiring, printed circuit boards (the electronic boards that hold the components of a circuit and connect them together), software or microchips (small integrated electronic circuits) on a file server (a powerful network computer that stores computer files and makes them available to users on a network), or on cables either within or outside the building.

An applications programmer writes applications programs (computer programs designed to be used for a particular purpose e.g. word-processors, spreadsheets or database programs).

A systems support person is an analyst programmer (a person whose job is a combination of systems analysis and computer programming) who is responsible for maintaining, updating (bring up to date i.e. change into the latest version) and modifying the software used by a company.

Some specialize in systems software (software that handles the basic operation of the computers). This involves use of machine code (computer language that consists entirely of a combination of ls and 0s) and specialized low-level computer languages (computer languages, such as machine code or assembly language, that is closer to the form that a computer understands than to that of a human language). They may sort out problems encountered by users including amending an area of code (text of a program or part of a program using a computer language) in the software, retrieving files and data lost when a system crashes (fails suddenly and completely, usually referring to the failure of a hard disk).

UNIT 2

THE COMPUTER

Generations of Computers

Ex. 1. Read, translate and memorize the following words:
vacuum tubes, malfunction, punched cards, superior, reliable**,** predecessors, symbolic language, integrated circuits, silicon, hallmark, semiconductors, networks, to run, accessible, voice recognition, artificial intelligence, quantum computation, to affect, to result in, entire, drastically, palm, eventually.

Ex. 2. Translate the text.
The history of computer development is often referred as to the different generations of computing devices. Each of the five generations of computers is characterized by a major technological development that fundamentally changed the way computers operate, resulting in smaller, cheaper, more powerful and more efficient and reliable computing devices. As a result of the miniaturization, speed, power and memory of computers have proportionally increased. New discoveries are constantly being developed that affect the way we live, work and play.

First generation (1940-1956): vacuum tubes. The first computers used vacuum tubes and were often enormous, taking up entire rooms. They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions. First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and

they could only solve one problem at a time. Input was based on punched cards and paper tape, and output was displayed on printouts. The UNIVAC and ENIAC computers are the examples of the first-generation computing devices.

Second generation (1956-1963): transistors. Transistors replaced vacuum tubes and ushered in the second generation of computers. The transistor was invented in 1947 but did not see a widespread use in computers until the late 1950s. The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors. Second-generation computers moved to symbolic, or assembly languages, which allowed programmers to specify instructions in words. High-level programming languages were also being developed at this time, such as the early versions of COBOL and FORTRAN. The first computers of this generation were developed for the atomic energy industry.

Third generation (1964-1971): integrated circuits. The development of the integrated circuit was the hallmark of the third generation of computers. Transistors were miniaturized and placed on silicon chips, called semiconductors, which drastically increased the speed and efficiency of computers. Instead of punched cards and printouts, users interacted with the third generation computers through keyboards and monitors and interfaced with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory. Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.

Fourth generation (1971-present): microprocessors. The microprocessor brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm of the hand. The Intel 4004 chip, developed in 1971, located all the components of the computer – from the central processing unit and memory to input/output controls – on a single chip. In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced the Macintosh. As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of the GUI and the mouse.

*Fifth generation (present and beyond): artificial intelligence.*Fifth generation computing devices, based on artificial intelligence, are still in development, though there are some applications, such as voice recognition, that are being used today. The use of parallel processing and superconduc-

tors is helping to make artificial intelligence a reality. Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come.

Ex. 3. Answer the questions.

1. What did first generation computers rely on? Give the examples of the first-generation computing devices. 2. When was the transistor invented? 3. What are its advantages over the vacuum tubes? 4. What was the hallmark of the third generation of computers? 5. Describe the fourth generation of computers. 6. When was the Macintosh introduced? 7. What are fifth generation computers based on?

Computer Hardware and Functionality of the Computer

What is a computer? A computer is an electronic machine that processes information – in other words, an information processor. It takes in raw information (or data) at one end (input), processes it, stores it until it is necessary (memory) and then spits out the results at the other end (output). Your keyboard and mouse, for example, are input units – ways of getting information into your computer that it can process, if you use a microphone and voice recognition software, that's another form of input. Your computer stores all your documents and files on a hard-drive: a huge magnetic memory. But smaller, computer-based devices like digital cameras and cell-phones use other kinds of storage such as flash memory cards. As for output, your computer has a screen and stereo loudspeakers. You may have an ink-jet or laser printer too to make an output. Your computer's processor (CPU) is a microchip buried deep inside. It works amazingly hard and gets incredibly hot in the process. That's why your computer has a little fan blowing away – to stop its brain from overheating!

A computer system consists of two parts: hardware and software. Hardware is any electronic or mechanical part you can see or touch. Software is a set of instructions, called a program, which tells the computer what to do. There are three basic hardware sections: the central processing unit (CPU), main memory and peripherals. Perhaps the most influential component is the central processing unit. Its function is to execute program instructions and coordinate the activities of all the other units. In a way, it is the "brain" of the computer. Peripherals are the physical units attached to the computer. They include storage devices and input/output devices.

Computer case. The computer case contains the most important components of the computer: the motherboard, the processor, random access memory modules, the hard drive etc.

- *Motherboard.* The motherboard is the part of the computer where such things as the processor, memory modules, expansion cards and external devices are attached. This means that the motherboard controls the functions of different components.

- *Processor.* The processor can be considered to be the 'engine' of the computer because it executes the lion's share of the information processing; the processor fetches commands and necessary information from the RAM, carries out the tasks specified by the commands, and returns the processed information to the RAM. The speed of a computer depends largely on the speed of the processor.

- *Random Access Memory.* The RAM is a memory storage that functions during computer use and is especially utilized by the processor. In modern computers, the amount of RAM is around 4–16 GB depending on the type and purpose of the computer. The RAM consists of one or more memory modules. When the computer is started, the operating system is loaded into the RAM (an operating system is a program that controls the devices and programs in a computer). The computer also loads the files being processed – music, assignments, videos etc – to the RAM. If there is enough RAM, the computer executes requested tasks quickly. This is why it is a good idea to add to the memory by buying more memory modules as the need arises.

- *Hard drive.* The hard drive is the permanent memory of the computer where saved files remain even when the computer is turned off. This is why the hard drive is used for saving files. The capacity of hard drives varies; currently the typical capacity is 500 – 1000 GB, but hard drives of over 1500 GB, i.e. 1,5 terabit, are also available. However, the capacity of the internal hard drives in laptop computers is often less than that.

- *Display and display adapter.* Most computer displays are so-called LCD displays (Liquid Crystal Display), where the image display is produced by liquid crystals between two transparent sheets. Display sizes range between only a few inches in handheld apparatuses to large 24 inch desktop displays. One of the most important features of the display is its resolution, i.e. how many pixels (picture elements) the image consists of.

Keyboard. A standard keyboard has 102 keys. The keys are divided into alphabetical (a-z), numerical (1-0) and special (Function, Ctrl, Alt etc keys). Special keys are located among the alphabetical ones.

- **Ctrl** (Control) is used in combination with other keys for different

actions. The combination **Ctrl+C**, for example, copies the chosen data to the memory;

- **Alt** (Alternative) is used like the Ctrl key. Sometimes both these keys are used in combination: **Ctrl+Alt+Del**, for example, brings up the task manager (in Windows XP);
- **Alt Gr** (Alternative Graphics) produces the 'third character' of the keys, e.g. @, $, £ and }.With this key, you can also create the ~ character (important for the Internet);
- **Shift**: capitalizes letters and the special characters on the numerical keys, among
- **Caps Lock** locks the capitalization of letters. This function is connected with an A or Caps lock pilot light on the keyboard. It turns on the light when the function is in use;
- **Tab**: the tabulator is mainly used in word processing: each time you press the tab button, the cursor moves to the next tab stop on the same row;
- **Backspace**: removes the characters to the left of the cursor, i.e. what you just wrote. This key can also be used to remove a larger portion of text;
- **Enter** by pressing this key you can change paragraphs or e.g. accept a function.

The keyboard also has the rarely used keys **Print Screen**, **Scroll Lock and Pause**.

Pointing devices. Traditionally, most programs have been designed to be used with a mouse. The mouse cursor seen on the screen of the computer moves along with the mouse. The cursor can be used to select menu commands and areas, as well as activating different objects by clicking the mouse keys.

- *Mouse.* You can attach a traditional mouse with or without a cord to any computer. Cordless mice use radio waves to relay movement from the mouse to the computer (for this mouse, a small radio receiver is attached to the computer).
- *Touchpad.* Almost all laptop computers have a touchpad which is used to move the cursor. Some models also have a so-called pointing stick. In addition, portable computers have keys with the clicking function of a mouse. The touchpad is a pad where you can control the cursor by moving your finger along the pad. Tapping the pad serves the same function as clicking a mouse.

Storage devices (hard drives, DVD drives or flash drives) provide a permanent storage of both data and programs. Disk drives are used to read and write data on disks. Input devices enable data to go into the computer's memory. The most common input devices are the mouse and the keyboard. Output devices enable us to extract the finished product from the system. For

example, the computer shows the output on the monitor or prints the results onto paper by means of a printer.

On the rear panel of the computer there are several ports into which we can plug a wide range of peripherals – a modem, a digital camera, a scanner, etc. They allow communication between the computer and the devices. Modern desktop PCs have USS ports and memory card readers on the front panel.

Ex. 1. Answer the questions:

1. What is a computer? 2. How can a computer be characterized from the point of view of its constituent parts? Give brief characteristics of each one. 3. Why is a computer said to simulate a calculator? How do they differ?

Ex. 2. Match these words from the text (1-9) with the correct meanings (a-i).

1. software	a) the brain of the computer
2. peripherals	b) physical parts that make up a computer system
3. main memory	c) programs which can be used on a particular computer system
4. hard drive (also known as hard disk)	d) the information which is presented to the computer
5. hardware	e) results produced by a computer
6. input	f) input devices attached to the CPU
7. ports	g) section that holds programs and data while they are executed or processed
8. output	h) magnetic device used to store information
9. central processing unit (CPU)	i) sockets into which an external device may be connected.

Ex. 3. Look at the list of the following terms and put each one in an appropriate column of the table. The first one has been done for you.

~~processor~~ ROM expandable memory ALU DIMMs RAM computer brain byte DVD system clock mouse gigahertz printer megabyte webcam hard drive keyboard registers

CPU	Main Memory	Peripherals
processor		

Ex. 4. Listen and complete the extract from the conversation.

Assistant: Do you need any (1) ...

Paul: Um, yes, we're looking for a Mac computer. Have you got any fairly basic ones?

Assistant: Yes, sure. If you'd like to come over here.

Paul: What different (2) ... are there?

Assistant: At the moment we've got these two models: the iMac, which is a desktop computer with an Intel Core 2 Duo processor (3) ... at 2.33 gigahertz, and the portable MacBook, which has a processor (4) ... at 2.0 gigahertz. Core Duo technology actually means two cores, or processors, built into a single chip, offering up to twice the speed of a traditional chip.

Sue: So they're both very (5) ... which has more RAM? ... ,then. And which one has more memory, I mean.

Assistant: Well, the iMac has two gigabytes of RAM, which can be (6) ... up to three gigabytes, and the MacBook has one gigabyte, expandable to two gigabytes. It all depends on your needs. The iMac is (7) ... for home users and small offices. The MacBook is more (8) ... if you travel a lot.

Ex. 5. Work in pairs. One of you wants to buy a computer, the other is the shop assistant. Use the prompts and product descriptions below to role play the conversation.

Shop assistant	*Customer*
Greet the customer and offer help. Show the customer two possible models. Describe the processor, RAM and storage capacity). Compare the two different models. Give the information required. Compare the two models. Answer, and mention any final details that might persuade the customer to buy the computer.	Explain what you are looking for. Ask for some technical specs. Ask the price. Decide which computer to buy or leave the shop.

Toshiba Satellite	**Dell desktop PC**	**Palm TX handheld**
laptop	AMO Athlon at 2.4GHz	Intel 312MHz
2.0GHz Core 2 Duo processor	1 GB RAM expandable to 4GB	ARM-based processor
2GB RAM expandable to 4GB	320GB hard drive	128 MB Flash memory (non-volatile)
I 60GB hard drive	DVD+/-RW drive	Support for memory cards
Super Multi drive (double layer)	17" LCD monitor	320x480 TFT touch screen
15.4" wide XGA display	£680	Wi-Fi and Bluetooth
		Lithium-ion battery

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Wireless LAN,Wi-Fi
compliancy
£ 1,099

Ex. 6. Input devices are the pieces of hardware which allow us to enter information into the computer (keyboard, digital camera, mouse, joystick, webcam, microphone, scanner, graphics tablet, touch screen, lightpen, barcode reader, touchpad, trackball). Which input device would you use for these tasks?

1) to play computer games;

2) to copy images from paper into a computer;

3) to read price labels in a shop;

4) to select text and click on links on web pages;

5) to enter drawings and sketches into a computer;

6) to input voice commands and dictate text;

7) to draw pictures or select menu options directly on the screen;

8) to take and store pictures and then download them to a computer.

Ex. 7. Complete each sentence by choosing from the following devices: touch screen, trackball, touchpad, webcam.

1. A … is a stationary device that works like a mouse turned upside down. You roll the ball with your hand to move the pointer on the screen. 2. Interactive … are used in museums, information centres and Internet kiosks. You use your finger to point directly to objects on the screen. 3. A … is used to send live video images via the Internet. 4. A … is found on notebook PCs. You use it by pressing the sensitive pad with a finger.

Ex. 8. Read the passage and complete these sentences with the correct 'mouse action'.

A mouse is a hand-held device that lets you move a pointer (or cursor) and select items on the screen. It has one or more buttons to communicate with the PC. A scroll wheel lets you move through your documents or web pages. The pointer looks like an I-bar, an arrow or a pointing hand. An optical mouse has an optical sensor instead of a ball underneath. A cordless (wireless) mouse has no cable; it sends data via infrared signals or radio waves.

Mouse actions:

• to click, press and release the left button;

• to double-dick, press and release the left button twice;

• to drag, hold down the button, move the pointer to a new place and then release the button;

• to right-click, press and release the right button; this action displays a list of commands.

1. To start a program or open a document you ... on its icon – that is, you rapidly press and release the mouse button twice. 2. If you want to select a menu option, you just ...on the left button. 3. If you want to find the commands for a particular text, image, etc., you have to ... on it. 4. If you want to move an object, press the button and ...the object to the desired location.

Ex. 9. Read the passage and complete these sentences with words written in bold type.

A printer is a device that prints your texts or graphics on paper. The output on paper or acetate sheets is called **printout** or hard copy. A program in your computer, called the **printer driver**, converts data into a form that your printer can understand. A **print spooler** stores files to be printed when the printer is ready. It lets you change the order of documents in the queue and cancel specific print jobs. The output quality, or **resolution**, is measured in **dpi** or dots per inch. The speed of your printer is measured in **pages per minute** (ppm). In a network, users can share a printer connected to a **print server**, a computer that stores the files waiting to be printed.

1. The differences in ... are noticeable: the more dots per inch, the clearer the image. 2. A print resolution of between 600 .... and 2,400 ... ensured that even text as small as 2 pt was legible. 3. Passengers with an electronic ticket will need a ... of ticket confirmation or a boarding pass to be admitted to secured gate areas. 4. The key advance of recent years is printing speed: the latest generation of ink-jets prints black-and-white text at 15 ... ... (...). 5. With appropriate software, you can view the images on a computer, manipulate them, or send them to a ... and produce excellent quality colour copies. 6. A ... ... is a dedicated computer that connects a printer to a network. It enables users to share printing resources. 7. A ... ... is a utility that organizes and arranges any documents waiting to be printed. 8. In computers, a .... is a program installed to control a particular type of printer.

Ex. 10. Read the passage and complete the sentences with the comparative or superlative form of the adjectives in brackets.

A dot-matrix printer uses a group, or matrix, of pins to create precise dots. A print head containing tiny pins strikes an inked ribbon to make letters and graphics. This impact printing technology allows shops, for example, to print multi-part forms such as receipts and invoices, so it's useful when self-copying paper is needed. It has two important disadvantages: noise and a relatively low resolution (from 72 to 180 dpi).

An ink-jet (also called bubble-jet) *printer* generates an image by spraying tiny, precise drops of ink onto the paper. The resolution ranges from 300 to 1,200 dpi, suitable for small quantities or home use. A standard

ink-jet has a three-colour cartridge, plus a black cartridge. Professional ink-jets have five-colour cartridges, plus black; some can print in wide format, ranging from 60 cm up to 5 metres (e.g. for printing advertising graphics). Some ink-jet based printers can perform more than one task. They are called multi-function printers because they can work as a scanner, a fax and a photocopier as well as a printer. Some units accept memory cards and print photos directly from a camera.

A laser printer uses a laser beam to fix the ink to the paper. A laser works like a photocopier; a powder called toner is attracted to paper by an electrostatic charge and then fused on by a hot roller. Laser printers are fast and produce a high resolution of 1,200 to 2,400 dpi, so they are ideal for businesses and for proofing professional graphics work.

A professional image-setter is a typesetting printer that generates very high-resolution output (over 3,540 dpi) on paper or microfilm. It's used for high-quality publications.

A plotter is a special type of printer which uses ink and fine pens held in a carriage to draw detailed designs on paper. It's used in computer-aided design, maps, 3-D technical illustrations, etc.

1. Dot-matrix printers are … (chip) than laser printers. 2. Professional image-setters have … (high) resolution that's why they are used for high-quality publications. 3. Ink-jet printers are … (slow) than laser printers. 4. Laser printers are … (expensive) than ink-jet printers. 5. My printer is … (bad) in the world. It never works when I need it.

Ex. 12. Read the passage and answer the following question: which device or format would be most suitable for storing these things?

1. The operating system and the programs on a home computer. 2. An electronic encyclopedia for children. 3. A movie in digital format. 4. The music tracks by your favorite artist Panasonic portable DVD player. 5. All the files generated by a company in one day. 6. The photos taken with a digital camera.

Magnetic storage. Magnetic devices store data magnetically. A disk drive spins the disk at high speed and reads its data or writes new data onto it.

• A floppy disk drive uses 3.5 inch diskettes which can only hold 1.44 MB of data; it's often called A: drive and is relatively slow. It is not used today. It is an out-of-date (outdated) device.

• Most PCs have one internal hard disk, usually called C: drive, which can hold several gigabytes of data. It's used to keep the operating system, the programs and the user's files easily available for use. When you format a disk, or prepare it for use, its surface is divided into concentric circles called tracks. Each track is further divided into a number of sectors. The computer

remembers where information is stored by noting the track and sector numbers in a directory. The average time required for the read/write heads to move and find data is called access time; it is measured in milliseconds (ms). Don't confuse 'access time' with 'transfer rate', the rate of transmission of data from the disk to the CPU (e.g. 15 megabytes per second).

A portable hard drive is an external unit with the drive mechanism and the media all in one scaled case. You can use it to make a backup, a spare copy of your files, or to transport data between computers.

Optical storage. Optical drives use a laser to read and write data, so they are not affected by magnetic fields; but they are slower than hard drives. Modern DVD recorders accept all CD and DVD formats.

CDs (compact discs) can store up to 650-700 MB of data.

• CD-ROMs (read only memory) are 'read-only' units, so you cannot change data stored on them (e.g. a dictionary or a game).

• CD-R (recordable) discs are write-once devices which let you duplicate CDs.

• CD-RW (rewritable) discs enable you to write onto them in multiple sessions, like a hard disk.

DVDs (digital versatile discs) are similar in size to CDs (both are 1.2 mm thick), but they differ in structure and capacity. DVDs have more tracks and more pits (tiny holes) per track, and can store from 4.7 GB to 17 GB of data, movies, high-definition sound, etc. so they will probably replace CDs.

DVD formats include:
• DVD-ROM (read-only memory)
• DVD-R or DVD+R (recordable only once)
• DVD-RW or DVD+RW (rewritable, so it can be erased and reused many times). Portable DVD players let you watch movies or TV, play games and listen to music, wherever you are. They usually run on batteries, have a widescreen (rectangular 16:9 format) LCD and support multi-format playback, allowing you access to many file formats including DVD video, JPEG pictures, MP3 music, etc. They have two built-in stereo speakers, or headphones if you don't want to disturb other people.

Removable flash memory. Flash memory is solid-state, rewritable memory; it is non-volatile, so it retains data when the power is turned off. This explains its popularity in small devices. Flash memory cards such as CompactFlash or Secure Digital are found in cameras, PDAs and music players. Flash drives, also known as thumb or pen drives, are connected to a USB port of the computer. They let you save and transfer data easily.

Ex. 13. Summarize the text using the following words:

raw information, input/output, storage, printers, a computer case, a keyboard, pointing devices, hardware/software, peripherals, magnetic storage, optical storage.

UNIT 3

COMPUTER USES

Ex. 1. Before you read the following passages, talk about these questions: what kind of computers do you use? What do you use computers for?

a) We are now living in what some people call the digital age, meaning that computers have become an essential part of our lives. Young people who have grown up with PCs and mobile phones are often called the digital generation. Computers help students to perform mathematical operations and improve their maths skills. They are used to access the Internet, to do basic research and to communicate with other students around the world. Teachers use projectors and interactive whiteboards to give presentations and teach sciences, history or language courses. PCs are also used for administrative purposes – schools use word processors to write letters, and databases to keep records of students and teachers. A school website allows teachers to publish exercises for students to complete on-line. Students can also enroll for courses via the website and parents can download official reports.

Mobiles let you make voice calls, send texts, e-mail people and download logos, ringtones or games. With a built-in camera you can send pictures and make video calls in face-to-face mode. New smart phones combine a telephone with web access, video, a games console, an MP3 player, a personal digital assistant (PDA) and a GPS navigation system, all in one.

In banks, computers store information about the money held by each customer and enable staff to access large databases and to carry out financial 30 transactions at high speed. They also control the cash points, or ATMs (automatic teller machines), which dispense money to customers by the use of a PIN-protected card. People use a Chip and PIN card to pay for goods and services. Instead of using a signature to verify payments, customers are asked to enter a four-digit personal identification number (PIN), the same number used at cash points; this system makes transactions more secure. With on-line banking, clients can easily pay bills and transfer money from the comfort of their homes.

Airline pilots use computers to help them control the plane. For example, monitors display data about fuel consumption and weather conditions. In airport control towers, computers are used to manage radar systems and

regulate air traffic. On the ground, airlines are connected to travel agencies by computer. Travel agents use computers to find out about the availability of flights, prices, times, stopovers and many other details.

b) We have many types of computers at our disposal. First, all employees receive PDAs and desktop computers. But we only use those for word processing and spreadsheets. Of course, some programs are too powerful for desktop. So many employees use the faster workstations. And we do have a few laptops and handheld PCs. However, employees only use them on business trips. Most employees just answer email with their cellular phones. The new server provides access to all printers. Finally, our mainframe processes our largest data files. No need for a supercomputer yet!

Ex. 2. Use the following collocations to complete these sentences.

perform operations, do research, make calls, send texts, display data, write letters, store information, complete exercises, carry out transactions

1. Thanks to Wi-Fi, it's now easy to … from cafes, hotels, parks and many other public places. 2. Online banking lets you ... between your accounts easily and securely. 3. Skype is a technology that enables users to … over the Internet for free. 4. In many universities, students are encouraged to … using PowerPoint in order to make their talks more visually attractive. 5. The Web has revolutionized the way people …– with sites such as Google and Wikipedia, you can find the information you need in seconds. 6. Cookies allow a website to … on a user's machine and later retrieve it; when you visit the website again, it remembers your preferences. 7. With the latest mobile phones, you can … with multimedia attachments – pictures, audio, even video.

Ex. 4. Listen to four people talking about how they use computers at work. Write each speaker's job in the Table.

Electrical engineer, secretary, librarian, composer

Speaker	Job	What they use computers for
1.		
2.		
3.		
4.		

Ex. 5. Listen again. Write what each speaker uses their computer for.

Ex. 6. Use the following collocations to complete these sentences:

GPS navigator, desktop computer, mp3 player, laptop (notebook), ATMs, PDA, tablet PC, workstation, cellular (mobile) phones, digital camera.

a) Until recently, I owned a 1. … which I used at home occasionally, carried around with me and took on business trips. However, I now have a 2. … which is a handheld computer and known as a palmtop. I can use it as a portable audio player and smart phone too. I work for an IT organization and we use a 3. … as it has the capability of hosting multiple operating systems. I'm in the Customer Order Processing department and we execute many programs concurrently. 4. … are used for word processing and spreadsheets. Most employees just answer e-mail with their 5. …

b) A 6. … allows photographs to be input to a computer for editing. 7. … let you surf the Net, send texts, e-mail people. 8. … dispense money to customers by the use of a PIN-protected card. 9. … can provide people who use it with their exact position on Earth, tell them how to get to another location, how fast they are moving, where they have been, how far they have gone and what time it is. 10. … allow the user to play music, podcasts and so on anywhere. They can be listened to with earphones or headphones, or played through speakers via an external amplifier, e.g. through a stereo system.

Ex. 7. In small groups choose one of the areas given below and discuss what you can do with computers in that area. Look at some expressions below to help you.

Formula 1 cars: design and build the car, test virtual models, control electronic components, monitor engine speed, store (vital) information, display data, analyze and communicate data.

Entertainment: download music, burn CDs, play games, take photos, edit photos, make video clips, watch movies on a DVD player, watch TV on the computer, listen to MP3s, listen to the radio via the Web.

Factories and industrial processes: design products, do calculations, control industrial robots, control assembly lines, keep record of stocks (materials and equipment).

School/University: access the Internet, enroll online, search the Web, prepare exams, write documents, complete exercises online, do research, prepare presentations.

People use computers to … . Computers are used to … . A PC can also be used for … . Computers allow (enable) …-ing. Computers allow (enable) people to … . Computers let people … .

Ex. 8. Listen again and decide whether these sentences are true or false. Correct the false ones.

1. A mainframe computer is less powerful than a PC. 2. A mainframe is used by large organizations that need to process enormous amounts of data. 3. The most suitable computers for home use are desktop PCs. 4. A laptop is not portable. 5. Laptops are not as powerful as desktop PCs. 6. Using a

stylus, you can write directly onto the screen of a tablet PC. 7. A Personal Digital Assistant is small enough to fit into the palm of your hand. 8. A PDA does not allow you to surf the Web.

Ex.9. Write a short presentation summarizing your discussion. Then ask one person from your group to give a summary of the group's ideas to the rest of the class.

Types of Computers

The types of computers range from the Hybrid to the Analog types. The computers you come across in your daily life range from laptops, palmtops to desktop and super computers. According to the classification based on operational principle the types of computers are analog and hybrid.

Analog computers. The Analog computer is almost an extinct type of computer these days. It is different from a digital computer in respect that it can perform numerous mathematical operations simultaneously.

Hybrid computers. These types of computers are, as the name suggests, a combination of both Analog and Digital computers. The Digital computers which work on the principle of binary digit system of 0 and 1 can give many precise results. But the problem is that they are too slow and incapable of large scale mathematical operation. Based on capacity, speed and reliability they can be divided into the following 3 categories:

1. The Mainframe Computers. These are computers used by large organizations like meteorologist surveys and statistical institutes for performing bulk mathematical computations. They are core computers which are used for desktop functions of over one hundred people simultaneously.

2. The Microcomputers. These are the most frequently used computers better known by the name "Personal Computers". This is the type of computer meant for public use. The choice ranges as follows: *hand-held personal computers* (HPC) (a slightly larger and heavier version of the PDA), *PDA* (often use flash memory instead of a hard drive for storage. These computers usually do not have a keyboard but rely on touch-screen technology for user input), *laptop* (also called a notebook, that integrates the display, keyboard, a pointing device, processor, memory and hard drive all in a battery-operated package), *desktop* (is not designed for portability), *workstation* (a desktop computer that has a more powerful processor, additional memory and enhanced capabilities for performing a special group of tasks, such as 3 D Graphics or game development).

3. The Super Computers. It is somewhat similar to mainframe computers and is used in economic forecasts and engineering designs. Today life without computers is inconceivable. Usage of different types of com-

puters has made life both easier and fast paced.

Ex. 1. Give English-Russian equivalents of the following words and expressions:

настольный компьютер, reliability, на основе, simultaneously, вышедший из употребления, laptop, надежность, extinct, карманный компьютер, fast pace, персональный цифровой секретарь, inconceivable, handheld PC.

Ex. 2. Answer these questions.

1. Which types of computers are there in terms of the classification based on operational principle? Characterize each one. 2. How can computers be classified according to the principle of physical structures and the purpose of their use? Speak on the tree types.

Ex. 3. Summarize the text using the words from Exercise 1.

Computerized Devices

Ex. 1. Everybody nowadays uses a lot of computerized devices having an electronic chip inside. Read about some of them.

Smart Watches. There's no doubt that with the popularity of smart phones that can manage virtually every aspect of our lives, the trend in technology is to get more and more "connectivity" into smaller and smaller packages.

Simultaneously, wrist watches have become a lesson in technological redundancy for many people. Ask a friend for the time of day and they're just as likely to glance at their smart phone as they are to look at an actual wrist-bound timepiece. The newest wave of smart watches aims to change all that.

Smart watches are digital watches that do more – a lot more – that your old analog time tracking device. We're not talking about that once-amazing calculator watch that you had in elementary school. These are full-fledged digital tools. Smart watches can run apps and play back all sorts of digital media, like audio tracks or radio streamed to Bluetooth headphones. Many of these watches have touch-screens, which allow you to access functions like a calculator, thermometer, compass and more.

Most of the current iterations of smart watches aren't wholly standalone devices, simply because they lack an Internet connection. So, many of the watches are designed to link directly with other devices that do have Internet connectivity, namely your smart phone.

Just as with your smart phone, Internet access enables a smart watch with whole world of potential capabilities, like message notifications, GPS navigation and calendar synchronization. And of course, a Bluetooth connection to your phone means the watch can help you place calls or send and receive messages.

Some smart watches are made specifically for athletics purposes, letting you track your lap times, distance and route. They may work in tandem with accessories such as a heart rate monitor or cadence sensor. There are specialty smart watches built especially for sailing enthusiasts, helping them track variables such as speed, wind direction and wind speed.

LED T-shirt. Many of us immediately associate the phrase wearable technology with smart watches and products like Google Glass, but we're also getting closer to our clothes linking up with our smart phones too. The latest, and coolest example yet is t-shirt OS 2.0, a funky digital shirt with an LED display on the front, ready to broadcast your message to the world. The LEDs allow for custom messages and animations to play across your chest, and it's all controlled by an app on your phone.

UNIT 4
NETWORKING

Ex. 1. Read the information and correct the following statements.

Classification of Networks

Networking allows two or more computer systems to exchange information and share resources and peripherals. Networks are classified according to geographical area. They can be divided into PANs (Personal Area Networks) which typically include a laptop, a mobile phone and a PDA; LANs usually placed in the same building; MANs (Metropolitan Area Networks) which cover a campus or a city; WANs (Wide Area Networks) which have no geographical limit and may connect computers or LANs on opposite sides of the world. They are usually linked through telephone lines, fibre-optic cables or satellites. The main transmission paths within a WAN are high-speed lines called backbones. Wireless WANs use mobile telephone networks. The largest WAN in existence is the Internet.

LANs can be built with two main types of architecture: peer-to-peer, where the two computers have the same capabilities, or client-server, where one computer acts as the server containing the main hard disk and controlling the other workstations or nodes, all the devices linked in the network (e.g. printers, computers, etc.). Computers in a LAN need to use the same network protocol (the language, or set of rules) to communicate with each other. Networks use different protocols. For instance, the Internet uses TCP/IP. Ethernet is one of the most common protocols for LANs.

A router, a device that forwards data packets, is needed to link a LAN to another network, e.g. to the Net. Most networks are linked with cables or wires but new Wi-Fi, wireless fidelity, technologies allow the creation of

WLANs, where cables or wires are replaced by radio waves. To build a WLAN you need access points, radio-based receiver-transmitters that are connected to the wired LAN, and wireless adapters installed in your computer to link it to the network.

Hotspots are WLANs available for public use in places like airports and hotels, but sometimes the service is also available outdoors (e.g. university campuses, squares, etc.).

1. LANs link computers and other devices that are placed far apart.

2. In a client-server architecture, all the workstations have the same capabilities.

3. The word protocol refers to the shape of the network.

4. Routers are used to link two computers.

5. Access points don't need to be connected to a wired LAN.

6. Wireless adapters are optional when you are using a WLAN.

7. Hotspots can only be found inside a building.

8. The Internet is an example of a LAN.

9. Wireless WANs use fibre and cable as linking devices.

Ex. 2. Use the words in the box to complete the sentences.

LAN WLAN nodes peer-to-peer hub backbones server

1. All the PCs on a … are connected to one … , which is a powerful PC with a large hard disk that can be shared by everyone. 2. The style of … networking permits each user to share resources such as printers. 3. The star is a topology for a computer network in which one computer occupies the central part and the remaining … are linked solely to it. 4. At present Wi-Fi systems transmit data at much more than 100 times the rate of a dialup modem, making it an ideal technology for linking computers to one another and to the Net in a … . 5. All of the fibre-optic … of the United States, Canada and Latin America cross Panama. 6. A …. joins multiple computers (or other network devices) together to form a single network segment, where all computers can communicate directly with each other.

Ex. 3. Read these descriptions of different physical topologies of communication networks.

Network Topology

Topology refers to the shape of a network. There are three basic physical topologies.

• Star: there is a central device to which all the workstations are directly connected. This central position can be occupied by a server, or a hub, a connection point of the elements of a network that redistributes the data.

• Bus: every workstation is connected to a main cable called a bus.

• Ring: the workstations are connected to one another in a closed loop configuration. There are also mixed topologies like the tree, a group of stars connected to a central bus.

Ex.4. Which network topology type is described below?

1. All the devices are connected to a central station. 2. In this type of network there is a cable to which all the computers and peripherals are connected. 3. Two or more star networks connected together; the central computers are connected to a main bus. 4. All devices (computers, printers, etc.) are connected to one another forming a continuous loop.

Ex.5. A network administrator has set up a new network in a school. Which topology has she chosen?

We have decided to install computers in all the departments but we haven't spent a lot of money on them. Actually, only the one in the staff room is really powerful (and expensive). They all have common access to the Net and share a laser printer. The teachers in this school have built up a general file of resources kept in the main computer to which all the others in the network have access.

Ex.6. Read the text and write a list of the advantages and disadvantages of wired and wireless networks.

Wired networks are linked by Ethernet cables, phone lines and high-speed fibre optic cables. Wireless networks, however, use electromagnetic waves, such as radio waves, to transmit data. These are the main types of wireless networks: satellites – for long distances; WiMAX – for connecting Wi-Fi hotspots; Wi-Fi – for medium-range distances; Bluetooth – for short distances; GSM – for mobile phones.

To set up at home wireless LAN you'll need computers equipped with a wireless adapter or wireless card, a wireless access point (a wireless router) and a broadband internet connection. Wired LANs are more difficult to install, but they are cheaper, faster and more re liable. Wireless networks let you move, or roam, from one access point to another, but they are less secure and subject to interference.

Ex.7. Read the text and tell how to install a wired modem router. Use modal verbs.

A modem router is a device that connects your computer or home LAN to the Internet.

• Plug one end of the phone cord directly into a phone jack, and the other end into the ADSL port on the router.

• Plug one end of the Ethernet cable into your computer's network port and the other end into an Ethernet port on the router.

• Turn on your computer. To set up, or configure, the router, you'll need to input some parameters, for example your ISP's name and phone number. *NOTE:* a router has various Ethernet ports, so you can connect various PCs to the router via Ethernet cables. If you already have a hub or switch connecting a LAN, you only need one cable to connect the hub to the router.

Ex.8. In pairs, do this network quiz. See which pair can finish first.

1. This network typically consists of two or more local area networks, covering a large geographical area.

    a) LAN   b) WAN   c) Intranet

2. This type of network does not have a dedicated server; all the computers are independent.

    a) peer-to-peer   b) client-server   c) MAN

3. On this topology, all devices are connected to the same circuit, forming a continuous loop.

    a) star   b) ring   c) bus

4. The language used by computers to communicate with each other on the Internet is called

    a) Ethernet.   b) ADSL.   c) TCP/IP.

5. Which cables are used to transfer information for the Internet over long distances at high speeds?

    a) telephone lines   b) Ethernet cables   c) fibre optic cables

6. Which device allows several computers on a local network to share an internet connection?

    a) an ADSL port   b) a router   c) an Ethernet port

7. Which device serves as a common connection point for devices in a wireless network?

    a) wireless access point   b) wired router   c) wireless adapter

8. Bluetooth is a wireless technology that uses radio waves to transmit data over

    a) long distances.   b) medium-range distances.   c) short distances (10 m or less).

Ex.9. Match the questions (1-6) with the answers (a-f).

1. Why was the hacker arrested? 2. Is it OK to log on to my bank account using public computers in a cyber-safe? 3. How do I set up an internet connection at home? 4. Can I download software from your site? 5. How can I add video to instant messaging? 6. What do I need to do to sign up for a *Yahoo!* e-mail account?

a) Yes, but always remember to log off after you've ended your session; b) Yes, you can even try the programs out for a period before you buy them!

c) Because he broke into a computer system and stole confidential data; d) Simply install this program and plug the webcam into your computer; e) You need to install the software for your router. Follow the instructions provided by your ISP, probably in the form of a .pdf file on a CD; f) You have to create a username and password and then give some personal details.

Ex.10. Listen to an extract from a lecture on networks and answer these questions.

1. What does LAN stand for? 2. Where are LANs usually located? 3. What is the difference between a wired LAN and a wireless LAN?

Ex. 11. Listen again and label the elements of this LAN.

UNIT 5
THE INTERNET

Ex.1. Read the text and decide if the sentences below are True or False. If they are false, correct them.

What is the Internet?

What is the Internet? The Internet is an International computer Network made up of thousands of networks linked together. All these computers communicate with one another; they share data, resources, transfer information, etc. To do it they need to use the same language or protocol: TCP/IP (Transmission Control Protocol I Internet Protocol) and every computer is given an address or IP number. This number is a way to identify the computer on the Internet.

Getting connected. To use the Internet you basically need a computer, the right connection software and a modem to connect your computer to a telephone line and then access your ISP (Internet Service Provider).

The modem (modulator-demodulator) converts the digital signals stored in the computer into analogue signals that can be transmitted over telephone lines. There are two basic types: external with a cable that is plugged into the computer via a USB port, and internal, an expansion card inside the computer. A PC card modem is a different, more versatile option for laptops and mobile phones.

At first most computers used a dial-up telephone connection that worked through the standard telephone line. Now a broadband connection, a high data transmission rate Internet connection, has become more popular: either ADSL (Asymmetric Digital Subscriber Line), which allows you to use the same telephone line for voice and fast access to the Internet, or cable, offered by most TV cable providers.

The basic equipment has changed drastically in the last few years. You no longer need a computer to use the Internet. Web TV provides e-mail and access to the Web via a normal TV set plus a high-speed modem. More recently, 3Generation mobile phones and PDAs, personal digital assistants, also allow you to go online with wireless connections, without cables.

Telephone lines are not essential either. Satellites orbiting the earth enable your computer to send and receive Internet files. Finally, the power-line Internet, still under development, provides access via a power plug.

Components of the Internet. The Internet consists of many systems that offer different facilities to users.

WWW, the World Wide Web, a collection of files or pages containing links to other documents on the Net. It's by far the most popular system. Most Internet services are now integrated on the Web.

E-mail, or electronic mail, for the exchange of messages and attached files. Mailing lists based on programs that send messages on a certain topic to all the computers whose users have subscribed to the list.

Chat and instant messaging, for real-time conversations; you type your messages on the keyboard.

Internet telephone, a system that lets people make voice calls via the Internet. *Video conference*, a system that allows the transmission of video and audio signals in real time so the participants can exchange data, talk and see one another on the screen.

File Transfer Protocol (FTP), used to transfer files between computers. *Newsgroups,* where people send, read and respond to public bulletin board messages stored on a central computer. *TELNET*, a program that enables a computer to function as a terminal working from a remote computer and so use on-line databases or library catalogues.

1. The Internet and the World Wide Web are synonyms.

2. Computers need to use the same protocol (TCP I IP) to communicate with each other.

3. Web TV can provide access to the Net.

4. ADSL and cable are two types of dial-up connections.

5. External, internal and PC card are types of connections.

6. Information can be sent through telephone lines, satellites and power lines.

7. The computer IP number is a way to identify it on the Internet.

Ex. 2. What Internet system should these people use?

1."I like receiving daily updates and headlines from newspapers on my computer." 2."I'm doing some research and need computer access to the University library." 3. "I'd like to avoid flying to Japan to attend the meeting but I want to see what's going on there." 4."I want to read people's opinions

about environmental issues and express my views." 5."I have designed a web page and want to transfer the data to my reserved web space."6. "I'd like to check my students' draft essays on my computer and send them back with my suggestions." 7."I don't want to spend too much money on international phone calls but I love hearing his voice." 8."I live in a small village where there are no other teenagers. I wish I had the chance to meet and chat with friends."

Ex. 3. Choose the correct alternatives to complete this newspaper article.

Sharing your broadband connection with your neighbours is either the best way of making friends or the fastest way to lose them. Thanks to new European legislation, (1) *modem/wireless/telephone* technology and a firm called MyZones, several households within 300 metres of each other can now share the cost of fast (2) *broadband/dial-up/phone* access. But the more people using your network, the slower it gets. If four people are using it at once, the surfing speed is 128k. Clive Mayhew-Begg, chief executive of MyZones, says, "Sharing broadband is just the start of a new generation of consumer-based Internet services." It starts on July 25 when MyZones will start selling £150 starter kits. These include a Wi-Fi (wireless technology) point and ADSL (3) *3G/modem/TV* but not the Wi-Fi adapters you and your neighbours will need. These will cost an extra £60 or so for each computer logged on to the wireless network.

Ex. 4. How to choose the right ISP? How to decide whether you should change the one you have? Here are some decisions to make.

First of all you need to decide which type of connectivity (dial-up or broadband) you need depending on your requirements. Then the bandwidth (data transmission speed) they offer is another important factor. The services the ISP provides, such as the number of e-mail addresses, space for web pages or blogs, spam and virus protection should also be taken into account. Last but not least, the cost of special software and connection fees should have an influence on your choice. With these criteria in mind, have a look at some of the available ISPs and decide which one meets your needs best.

Ex. 5. Read the text and find words in it that match these definitions.

E-mail

An e-mail is an electronic message sent from one computer to another that can also include attachments: documents, pictures, sounds and even computer programs. Although it's much faster and easier to use than the post, snail mail, the two have many things in common: you send an e-mail to a mail server (an electronic post office) where it is stored in a mailbox, which holds incoming mail until the recipient downloads it. Users are given an e-mail address and a password by an Internet Service Provider (ISP).

A typical e-mail address has three parts: jsmith@hotmail.com, where jsmith – username (a person's name or nickname), the @ sign means 'at', hotmail.com – the domain name or network address: the mail server where the account is located. The final part of it, the top-level domain, adds information about it, e.g. .com = company, .org = non profit institution, .co.uk = a company in the UK, .es = España, etc.

E-mails usually have two main parts. 1. The header generally includes these: **TO** (name and address of the recipient); **CC** (carbon copy sent to another addressee); **BCC** (blank / blind carbon copy); **SUBJECT** (topic of the message).

2. The body (the message itself). Some e-mail programs also include a signature, with added information about the sender, at the end of the message.

You can make your message look more expressive or attractive by using smileys (also called emoticons): little pictures either made with characters from the keyboard such as :-) for happy, :-o surprised, :-(sad, etc. or downloaded images and animations.

Spam

Spam, or junk e-mail, is the name given to unwanted messages, mainly commercial advertising. Some companies, spammers, use it extensively because it's cheaper than other types of advertising: you or your Internet Service Provider pay for it.

Mailing lists and newsgroups. A mailing list is a basic type of discussion group that uses e-mail to communicate. The messages are distributed to all the subscribers, i.e. everyone who belongs to the list. Newsgroups are similar. The main difference is that the message is not sent to someone's mail server but to a bulletin board where everybody can read and answer the message.

1. File that has been included as part of an e-mail message.
2. Conventional mail delivered very slowly in contrast with e-mail.
3. Symbols used to express emotions in an e-mail.
4. The part of the e-mail address that identifies the user of the service.
5. The computer that provides you with mail service.
6. A facility that allows users to send and receive messages via the Internet.
7. The part of the e-mail where you write the information about the addresses and subject.
8. The part of the e-mail address that identifies the server.
9. The place where your Internet Service Provider stores new e-mail for you.

Ex. 6. Where in the main parts of an e-mail message would you write the information below? What additional information do the TLDs (top-level domains) of the addresses give you?

1. peterswinburn@jazzfree.com.
2. Eleanor Richardson, Manager
3. maryjones@arrakis.es; susanwilt@hotmail.co. uk.
4. Plane tickets.
5. Peter,

I've already booked the plane tickets to attend the Managers' Conference. Mary and Susan are joining us. Best wishes.

Ex. 7. Read this information on attaching files in two different e-mail programs and tell which information (1-6) is the same for E-post Express and Mega Mail, and which is different?

E-POST EXPRESS. You can attach a file while you are online or offline. Open the program and click. Create a new mail massage to go to you compose window. Click on the paperclip icon with the word Attach below it. An Insert Attachment dialog box appears, which shows your computer directory. Click on the file you want to send and then click the Attach button. The file and an icon appear in the attach field. Send multiple files by repeating the procedure. The files can be any size but some servers will not accept files of more than one megabyte. To remove a file, click on the attachment with the right mouse button then click Remove. When you are finished, click Send.

MEGA MAIL. Connect to the Internet to open your program and go to the compose screen. Click on Attach Files. A screen opens showing three Browse buttons. You can only send three attachments up to three megabytes in total. Click on the first Browse button. A Choose File dialog box appears, which shows your computer directory. Click on the file you want to send. The File name appears in the drop-down list box. Click Open. The Choose File dialog box disappears and the file appears in the file field of the Attach File screen. Click Attach Files. A screen appears telling you that the file is being attached and then another screen appears when the program has attached the file. To add more files, click Attach More Files and the Attach Files screen will reappear. When you have finished, click Done. You compose screen reappears, listing the name of the attached file with an icon next to it. Click Send.

1. You can send up to three megabytes of data. 2. A dialog box appears, showing the computer directory. 3. You can attach and send up to three files. 4. You have to be online to attach files. 5. Click Send when you want to send your e-mail. 6. The program shows an icon next to the attached file.

Ex. 8. A manager is giving his colleagues some advice on how to prevent spam. Complete the sentences with the words in the box.

Mailing list, spam, e-mail address, newsgroups, spammers.

1. Never ever reply to a … e-mail or click on a link within the mail – this will lead to more junk email being sent to you. Unsubscribing only confirms you do actually exist, so they've hit the jackpot. 2. Don't let your e-mail address be displayed anywhere on the Internet, including ... , chat rooms or any websites. 3. Never forward a spam to other people – … might be able to track their addresses too, and you could end up losing friends! 4. Send your e-mails on a strictly 'need to know' basis; don't include everyone on a … unless it is really necessary. 5. Treat your … like your phone number – don't give it out randomly. Try to use a different one when shopping online.

WWW

Ex. 9. Read the text and tell what the Web is; how to surf the Web and what you can do on the Web.

The World Wide Web, Web or WWW is a network of documents that works in a hypertext environment, i.e. using text that contains links, hyperlinks to other documents. The files, web pages, are stored in computers, which act as servers. Your computer, the client, uses a web browser, a special program to access and download them. The web pages are organized in websites, groups of pages located on the Web, maintained by a webmaster, the manager of a website. The Web enables you to post and access all sorts of interactive multimedia information and has become a real information highway.

To surf or navigate the Web, access and retrieve web pages or websites, you need a computer with an Internet connection and a web browser. After you have launched it, you must type the website address or URL (Uniform Resource Locator), which may look like this: http://www. cup.org/education/sample.htm.

http: // indicates the type of protocol that the server and browser will use to communicate; www. shows that it is a resource on the World Wide Web; cup.org is the domain name of the web server that hosts the website; education is the path, the place where a web page is located; htm is the filename or name of a single web page.

The different parts are separated by full stops (.) and forward slashes (/). When we say a URL, we say dot (.) and slash (/).

To find interesting sites you can use search engines, where the website information is compiled by spiders, computer-robot programs that collect information from sites by using keywords, or through web indexes, subject directories that are selected by people and organized into hierarchical subject categories. Some web portals – websites that offer all types of services, e.g. email, forums, search engines, etc. – are also good starting points.

The most relevant website addresses can be stored in your computer using the bookmarks or favorites function in your browser. Websites usually have a beginning page or home page. From this starting point you can navigate by clicking your mouse on hyperlinks in texts or images.

The Web is an open door to a universe of multimedia resources that people use in many different ways. Here are just a few.

"In my weblog, an electronic journal I maintain on the Web, you can read and post opinions in chronological order. In my role as blogger, the manager of a blog, I can promote this new type of discussion."

"E-learning, education via the Web, is a great opportunity for people like me who haven't got time to attend classes."

"On-line shopping, i.e. cyber-shopping or e-commerce, saves you time and gives you the comfort of buying from your personal computer. The goods are then sent to you, so it's very easy."

Ex. 10. Complete these instructions about how to navigate with the words in the box.

Client, search engine, web page, web server, surf, website, web browser, URL.

1. Start up your computer and connect to the Internet. 2. Open your … … . 3. Type the ... to access a website. 4. Your web browser sends the request to the correct … … . 5. The server looks for the document and sends it to the …. computer. 6. Your web browser displays the selected … … on the screen. 7. From the home page of the … you can … to other pages by clicking on hyperlinks. 8. If you want to find more websites, use a … … .

Ex. 11. Read the text, solve the following clues and complete the puzzle with words from the text.

IRC (Internet relay chat) is a system that allows Internet users to meet in channels (or chat rooms) in order to have live conversations on the topic of the chosen channel. To participate you need to install a chat client, a special type of software, on your computer to connect to the chat server, the computer where the meeting takes place.

Once you have logged int0 an IRC server or a web chat site, you have to choose a user name or nickname that will identify you during the chat.

After choosing the channel, you can read the conversations, type and send messages. You can post messages to everyone in the channel or have private conversations with someone.

Channels are run by channel operators "chanops" or just "ops" who control the content and the people who join and may ban users or ask them to leave the room.

Instant messaging allow Internet users to communicate in one-to-one conversations; they are a chat room for just two people. With programs such as ICO (I seek you) and MSN Messenger you can maintain a list of people, called a buddy list or contact list. The program opens up a small window where the people engaged in the conversation type their messages. The latest IM programs also incorporate telephone, video and file-sharing facilities and are becoming an alternative to traditional video conferencing programs.

Video conferencing (video call) systems allow a live connection between two or more participants in separate locations using the Internet to exchange audio and video data. The users need a computer with broadband access, a webcam, a microphone and speakers. Some popular programs are Skype, Google+ Hangouts, Onstream Meetings, Windows Live Video Messenger (Microsoft) and many others.

The Net can also be used for on-line telephone conversations, either computer-to-computer or computer-to-phone, which require special software (e.g. Net2Phone) or an applet, a Java application that runs from the browser when you access a web page, and also a microphone, sound card and speakers.

This type of communication uses VoIP (Voice over Internet Protocol), which turns analogue audio signals, like the ones on the telephone, into digital data that can be sent via the Internet.

Internet users can also communicate in three-dimensional environments. Instead of nicknames, people choose Avatars or 3D characters in order to interact with other people. A popular language used to create interactive simulations within the Net is VRML (Virtual Reality Modeling Language).

1. One of the systems used for chat rooms.	_ _ C
2. The protocol needed for online phone conversations.	_ o _ _
3. The language used to build virtual simulations.	_ _ M _
4. Avatars are three … characters.	_ _ m _ _ _ _ _ _ _ _
5. Video calls transmit … and video data.	_ u _ _ _
6. Another word for channel operators.	_ _ _ n _ _ _
7. You must install a chat … on your	_ _ i _ _ _

computer.	
8. The conversation takes place on a … server.	c _ _ _
9. A type of Java program whose name sounds like a fruit.	a _ _ _ _ _
10. A synonym of a buddy list is a … list.	_ _ _ t _ _ _
11. Chats can also take place on the …	_ e _

Ex. 12. Complete the sentences below with words from the box.

buddy	video conferencing	nicknames
chat room	messaging	avatars

1. Always show respect for other people in a … … Never send any unpleasant or threatening email messages. 2. Most instant … programs have what is called a … list. Each user's screen shows a box with the … of the people he/she chats with. 3. The company hopes to have virtual open-plan offices, where researchers from around the world can collaborate. Individuals would be represented by … , personalized electronic figures with perhaps a name badge or a picture of the owner's face. 4. Fear of flying is producing a surge of interest in … … , in which business people meet face-to-face even though they are hundreds or thousands of miles apart.

Ex. 13. Look at the definition of etiquette. What do you think Netiquette is?

Etiquette – formal rules of correct and polite behavior in society or among members of a profession. There are certain netiquette rules you should follow if you want to use chat rooms and other communication environments correctly. Next time you enter a chat room, keep them in mind.

Netiquette

Ex. 14. Read the text about Netiquette and check your answer to Exercise 12. Then write the headings (a-d) above the correct paragraphs (1-4):

a) rules for talking on-line; b) invading privacy; c) the Golden Rule; d) culture and netiquette.

1. …

People in the West usually shake hands when they first meet. Good friends in Middle Eastern cultures kiss each other three times on the cheeks. The Japanese bow their heads to show respect and the Thais bring their

hands together in front of their face. The online community, too, has its own culture and customs. Good Internet behavior is called Netiquette.

2. …

The Internet is an international of communication where you can talk to people on-line. Asking questions is fun but making jokes about people from other cultures can lead to misunderstanding and bad feelings. Sending hurtful or insulting messages, or flames, to people is bad behavior. Bad language is not cool. Everyone is happy when people are friendly.

3. …

Netiquette includes more than good spelling and grammar. Typing in all upper case is bad as it is the same as SHOUTING. Not starting your sentences with capital letters is lazy. Sending e-mails with 'Hello' and 'Thank you' is nice. The Golden Rule is "Treat others in the same way that you like to be treated." Remember, real people read what you type!

4. …

It is also bad Netiquette to send people spam. This kind of e-mail means people have to cancel something that they did not ask for in the first place. When you use Cc: instead of Bcc: you send other people's e-mail addresses without their permission. This is an invasion of their privacy and breaks the Golden Rule.

Remember these ten netiquette commandments by heart.

1. Be polite. You're speaking to a human being not to a machine.

2. Don't use CAPITAL LETTERS! This is considered as shouting.

3. Have a look at the tone of the conversation in the room before you take part. You may not like that channel.

4. Ignore those people who don't follow these rules.

5. Don't believe all the things people might tell you. Some people lie just for fun.

6. Don't give personal information (your real name, address, password, etc.).

7. Protect your computer. Use a firewall and antivirus programs.

8. Don't accept files from people you don't know. They might be or contain Trojans.

9. In short, follow the same rules as in real life.

10. Enjoy your chat and have fun!

Ex. 15. Work in pairs. Match the emoticons with the meanings and descriptions in the box. Do you know any others?

1. :(	2. :((	3. :D	4. :)
5. >:(	6. B)	7. :|	8. :O

shouting	I don't care!	sad	very sad
very angry	cool sunglasses smiley	laughing	happy

Ex. 16. We often use abbreviations in on-line chats and Instant Messaging. Match the most common abbreviations with their meanings:

ASAP	Laughing out loud	IMO	Face to face
BBS	are	LOL	see
BFN	you	TIA	be
BTW	Good luck	msg	By the way
F2F	In my opinion	ur	I love you
GL	Hug and kiss	2	Message
IC	Bye for now	4	your/you're
ILU	In other words	b	As soon as possible
c	Be back soon	r	Thanks in advance
u	I see	H&K	for
IOW	to		

Ex. 17. Rewrite this IM chat using abbreviations.

Paulo:	By the way, are you free on Saturday?
Emma:	Sure – it would be good to meet face to face. Shall we go for a coffee?
Paulo:	Good plan. Cafe Moka makes the best coffee, in my opinion.
Emma:	It's the closest to your house in other words!
Paulo:	Laughing out loud! Yes, you're right! But the coffee really is good.
Emma:	See you at 4?
Paulo:	Great. Bye for now.

Ex. 18. Read the article and find websites for the following tasks.

1. To search for information on the Web. 2. To buy books and DVDs. 3. To participate in political campaigns. 4. To view and exchange video clips. 5. To manage and share personal photos using tags. 6. To buy and sell personal items in on line auctions. 7. To download music and movies, sometimes illegally.

Tour the Collectives of Cyberspace

The Internet isn't just about e-mail or the Web anymore. Increasingly, people on-line are taking the power of the Internet back into their own hands. They're posting opinions on on-line journals – weblogs, or blogs; they're organizing political rallies on MoveOn.org; they're trading songs on illegal file-sharing networks; they're volunteering articles for the online encyclo-

pedia Wikipedia; and they're collaborating with other programmers around the world. It's the emergence of the "Power of Us". Thanks to new technologies such as blog software, peer-to-peer networks, open-source software, and wikis, people are getting together to take collective action like never before.

eBay, for instance, wouldn't exist without the 61 million active members who list, sell, and buy millions of items a week. But less obvious is that the whole marketplace runs on the trust created by eBay's unique feedback system, by which buyers and sellers rate each other on how well they carried out their half of each transaction. Pioneer e-tailer Amazon encourages all kinds of customer participation in the site – including the ability to sell items alongside its own books, CDs, DVDs and electronic goods. MySpace and Facebook are the latest phenomena in social networking, attracting millions of unique visitors a month. Many are music fans, who can blog, e-mail friends, upload photos, and generally socialize. There's even a 3-D virtual world entirely built and owned by its residents, called Second Life, where real companies have opened shops, and pop stars such as U2 have performed concerts.

Some sites are much more specialized, such as the photo-sharing site Flicker. There, people not only share photos but also take the time to attach tags to their pictures, which help everyone else find photos of, for example, Florence, Italy. Another successful example of a site based on user-generated content is You Tube, which allows users to upload, view and share movie clips and music videos, as well as amateur video-blogs. Another example of the collective power of the Internet is the Google search engine. Its mathematical formulas surf the combined judgements of millions of people whose websites link to other sites. When you type Justin Timberlake into Google's search box and go to the star's official website, the site is listed first because more people are telling you it's the most relevant Justin Timberlake site – which it probably is.

Skype on the surface looks like software that lets you make free phone calls over the Internet – which it does. But the way it works is extremely clever. By using Skype, you're automatically contributing some of your PC's computing power and Internet connection to route other people's calls. It's an extension of the peer-to-peer network software such as Bit Torrent that allow you to swap songs – at your own risk if those songs are under copyright. BitTorrent is a protocol for transferring music, films, games and podcasts. A podcast is an audio recording posted on-line. Podcasting derives from the words iPod and broadcasting. You can find podcasts about almost any topic – sports, music, politics, etc. They are distributed through RSS

(Really Simple Syndication) feeds which allow you to receive up-to-date information without having to check the site for updates. BitTorrent breaks the files into small pieces, known as chunks, and distributes them among a large number of users; when you download a torrent, you are also uploading it to another user.

Ex. 19. Choose the answers YES/NO. Read the text to check your answers.

1. Can you send music in an e-card? 2. Do you have to save an e-card to view it? 3. Do you pay for freeware programs? 4. Can you download a movie from the Internet?

You can view many interesting websites with your browser. Some let you view and send e-cards for birthdays, holidays or other special occasions using your e-mail program. An e-card can contain pictures, cartoon animations, or play songs. You can type your own personal message on the card, change the music, preview it, or send it as a screen saver. Most e-cards open automatically in your e-mail, others give you a link to click. You usually view e-cards like a standard Web page.

You can download computer programs, games and utilities, such as virus protection programs. Some of these programs are shareware, which means you pay a fee if you keep the program, or freeware, which have no fee. To download a program, you save it on your computer. After you click the download button, the Save As dialog box appears. Choose the location where you want to save the file and click Save. It can take anything from a few seconds to a few hours for a download to complete.

You can view e-mail attachments on the Internet or you can save them onto your computer. To open an attachment your computer needs a program that can open it. If your computer does not have compatible software, you cannot open the attachment. All digital files have a file extension that shows you the file format, for example, .avi for video, .doc for MS Word files and .mpeg for music files.

Ex. 20. Read the article about cloud computing and say if the following statements are TRUE (T) or FALSE (F).

1. Salesforce has been operating cloud services longer than the big players. 2. Salesforce has had to change its business model because of falling profits. 3. Benioff believes cloud computing will replace call centres and helplines. 4. Cloud computing suffers from more unplanned down ti me than average in-house IT departments.

The "cloud" and cloud computing are among the buzz words of the year. The big players are moving into this area in a big way. Google will already run your e-mail and host your documents, and its App Engine lets users run

custom applications. Amazon has a service that allows users to set up virtual servers on the Internet, and Microsoft is joining the party with Windows Azure. At the same time, the concept of cloud computing is far from new, and one company that has been in the business since 1999 is salesforce.com. The business lets customers manage their sales data, leads and other information on the Internet using salesforce.com's on-line applications, and with over $1 bln in annual revenue. It is clearly a model that works.

Marc Benioff, the company's 44-year-old chief executive and co-founder is convinced that cloud computing is the way ahead. "This is the future," he says. "If it isn't, I don't know what is. We're in it. You're going to see this model dominate our industry."

Benioff sees the service cloud as the alternative to call centres and telephone help-lines. He believes that when customers have a problem with a product or service they no longer call a helpline, they go to Google. Companies like Orange are already using the service cloud, where they can set up their own web portal with links to customer services and other applications.

But are there any dangers to this the brave new world? When Gmail was hit by an outage in February, Twitter was alive with cries about the risks of moving mission-critical data and applications outside your own IT department's control, even though the downtime lasted only about two and a half hours. Besides questions about reliability, some doubters also voice worries about privacy and security. But supporters of the cloud say that organizations like Salesforce and Google do a much better job of uptime and transparency than most IT departments. "All complex systems have planned and unplanned downtime," says Benioff, who claims 99.9% uptime last year. The reality is we are able to provide higher levels of reliability and availability than most companies could provide on their own. His 55,000 customers and 1.5 million subscribers, will be hoping that he is right.

Ex. 21. Read the text and match the words (1-7) with the definitions (A-G).

Cloud Computing

Cloud computing provides many businesses with affordable and customizable services. Yet many avoid this technological resource because they don't understand it. This week's column should explain the concept. Cloud computing is a lot like utility computing. However, cloud computing focuses on using the Internet for software and other resources. Cloud computing offers more elasticity and scalability than normal computing. Businesses have access to many resources from both the private and public clouds. Computers can easily switch to a new OS

with PaaS (platform as a service). They can also switch to a new server with IaaS (infrastructure as a service).

Businesses benefit from the pay as you go pricing of cloud computing. And with SaaS (software as a service), the deployment of new software is almost automatic. It eliminates the need to buy software and install it on every single computer. Furthermore, businesses can monitor their usage and cancel services anytime.

Installing a CDN (content delivery network) is a local form of cloud computing that will increase bandwidth. A CDN designates computers on a network for storage. Instead of all computers clogging one server to retrieve data, each user accesses data on a nearby CDN storage computer.

1. Public cloud, 2. Cloud computing, 3. Private cloud, 4. Utility computing, 5. PaaS, 6. IaaS, 7. Scalability

A. Internet services available for a fee.
B. Internet services available to everyone.
C. Receiving server functions over the Internet.
D. Receiving operating systems over the Internet.
E. Use of the Internet for software and other services.
F. Potential for a system to change size.
G. Computing as a metered service.

UNIT 6
SOFTWARE

Ex.1. Read the text about software and define the term 'computer software".

What is Software?

Computer software is a general term used to describe a collection of computer programs, procedures and documentation that perform some tasks on a computer system. Software includes websites, programs, video games, etc. that are coded by programming languages like C, C++, etc. The term "software" is sometimes used in a broader context to mean anything which is not hardware (which encompasses the physical interconnections and devices required to store and execute (or run) the software) but which is used with hardware, such as film, tapes, records, etc.

In computers, software is loaded into RAM and executed in the CPU. Once the software is loaded, the computer is able to execute the software. This involves passing instructions from the application software, through the system software, to the hardware which ultimately receives the instruction as machine code. Each instruction causes the computer to carry out an opera-

tion – moving data, carrying out a computation, or altering the control flow of instructions. Software is usually written in high-level programming languages that are easier and more efficient for humans to use (closer to natural language) than machine language. The term "software" was first used by John. W. Tukey in 1958.

Classes of Software

Practical computer systems divide software into three major classes: system software, programming software and application software, although the distinction is arbitrary, and often blurred.

• *System software* helps run the computer hardware and computer system. It includes operating systems, device drivers, servers, windowing systems, utilities and more. The purpose of system software is to insulate the applications programmer as much as possible from the details of the particular computer complex being used, especially memory and other hardware features, and such accessory devices as printers, readers, displays, keyboards, etc.

• *Programming software* usually provides tools to assist a programmer in writing computer programs and software using different programming languages in a more convenient way. The tools include text editors, compilers, interpreters, linkers, debuggers, etc.

• *Application software* allows end users to accomplish one or more specific tasks. It is often purchased separately from computer hardware. Sometimes applications are bundled with the computer, but that does not change the fact that they run s independent applications. Typical applications include industrial automation, business software, educational software, medical software, databases, and computer games. Businesses are probably the biggest users of application software, but almost every field of human activity now uses some form of application software.

Ex. 2. Give Russian equivalents of the following words and expressions:

encompass, interconnections, execute, carry out, alter, arbitrary, insulate, compilers, debuggers, accomplish, tools, CPU, paste, precede, blurred.

Ex. 3. Answer these questions.

1. Who was the term first used by? 2. How do computer hardware and software correlate? 3. What major classes are software systems divided into? Describe each one. 4. How do computer operate?

Ex. 4. Say which of the following statements are true or false. Correct the false ones.

1. Computer software is divided into 2 major classes. 2. Software encompasses the physical interconnections and devices required to store and run the program. 3. Programming software allows end users to accomplish

one or more specific (non-computer related) tasks. 4. Application software always comes bundled with the computer and you will have the ability to change it on a PC. 5. Once the software is loaded, the computer is not able to execute the software.

Types of Software
Ex. 5. Fill in the gaps with the following words and expressions (a-h):

a) commercial software, b) spyware, c) proprietary software, d) adware (advertising-supported software), e) careware, f) freeware, g) abandonware, h) shareware.

1. ... It's a computer software that is available for use with no cost or for an optional fee. The user is not obliged to pay (e.g. after some trial period or for additional functionality).

2. The term ... refers to copyrighted commercial software that is distributed without payment on a trial basis and is limited by any combination of functionality, availability, or convenience. It is often offered as a download from an Internet website or as a CD inserted into a periodical such as a magazine. The aim of this type of software is to give buyers the opportunity to use the program and judge its usefulness before purchasing a license for the full version of the software. It is usually offered as a trial version with certain features only available after the license is purchased, or as a full version, but for a trial period. This software is often offered without support, updates, or help menus, which only become available with the purchase of a license.

3. ... refers to computer software that is no longer sold or supported, or whose copyright ownership may be unclear for various reasons. In other words, it is the software no longer available for legal purchase. The reasons can be different: software companies may change their names, go bankrupt, enter into mergers, or cease to exist for a variety of reasons.

4. ... is any software package which automatically plays, displays, or downloads advertisements to a computer after the software is installed on it or while the application is being used. Some types of this software are also spyware and can be classified as privacy-invasive software.

5. ... (also called charityware) is software distributed in a way that benefits a charity. Some ... is distributed free, and the author suggests that some payment be made to a nominated charity.

6. ... is a computer software which is the legal property of one party. The terms of use for other parties are defined by contracts or licensing agreements. These terms may include various privileges to share, alter and use the software and its code. Therefore this software is not free. Well

known examples of this type of software include Microsoft Windows, adobe Photoshop, Mac OS X, WinZip.

7. … is a computer software that is installed intentionally on a PC to intercept or take partial control over the user's interaction with the computer, without the user's informed consent. … programs can collect various types of personal information, such as the Internet surfing habits, sites that have been visited, but can also interfere with the user's control of the computer in other ways, such as installing additional software and redirecting Web browser activity.

8. … refers to any software that is designed for sale to serve a commercial need. It is usually proprietary software, but in some instances it may be public-domain (общедоступный) software.

Ex.6. Talking points:
1. Computer software: definition, major classes.
2. Types of software.
3. Software reliability.

Ex. 7. Translate the following text into English in writing.

Программное обеспечение – наряду с аппаратными средствами, важнейшая составляющая информационных технологий, включающая компьютерные программы и данные, предназначенные для решения определенных задач.

В компьютерном жаргоне часто используется слово «софт» от английского software, которое в этом смысле впервые применил в статье American mathematical Monthly математик из Принстонского университета Джон Тьюки (John W. Tukey) в 1958 г.

По назначению ПО разделяется на системное, прикладное и инструментальное. Системное программное обеспечение реализует связь аппаратного и программного обеспечения, выступая в качестве «межслойного интерфейса», с одной стороны которого аппаратура, а с другой приложения пользователя.

Прикладное программное обеспечение призвано решать прикладные задачи пользователя. Например, финансовое управление, сеть поставок, управление транспортными расходами.

Инструментальное программное обеспечение предназначено для использования в ходе проектирования, разработки и сопровождения программ. Виды инструментального ПО: текстовые редакторы, компиляторы, интерпретаторы, линковщики, отладчики, ассемблеры.

По способу распространения (доставки, оплаты, ограничения в использовании) ПО подразделяются на:

• Freeware – бесплатное ПО, являющееся собственническим. Условия его распространения могут запрещать его копировать, изменять, распространять;

• Shareware – условно-бесплатное ПО. Пользователю предлагают пробную версию с раздражающим напоминанием (NAG) о необходимости оплаты использования программы. Основной принцип этого ПО: «попробуй, прежде чем купить»;

• Abandonware – ПО, которое больше не выставляется на продажу производителем, и от которого больше не получают доходов;

• Adware – ПО, содержащее рекламу. Пользователю принудительно показывается реклама.

• Careware – вид условно-бесплатного ПО. Автор данного программного обеспечения требует, чтобы оплата за него шла на благотворительность;

• Spyware – шпионский программный продукт. Устанавливается без оповещения пользователя, его согласия и контроля.

• Proprietary ware – собственническое ПО. Правообладатель сохраняет за собой монополию на его использование, копирование, модификацию.

• Commercial software – ПО, созданное коммерческой организацией с целью получения прибыли.

UNIT 7
PROGRAMMING AND PROGRAMMING LANGUAGES

Ex.1. Read the text and then put these programming steps into the correct order.

Document and maintain the program. Test the program and detect bugs. Make flowchart. Write code and compile. Analyze the problem Debug and correct it if necessary.

Programming is the process of writing a program using a computer language. *A program* is a set of instructions which a computer uses to do a specific task (e.g. a solution to a maths problem). The only language a PC can directly execute is *machine code*, which consists of ls and 0s. This language is difficult to write, so we use symbolic languages that are easier to understand. For example, assembly languages use abbreviations such as ADD, SUB, MPY to represent instructions. The program is then translated into machine code by software called *an assembler*. Machine code and assembly languages are called *low-level languages* because they are closer to the hardware. Each statement in a program written in a low-level language

usually corresponds to one machine instruction. Assembly language might be used for any of three major reasons: speed, control, and preference. Programs written in assembly language usually run faster than those generated by a compiler; use of assembly language lets a programmer interact directly with the hardware (processor, memory, display, and input/output ports).

Compiled language is a language that is translated into machine code prior to any execution, as opposed to an interpreted language, which is translated and executed statement by statement.

High-level languages, however, are closer to human languages; they use forms resembling English, which makes programming easier. The program is translated into machine code by software called *a compiler*. Some examples are: FORTRAN – used for scientific and mathematical applications; COBOL – popular for business applications; BASIC – used as a teaching language; Visual BASIC is now used to create Windows applications; C – used to write system software, graphics and commercial programs; Java – designed to run on the Web; Java applets are small programs that run automatically on web pages and let you watch animated characters, and play music and games.

The languages used to create Web documents are called *markup languages*; they use instructions (markups) to format and link text files. Examples are: HTML – the code used to create Web pages; VoiceXML – it makes the Internet content accessible via speech recognition and phone. Instead of using a web browser on a PC, you use a telephone to access voice-equipped websites. You just dial the phone number of the website and then give spoken instructions, commands, and get the required information.

Steps in Writing a Program

To write a program, software developers usually follow these steps. First they try to understand the problem and define the purpose of the program. They design a *flowchart*, a diagram which shows the successive logical steps of the program. Next they write the instructions in a high-level language (Pascal, C, etc.). This is called *coding*. The program is then compiled. When the program is written, they test it: they run the program to see if it works and use special tools to detect bugs, or errors. Any errors are corrected until it runs smoothly. This is called debugging, or bug fixing.

Finally, software companies write a detailed description of how the program works, called *program documentation*. They also have a maintenance program. They get reports from users about any errors found in the program. After it has been improved, it is published as an updated version.

Ex. 2. Match the terms with their definitions.

1. Programming	a) basic language which consists of binary codes;
2. Machine code	b) programming language such as C, Java or Visual BASIC;
3. Assembly language	c) writing computer programs;
4. High-level language	d) low-level language translated into machine code by an assembler;
5. Java applet	e) software which converts a source program into machine code;
6. Compiler	f) language used to create and format documents for the Web;

Ex. 3. Work in groups of three. Read one of the texts below and complete the Table. When you have finished exchange information with the others in your group to complete two similar Tables.

Types of errors	
Definition	
Example	
Ways to avoid or deal with this kind of error	

A. *System errors* affect the computer or its peripherals. For example, you might have written a program which needs access to a printer. If there is no printer present when you run the program the computer will produce a system error message. Sometimes a system error makes the computer stop working altogether and you will have to restart the computer. A sensible way of avoiding system errors is to write code to check that peripherals are present before any data is sent to it. Then the computer would warn you by a simple massage on the screen, like "printer is not ready or available".

B. *Syntax errors* are mistakes in the programming language (like typing PRNIT instead of PAINT). Syntax errors cause the program to fail. Some translator programs won't accept any line that has syntax errors. Some only report a syntax error when they run the program. Some languages also contain special commands such as *debug*, which will report structural errors in a program. The programming manual for the particular language you're using will give details of what each error message means.

C. *Logic errors* are much more difficult to detect than syntax errors. This is because a program containing logic errors will run, but it won't work properly. For example, you might write a program to clear screen end then print 'hello'. Here is a code for this:

```
10// Message          30  CLS
20  PRINT 'Hello'     40  END.
```

The code has a logic error in it, but the syntax is right so it will run. You can get rid of logic errors from simple programs by 'hand-testing' them or doing a "dry run" which means working through each line of the program on paper to make sure it does what you want it to do. You should do this long before you type in the code.

Ex. 4. Match these problems and solutions.

Problems	Solutions
1. Connect a computer to a telephone line.	a) write code to check a peripheral is present before any data is sent;
2. Identify items for pricing.	b) use the *debug* command;
3. Add extra facilities to a computer.	c) add more memory;
4. Get more file storage space.	d) format the disk;
5. Find syntax errors.	e) use a removable disk;
6. Avoid marking the surface of a CD-ROM.	f) install and expansion card;
7. Improve the speed of your computer.	g) install a modem;
8. Avoid system errors.	h) fit a bigger hard disk;
9. Prepare a new disk for use.	i) use barcode labels;
10. Transfer information between computers.	j) hold it by the edges.

Ex. 5. Read the text and tell about Object-Oriented Programming.

Object-Oriented Programming

Object-Oriented Programming (OOP), in computer science, is a type of high-level computer language that uses self-contained, modular instruction sets for defining and manipulating aspects of a computer program. These discrete, pre-defined instruction sets are called objects and may be used to define variables, data structures, and procedures for executing data operations. In OOP, objects have built-in rules for communicating with one another. They can also be manipulated or combined in various ways to modify existing programs and to create entirely new ones from pieces of other programs. The most popular OOP language is C++. In May, 1995 a new OOP language Java was released. It has drawn worldwide interest. In some ways Java represents a simplified version of C++, but it adds other features and capabilities as well, and is particularly well suited for writing interactive applications to be used on the World Wide Web.

Ex. 6. Look at the table and answer the questions:

1. Who invented Java? 2. When was Java developed? 3. Can Java run on any computer (Mac, PC or UNIX workstation)? 4. What are Java's small programs called? What can you do with them?

Language	Date	Characteristics	Uses
Java invented by Sun Microsystems	1995	Cross-platform language that can run on any machine. Small Java programs, called "applets", let you watch animated characters, play music and interact with information	Designed to create Internet applications. When you see a Web page containing Java links, a Java program is executed automatically.

Ex. 7. Listen to the dialogue. Complete the Table with the relevant information.

Developed by	Date	Characteristics	Uses	Extensions
Dennis Ritchie at …		Created to replace … The language is small, …	Originally designed for … Today it is used to …	C++ and … Object-oriented language

Ex. 8. Answer the questions.

1. Are programming languages artificial or natural? 2. What type of programming languages do you know? 3. What programming languages are preferable to programmers? 4. What programming languages can you name?5. Which of them do you like best? 6. What programming languages have you already worked with? 7. What are the differences between them?

UNIT 8
OPERATING SYSTEM

The Definition of the OS

An operating system (commonly abbreviated as OS and O/S) is the software component of a computer system that is responsible for the management and coordination of activities and the sharing of the resources of the

computer. It is the most important program that runs on a computer. Every general-purpose computer must have an operating system to run other programs. Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers. For large systems, the OS has even greater responsibilities and powers. It is like a traffic cop (гаишник) – it makes sure that different programs and users running at the same time do not interfere with each other. The OS is also responsible for security, ensuring that unauthorized users do not access the system. Almost all computers, including hand-held computers, desktop computers, supercomputers and even modern video game consoles, use an operating system of some type.

Operating systems can be classified as follows:

• Multi-user (многопользовательские): allow two or more users to run programs at the same time. Some operating systems permit hundreds or even thousands of concurrent users.

• Multi-processing: support running a program on more than one CPU.

• Multi-tasking: allow more than one program to run concurrently (одновременно).

• Real time: respond to input instantly (реагируют на вход мгновенно).

Operating systems provide a software platform on top of which other programs, called *application programs* (прикладные), can run. The application programs must be written to run a particular operating system. Your choice of operating system, therefore, determines to a great extent the applications you can run. For PCs, the most popular operating systems are Windows, OS/2, Linux.

As a user, you normally interact with the OS through a set of commands. For example, the DOS operating system contains commands such as COPY and RENAME for copying files and changing the names of files, respectively. The commands are accepted and executed by a part of the operating system called the *command processor* or command line interpreter. Graphical user interfaces allow you to enter commands by pointing and clicking at objects that appear on the screen.

Types of OS

The three most common operating systems for personal computers are Microsoft Windows, Apple Mac OS X, and Linux.

Microsoft Windows. Microsoft created the Windows OS in the mid-1980s. Over the years, there have been many different versions of Windows, but the most recent ones are Windows 8 (released in 2012), Windows **7** (2009), and Windows Vista (2007). Windows comes preloaded on most new PCs, which

helps to make it the most popular operating system in the world. Windows dominates the PC world, running, by some estimates, on 90 % of all PCs. The remaining 10% are mostly Macintosh computers. Like the Macintosh operating environment, Windows provides a GUI, virtual memory management, multi-tasking and support for many peripheral devices.

Mac OS is a line of operating systems created by Apple. It comes pre-loaded on all new Macintosh computers, or Macs. All of the recent versions are known as OS X (pronounced O-S Ten), and the specific versions include Yosemite (released in 2014), Mavericks (2013), Mountain Lion (2012), Lion (2011), and Snow Leopard (2009). Apple also offers a version called Mac OS X Server, which is designed to be run on servers. Mac OS X users account for 9.5% of the operating systems market as of September 2014 – much lower than the percentage of Windows users (almost 90%). One reason for this is that Apple computers tend to be more expensive. However, many people prefer the look and feel of Mac OS X.

Linux (pronounced LINN-ux) is a family of open-source operating systems, which means they can be modified and distributed by anyone around the world. This is different from proprietary software like Windows, which can only be modified by the company that owns it (Microsoft). The advantages of Linux are that it is free, and there are many different distributions – or versions – you can choose from. Each distribution has a different look and feel, and the most popular ones include Ubuntu, Mint, and Fedora. Linux is named after Linus Torvalds, who created the Linux kernel in 1991. The *kernel* is the computer code that is the central part of an operating system. Linux users account for less than 2% of the operating systems market as of September 2014. However, most servers run Linux because it's relatively easy to customize.

Operating Systems for Mobile Devices

The operating systems we've been talking about were designed to run on desktop or laptop computers. *Mobile devices* such as phones, tablet computers, and MP3 players are different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include Apple iOS, Windows Phone, and Google Android. Operating systems for mobile devices generally aren't as fully featured as those made for desktop and laptop computers, and they aren't able to run all of the same software. However, you can still do a lot of things with them, like watch movies, browse the Web, manage your calendar, and play games.

Ex. 1. Define the term 'operating system'.

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Ex. 2. Give Russian-English equivalents of the following words and expressions:

current state, драйвер устройства, launch, interrupt, запускать, concurrent, open source, распределять, multi-tasking, загрузка, browse the Web, ядро, multi-reading, быть причиной, recognizing input, многопоточность, interact, прикладная программа, kernel, открытый источник.

Ex. 3. Talking points.

1. What operating system does your computer use? 2. Visit the Microsoft and Apple websites to learn more about each operating system. 3. Search the Internet for articles that compare Windows and Mac OS X. 4. Visit the Ubuntu, Mint, and Fedora websites to learn more about each Linux distribution. 5. f you have a PC and currently use an older version of Windows, such as Windows 7, search for articles comparing Windows 8.1 with Windows 7.

UNIT 9
WEB DESIGN

Web design is a process of conceptualization, planning, modeling and execution of electronic media content delivery via the Internet in the form of technologies (such as markup languages) suitable for interpretation and display by a web browser or other web-based graphical user interfaces (GUIs).

The intent of web design is to create a web site (a collection of electronic files residing on one or more web servers) that presents content to the end user in the form of web pages once requested. Such elements as text, forms, and bit-mapped images (растровые изображения) (GIFs, JPEGs, PNGs) can be placed on the page using HTML, XHTML, or XML tags. Displaying more complex media (vector graphics, animations, videos, sounds) usually requires plug-ins such as Flash, QuickTime, Java run-time environment (исполнительная среда), etc.

Typically web pages are classified as static or dynamic. Static pages don't change content and layout (разметка) with every request unless a human (web master (веб-разработчик) or programmer) manually updates the page. Dynamic pages adapt their content and/or appearance depending on the end-user's input or interaction or changes in the computing environment (user, time, database modifications, etc.)

Web Site Design

A web site is a collection of information about a particular topic or subject. Designing a web site is defined as the arrangement and creation of

web pages that in turn make up a web site. A web page consists of information for which the web site is developed. A web site might be compared to a book, where each page of the book is a web page.

For non-commercial web sites, the goals may vary depending on the desired exposure and response. For typical commercial web sites, the basic aspects of design are:

• The content: the information on the site should be relevant to the site and should target the area of the public that the website is concerned with.

• The usability: the site should be user-friendly, with the interface and navigation simple and reliable.

• The appearance: the graphics and text should include a single style to show consistency. The style should be professional, appealing and relevant.

• The visibility: the site must also be easy to find via most, if not all, major search engines and advertisement media.

A web site typically consists of text and images. The first page of a web site is known as the Home page or Index. Each web page within a web site is an HTML file which has its own URL. After each page is created, they are typically linked together using a navigation menu composed of hyperlinks.

Once a web site is completed, it must be published or uploaded in order to be viewable to the public. This may be done using an FTP client. Once published, the web master may use a variety of techniques to increase the traffic that the web site receives. This may include submitting the web site to a search engine such as Google or Yahoo, exchanging links with other web sites, creating affiliations with similar web sites, etc.

Web Site Planning

Before creating and uploading a website, it is important to take the time to plan exactly what is needed in the web site. Thoroughly considering the audience, as well as defining the purpose and deciding what content will be developed are extremely important.

Purpose. It is essential to define the purpose of the web site as one of the first steps in the planning process. A clearly defined purpose will help the rest of the planning process as the audience is identified and the content of the site is developed.

Audience. Defining the audience is a key step in the web site planning process. The audience is a group of people who are expected to visit your website. These people will be viewing the website for a specific reason and it is important to know exactly what they are looking for when they visit the site.

Content. Content evaluation and organization requires that the purpose of the web site be clearly defined. Collecting a list of the necessary content,

then organizing it according to the audience's needs is a key step in web site planning.

Restrictions. One of the restrictions on webpage design is the use of different Image file formats. The majority of users can support GIF, JPEG, and PNG. Internet Explorer is the major restriction here, not fully supporting PNG's advanced transparency features, resulting in the GIF format still being the most widely used graphic file format for transparent images.

Ex. 1. Answer these questions.

1. What kind of a process is web design? 2. What is web design aimed at? 3. How are web pages classified? 4. What is a web site? What is it compared to? 5. What are the steps of a web site creating? 6. What points should be considered before creating and uploading a web site? Cover each.

Ex. 2. Reveal basic aspects of a typical commercial web site design.

Ex.3. Give English equivalents of the following Russian words and expressions:

намерение, цель, стремительный, ярлык, внешний эффект, сенсация, совместимость, предоставить, отклик, маркировочный язык, соответствие, ответственность, растровый, разметка, веб-разработчик, содержание, ограничения, концепция, исполнительная среда, управляющий код.

Ex. 4. Replace the underlined words and expressions with synonyms. Translate the sentences.

1. The observable content (e.g. page layout, user interface, graphics, text, audio) is known as external. 2. The purpose of web design is to create a web site that presents content to the end user in the form of web pages. 3. Due to the fast development of the Internet, new aspects in the process of designing a web site may emerge. 4. Such elements as text, forms and raster images (GIFs, JPEGs, PNGs) can be placed on the page using HTML, XHTML or XML address codes. 5. For non-commercial web sites, the goals may vary depending on the desired exposure and reaction.

Ex. 5. Interpret the following abbreviations: XHTML, XML, DOM, PHP.

Ex. 6. Reproduce the text in English.

Веб-дизайн – это оформление веб-страниц. Он играет такую же роль для сайта, как полиграфический дизайн и верстка для бумажного издания. Часто под веб-дизайном понимают не только создание графических элементов для сайта, но и проектирование его структуры, навигации, то есть создание сайта целиком.

Какие бывают сайты? Сайт-визитка – содержит общие данные о фирме, как правило, это информация о фирме, прайс-лист, реквизиты, план проезда, т.е. визитная карточка фирмы. Каталог продукции – в

каталоге присутствует подробное описание товаров/услуг, сертификаты, технические данные, отзывы экспертов и т.д. Интернет-магазин – веб-сайт с каталогом продукции, с помощью которого клиент может заказать нужные ему товары. Используются различные системы расчетов: от пересылки товаров наложенным платежом до расчетов с помощью пластиковых карт. Тематический сайт – это веб-сайт, предоставляющий исчерпывающую информацию по какой-либо теме. Промо-сайт – сайт о конкретной торговой марке или продукте, на таких сайтах размещается исчерпывающая информация о бренде, различных рекламных акциях (конкурсы, викторины, игры и т.п.)

Сегодня веб-программирование позволяет создавать уникальные, удобные и функциональные сайты.

Designing Web Pages

Ex. 1. Are the following statements true (T) or false (F)?

1.You don't need to learn HTML to make a Web page. 2. Making a Web page is like designing a printed page. 3. You shouldn't use a lot of different colors in your texts. 4. Having a lot of pictures and animations on Web page is great. 5. Surfers like reading on the Net.

Beginning HTML. Web designers use Hyper Text Markup Language (HTML) to create and format Web pages. HTML uses a set of codes, called tags*, to structure* a Web document that will run in a browser. There are hundreds of tags you can use to format text, insert graphics, animations, sound and video. But you do not need to understand HTML to make your own personal home page. Many word-processing, desktop publishing and *Web-authoring* programs will *generate* HTML tags for you. To upload, or copy, your Web page to a Web server, use the server's File Transfer Protocol (FTP).

Home Page Hints. It's your cyber-home, but remember that websites are different from books or magazines. Think about these suggestions to make people want to stay.

1. Use *a navigation bar* to organize your hyperlinks to other pages.

2. Keep your use of color and buttons *consistent*. If a Next Page button is a pink circle, all Next page buttons should be the same, and on the same place on the screen.

3. *Hyperlinks* also let visitors to navigate up and down long pages.

4. If you use a lot of animation your Web page will take a long time to download.

5. If you use a lot of graphics, animation and text, your Web page will be too busy.

6. It's difficult to read the text that's next to animation.

7. Keep texts short and simple! Surfers don't like reading on a computer screen too much.

8. It is not easy to read multi-colored text.

9. Lots of bright colors look nice at first, but often give people headaches!

10. Make sure you use a spell check and use good grammar.

11. Try not to use too much slang. People who visit your site may not understand.

12. Don't be afraid to be *original*. Good websites have something that is different about them and that comes from you!

Ex. 2. Match the words in italics to the definitions below.

a) connection to a Web page or part of a Web page;

b) to make or produce;

c) plan or build a Web page;

d) a group of organized Web links, usually in a line;

e) does not change, always the same;

f) the type of software that help create Web pages;

g) new, not done before.

Ex. 3. Complete the sentences using the following words: busy, consistent, generate, home pages, structure, surfers, upload, Web-authoring.

1. That Web page is much too … I don't know what to look at. 2. An FTP server is a computer that lets you … files in the Net. 3. The buttons on this page are not … with the buttons on the last page. 4. Net … never like reading a lot of text on the screen. 5. … software means you don't have to learn HTML to make a Web page. 6. Many students have their own … on the World Wide Web. 7. HTML creates the … for Web pages to run on a browser. 8. Web-authoring programs … HTML tags for you.

UNIT 10
COMPUTER SECURITY

Ex. 1. Read the text and tell about simple and sophisticated techniques used to prevent computer crimes. Give the definition of the concept of Computer Security.

What is Computer Security?

Computer Security is a number of techniques developed to protect single computers and network-linked computer systems from accidental or intentional harm. The harm can include destruction of computer hardware and software, physical loss of data, deception of computer users and so on.

A variety of simple techniques can prevent computer crime. For example, any user can prevent access to confidential information. They can destroy printed information, protect computer screens from observation, keep printed information and computers in locked cabinets, and clear desktops of sensitive documents. However, there are some more sophisticated methods to prevent computer crimes. We would like to describe some of them.

One technique to protect confidentiality is *encryption*. Information can be scrambled and unscrambled using mathematical equations and a secret code called a key. Two keys are usually employed, one to encode and the other to decode the information. The key that encodes the data, called the private key, is possessed by only the sender. The key that decodes the data, called the public key, may be possessed by several receivers. The keys are modified periodically, further hampering unauthorized access and making the encrypted information difficult to decode or forge.

Another technique to prevent computer crime is *to limit access of computer data files to approved users*. Access-control software verifies computer users and limits their privileges to view and alter files. Records can be made of the files accessed, thereby making users accountable for their actions. Military organizations give access rights to classified, confidential, secret, or top secret information according to the corresponding security clearance level of the user.

Passwords are confidential sequences of characters that give approved users access to computers. To be effective, passwords must be difficult to guess. Effective passwords contain a mixture of characters and symbols that are not real words. To thwart imposters, computer systems usually limit the number of attempts to enter a correct password.

Tokens are tamper-resistant plastic cards with microprocessor chips that contain a stored password that automatically and frequently changes. When a computer is accessed using a token, the computer reads the token's password, as well as another password entered by the user, and matches these two to an identical token password generated by the computer and the user's password, which is stored on a confidential list. Sometimes passwords and tokens may be reinforced by biometrics, identification methods that use unique personal characteristics, such as fingerprints, retinal patterns, skin oils, deoxyribonucleic acid (DNA), voice variations, and keyboard-typing rhythms.

Computer networks, multiple computers linked together, are particularly vulnerable to computer crimes. Information on networks can be protected by a *firewall*, a computer placed between the networked computers and the network. The firewall prevents unauthorized users from gaining access to the computers on a network, and it ensures that information received from an outside source

does not contain computer viruses, self-replicating computer programs that interfere with a computer's functions.

We use computers for everything from banking and investing to shopping and communicating with others through e-mail or chat programs. Although you may not consider your communications "top secret," you probably do not want strangers reading your e-mail, using your computer to attack other systems, sending forged e-mail from your computer, or examining personal information stored on your computer (such as financial statements).

Ex. 2. Read the introduction to an e-mail and answer the questions.

1. Who is this e-mail from (i.e. an employee, IT specialist, customer etc)? 2. Who is the e-mail to? 3. What is the basic problem being discussed? 4. What will the rest of the e-mail be about? 5. What kind of ideas might be in the rest of the e-mail?

From: Rupert Hills-Jones

To: All employees

Subject: Data Security

Dear All,

Unfortunately there have been several instances recently of data falling into the wrong hands. I have been a victim of ID theft and we have lost a few company laptops and memory sticks containing sensitive trading information. The following rules around data and data security are mC11datory and failure to abide by these will result in disciplinary action up to and including dismissal. I am sorry for the stern tone but this is a very serious issue for us all.

Ex. 3. Read the rest of the e-mail from Rupert Wilson, CIO of London Investments. Some sentences have been removed from the e-mail. Read the text and complete the gaps 1-6 with the sentences a-f below.

a) Ideally this should contain both letters and numbers.

b) Only company-provided and approved software may be used.

c) At the end of each day, ensure that your desks are clear and all documentation or storage devices are in locked drawers.

d) Do not leave them where they can be seen on the back seat of a car.

e) IT will be running a webcast on how to do this next Tuesday 25th.

f) Any documentation found lying around after the trading day will be destroyed. You have been warned.

Clear Your Desk. With immediate effect we will be running a Clear Desk Policy in the office. 1. …

Shred. All unwanted printouts, photocopies, notes etc. must be put into the shredders that have been installed in each office 2. … .

Use Passwords. All systems must be accessed using a password. 3. … . This password is secret to you and should not be shared with any other individuals.

Change Passwords. All passwords must now be changed on a monthly basis. If you think that your password has been compromised, call the IT Helpdesk immediately.

Don't Download. All laptops are to be scanned on a monthly basis by IT to check for spyware or malware. Under no circumstances should any programs be downloaded from the internet onto company laptops. 4. … .

E-mails. Do not open email attachments unless you know the originator of the mail personally and you are expecting an attachment of that type and name.

Keep Secure. All laptops taken out of the office either to clients· offices or to work from home must be kept secure at all times. 5. … .

Memory Sticks. All memory sticks are now numbered. The IT Department will keep a list of memory sticks and who is responsible for them.

Encrypt. All data stored on memory sticks must be encrypted. 6. … . And on a personal note if anybody sees my wallet, could you please pop it into my office.

Regards, Rupert.

Confidential. Internet communications are not secure and therefore London Investments does not accept legal responsibility for the contents of this message. This e-mail and any attachments may be confidential. They may contain privileged information and are intended for the named addresses only. They must not be distributed without our consent. If you are not the intended recipient please notify us immediately and delete the message and any attachments from your computer. Do not disclose, distribute or retain this e-mail or any part of it. We believe but do not warrant this e-mail or any attachments are virus free. You must therefore take full responsibility for virus checking.

Ex. 4. Match the verbs in A with the words in B to make expressions from the e-mail.

A	B
1 be	a) an e-mail attachment
2 change	b) a document
3 download	c) a program
4 open	d) a victim
5 run	e) a webcast
6 scan	f) a laptop
7 shred	g) a password.

Ex. 5. Now complete sentences 1-7 with the expressions from exercise 4. You may need to make changes to the verbs. Then work in pairs. Ask and answer questions 1-7.

1. Why can it be dangerous to … if you don't know who sent it? 2. Why is it important to … like a bank statement that contains personal information, and not just throw it away? 3. How often should you … or a desktop for spyware and malware? 4. Why can it be harmful to … from the internet and run it on your computer? 5. Why is it a good idea to … regularly even if there's no evidence it has been compromised? 6. What are the advantages of … as opposed to having training seminars? 7. Have you ever … of ID fraud?

Ex. 6. Read the text carefully and answer these questions.

1. Why is security so important on the Internet? 2. What security features are offered by Mozilla Firefox? 3. What security protocol is used by banks to make online transactions secure? 4. How can we protect our e-mail and keep it private? 5. What methods are used by companies to make internal networks secure? 6. In what ways can a virus enter a computer system? 7. How does a worm spread itself?

Security and Privacy on the Internet

There are many benefits from an open system like the Internet, but one of the risks is that we are often exposed to hackers, who break into computer systems just for fun, to steal information, or to spread viruses (see note below). So how do we go about making our on-line transactions secure?

Security is crucial when you send confidential information on line. Consider, for example, the process of buying a book on the Web. You have to type your credit card number into an order form which passes from computer to computer on its way to the on-line bookstore. If one of the intermediary computers is infiltrated by hackers, your data can be copied. To avoid risks, you should set all security alerts to high on your web browser. Mozilla Firefox displays a lock when the website is secure and allows you to disable or delete *cookies* – small files placed on your hard drive by web servers so that they can recognize your PC when you return to their site. If you use on-line banking services, make sure they use digital certificates– files that are like digital identification cards and that identify users and web servers. Also be sure to use a browser that is compliant with SSL (Secure Sockets Layer), a protocol which provides secure transactions.

Similarly, as your e-mail travels across the Net, it is copied temporarily onto many computers in between. This means that it can be read by people who illegally enter computer systems. The only way to protect a message is to put it in a sort of virtual envelope – that is, to encode it with some form of

encryption. A system designed to send email privately is Pretty Good Privacy, a freeware program written by Phil Zimmerman.

Private networks can be attacked by intruders who attempt to obtain information such as Social Security numbers, bank accounts or research and business reports. To protect crucial data, companies hire security consultants who analyze the risks and provide solutions. The most common methods of protection are passwords for access control, firewalls, and encryption and decryption systems. Encryption changes data into a secret code so that only someone with a key can read it. Decryption converts encrypted data back into its original form.

Malware (malicious software) are programs designed to infiltrate or damage your computer, for example viruses, worms, Trojans and spyware. A virus can enter a PC via a disc drive – if you insert an infected disc – or via the Internet. A worm is a self-copying program that spreads through e-mail attachments; it replicates itself and sends a copy to everyone in an address book. A Trojan horse is disguised as a useful program; it may affect data security.

Spyware collects information from your PC without your consent. Most spyware and adware (software that allows pop-ups – that is, advertisements that suddenly appear on your screen) is included with 'free' downloads.

If you want to protect your PC, don't open e-mail attachments from strangers and take care when downloading files from the Web. Remember to update your anti-virus software as often as possible, since new viruses are being created all the time. *NOTE:* originally, all computer enthusiasts and skilled programmers were known as hackers, but during the 1990s, the term hacker became synonymous with cracker – a person who uses technology for criminal aims. Nowadays, people often use the word hacker to mean both things. In the computer industry, hackers are known as white hats and crackers are called black hats or dark-side hackers.

Ex. 7. Listen to an interview with Diana Wilson, a member of the Internet Safety Foundation. Which answers (a or b) best describe what she says?

1. Parents should make children aware of
a) the benefits and risks of the In-   b) the risks of the Internet.
ternet.

2. A web filter program can be used to
a) prevent access to sites with inap-   b) rate web content with labels
propriate content.   (similar to the way movies are rated).

3. If kids spend too much time on line or suffer from internet addiction, parents should

a) stop them using the Internet.   b) look for help from specialists.

Ex. 8. Listen again and complete the interviewer's notes.

Risks	Solutions
Manipulation of children	There are websites (4) … at children.
Invasions of (1) …	Internet (5) … programs let parents block objectionable websites.
Distribution of indecent or (2) … material	Websites should (6) … their content with a label, from child-friendly to over 18 only.
Violence and racist (3) …	

Ex. 9. Read the text and tell what the most common types of internet crimes are.

Internet Crime

The Internet provides a wide variety of opportunities for communication and development, but unfortunately it also has its dark side. Crackers, or black-hat hackers, are computer criminals who use technology to perform a variety of crimes: virus propagation, fraud, intellectual property theft, etc.

Internet-based crimes include scam, e-mail fraud to obtain money or valuables, and phishing, bank fraud, to get banking information such as passwords of Internet bank accounts or credit card details. Both crimes use e-mails or websites that look like those of real organizations.

Crackers are a new type of criminals. Due to its anonymity, the Internet also provides the right environment for on-line harassment or abuse, mainly in chat rooms or newsgroups. Piracy, the illegal copying and distribution of copyrighted software, information, music and video files, is widespread. But by far the most common type of crime involves malware.

Malware (malicious software) is software created to damage or alter the computer data or its operations. These are the main types.

• *Viruses* are programs that spread by attaching themselves to executable files or documents. When the infected program is run, the virus propagates to other files or programs on the computer. Some viruses are designed to work at a particular time or on a specific date, e.g. on Friday 13th. An e-mail virus spreads by sending a copy of itself to everyone in an e-mail address book.

• *Worms* are self-copying programs that have the capacity to move from one computer to another without human help, by exploiting security flaws in computer networks. Worms are self-contained and don't need to be attached to a document or program the way viruses do.

• *Trojan* horses are malicious programs disguised as innocent-looking files or embedded within legitimate software. Once they are activated, they

may affect the computer in a variety of ways: some are just annoying, others are more ominous, creating a backdoor to the computer which can be used to collect stored data. They don't copy themselves or reproduce by infecting other files.

• *Spyware*, software designed to collect information from computers for commercial or criminal purposes, is another example of malicious software. It usually comes hidden in fake freeware or shareware applications downloadable from the Internet.

Preventative Tips

• Don't open e-mail attachments from unknown people; always take note of the file extension.

• Run and update antivirus programs, e.g. virus scanners.

• Install a firewall, a program designed to prevent spyware from gaining access to the internal network.

• Make backup copies of your files regularly.

• Don't accept files from high-risk sources.

• Use a digital certificate, an electronic way of proving your identity, when you are doing business on the Internet. Avoid giving credit card numbers.

• Don't believe everything you read on the Net. Have a suspicious attitude toward its contents.

Ex. 10. Identify the Internet crimes sentences (1-6) refer to. Then match them with the advice below (a-f).

1. Crackers try to find a way to copy the latest game or computer program. 2. A study has revealed that half a million people will automatically open an e-mail they believe to be from their bank and happily send off all their security details. 3. This software's danger is hidden behind an attractive appearance. That's why it is often wrapped in attractive packages promising photos of celebrities like Anna Kournikova or Jennifer Lopez. 4. There is a particular danger in Internet commerce and e-mails. Many people believe they have been offered a special gift only to find out later they have been deceived. 5. 'Nimda' spreads by sending infected e-mails and is also able to infect websites, so when a user visits a compromised website, the browser can infect the computer. 6. Every day, millions of children spend time in Internet chat rooms talking to strangers. But what many of them don't realize is that some of the surfers chatting with them may be sexual predators.

a) People shouldn't buy cracked software or download music illegally from the Internet; b) Be suspicious of wonderful offers. Don't buy if you aren't sure; c) It's dangerous to give personal information to people you

contact in chat rooms; d) Don't open attachments from people you don't know even if the subject looks attractive; e) Scan your e-mail and be careful about which websites you visit; f) Check with your bank before sending information.

Ex. 11. Answer the following questions in written. Compare with your classmates' answers.

1. What do you do to prevent computer infections? 2. Do you keep your virus protection updated? 3. The Internet has lots of websites where you can get free advice and software. What should you do to improve your computer security?

Ex. 12. Choose the best words to go into each of the spaces.

1. A person who illegally accesses somebody else's computer over the internet is called a … .

a) pirate   b) hack   c) hacker

2. A website which (in theory) cannot be accessed by a hacker is …

a) strong   b) secure   c) clean

3. A website which can only be viewed by authorized people has … access.

a) reduced   b) small   c) restricted

4. Unwanted advertising e-mails are popularly known as … .

a) meatloaf   b) spam   c) sausages

5. Software which blocks attempts by others to access your computer over the internet is called a … .

a) firewall   b) fire blanket   c) fire engine

6. It's essential to … your anti-virus protection regularly.

a) up-to-date   b) date   c) update

7. Anti-virus software can … your computer for viruses.

a) detect   b) review   c) scan

8. Anti-virus software can also … viruses on removable media, such as floppy disks.

a) detect   b) control   c) see

9. When your anti-virus software subscription …

a) ends   b) stops   c) expires

10. … it's a good idea to … it immediately.

a) renew   b) renovate   c) replace.

How to avoid catching a virus. What should we do? Stay calm. A computer virus isn't dangerous until the infected email is opened. Delete any mail you think is infected and empty your deleted items folder. Enable a firewall (защитная система). It's an application that prevents computer viruses from infecting your computer. Update your operating system regu-

larly. Use spam protection. Many computer viruses get into your computer as e-mail attachments. Mark e-mails that look like spam as spam so that you won't have to get them in your main inbox and accidentally open them. For further protection, use anti-spam software. Avoid installing suspicious software. Some computer software or programs are hotspots for computer viruses, or they contain viruses themselves. If you are not sure about the publisher of the program, then don't install it.

What should not we do? Don't open any attachment you are not sure about, even if you have a virus scanner. Don't forward any attachment to a friend without being sure it is safe.

PART II

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TEXTS FOR ADDITIONAL READING
Text 1. The Word "Computer"

Over the years there have been several slightly different meanings to the word *computer,* and several different words for the thing we now usually call a computer.

For instance, "computer" was once commonly used to mean a person employed to do arithmetic calculations, with or without mechanical aids. During World War II it referred to U.S. and British servicewomen whose job was to calculate the trajectories of large artillery shells with such machines.

Charles Babbage designed one of the first computing machines called the Analytical engine, but due to technological problems it was not built in his lifetime. Various simple mechanical devices such as the slide rule and abacus have also been called computers. In some cases they were referred to as "analog computers", as they represented numbers by continuous physical quantities rather than by discrete binary digits.

In thinking of other words for the computer, it is worth noting that in other languages the word chosen does not always have the same literal meaning as the English language word. In French, for example, the word is "ordinateur", which means approximately "organizer". The Spanish word is "ordenador" with the same meaning, although in some countries they use the anglicism *computadora*. In Italian a computer is "calcolatore", calculator, emphasizing its computational uses over logical ones. In Swedish a computer is called "dator" from "data". In Finnish a computer is called "tietokone" which means "information machine". In Chinese a computer is called "dian nao" or "an electric brain'.

Text 2. The Development of the Computer

The inventions and ideas of many mathematicians and scientists led to the development of the computer. The first mechanical calculating machines were invented during the 1600's. One of the most notable of these devices was built in 1642 by the French mathematician and scientist Blaise Pascal.

During the 1830's an English mathematician named Charles Babbage developed the idea of a mechanical digital computer. He tried to construct a machine called an analytical engine. The machine contained the basic elements of an automatic computer and was designed to perform complicated calculations according to a sequence of instructions. However, the technology of Babbage's time was not advances enough to provide the precision parts needed to complete the machine.

Another important contribution to the development of the computer was made in the mid 1800's by George Boole, an English logician and mathematician. Boole devised a system of formulating logical statements symbolically so that they could be written and proved in a way similar to that of ordinary algebra. In 1930 the first reliable analog computer was built. This machine, called a differential analyzer, solved differential equations.

During the 1940's, John Von Neuman, an American mathematician, introduced an idea that improved the computer design. He proposed that programs could be coded as numbers and stored with data in a computer's memory. The invention of the transistor in 1947resulted in the production of faster and more reliable electronic computers. The new machines also were smaller and less expensive than earlier models.

The continued miniaturization of electronic equipment during the late 1960's and 1970's led to further advances in computer technology. The development of the integrated circuit enabled engineers to design both minicomputers and high-speed mainframes with tremendous memory capacities.

Text 3. Careers in Computing

Ex. 1. Read and translate the following descriptions and say who does what:

a) systems analyst;
b) software engineer/designer;
c) computer salesperson;
d) computer systems support person;
e) computer systems analyst programmer;
f) hardware engineer;
g) network support person.

1. Studies methods of working within an organization to decide how tasks can be done efficiently by computers. Makes a detailed analysis of the employer's requirements and work patterns to prepare a report on different options for using information technology. This may involve consideration of hardware as well as software. Either uses standard computer packages or writes a specification for programmers to adapt existing software or to prepare new software. May oversee the implementation and testing of a system and acts as a link between the user and the programmer.

2. Maintains the link between PCs and workstations connected in a network. Uses telecommunications, software and electronic skills, and knowledge of the networking software to locate and connect faults. This may involve work

with the controlling software, on the wiring, printed circuit boards, software or microchips on a file server, or on cables either within or outside the building.

3. Researches, designs, and develops computers, or parts of computers and the computerized element of appliances, machines, and vehicles. Also involved in their manufacture, installation, and testing. May specialize in different areas: research and development (r&d), design, manufacturing. Has to be aware of cost, efficiency, safety, environmental factors, as well as engineering aspects.

4. Produces the programs which control the internal operations of computers. Converts the system analyst's specification to a logical series of steps. Translates these into the appropriate computer language. Often comply programs from libraries or subprograms, combining these to make up a complete system program. Designs, tests and improves programs for computer-aided design and manufacture, business applications, computer networks and games.

5. Advises potential customers about available hardware and sells equipment to suit individual requirements. Discusses computing needs with client to ensure that a suitable system can be supplied. Organizes the sale and delivery and, if necessary, installation and testing. May arrange support or training, maintenance and consultation. Must have sufficient technical knowledge.

6. They are analyst programmers who are responsible for maintaining updating and modifying the software used by a company. Some specialize in software and electronic skills, and knowledge of the which handles the basic operation of the computers. This involves the use of machine codes and specialized low-level computer languages. Most handle applications software. May sort out problems encountered by users. Solving problems may involve amending an area of code in the software, retrieving files and data lost when a system crashes, and a basic knowledge of hardware.

7. Creates the software programs used by computers. May specialize in the internal operating systems using low-level computer language, or in applications programs. May specialize in one aspect of the work, e.g. programming, systems design, systems analysis or cover them all. May support the system through advice and training, providing user manuals, and by helping users with any problems that arise.

Text 4. GUI

Graphical user interface (GUI) is a computer program that enables a person to communicate with a computer through the use of symbols, visual metaphors and pointing devices. Well-designed graphical user interfaces can free the user from learning complex command languages. On the other hand, many users find that they work more effectively with a command-driven interfaces, especially if they already know the command language. Best known for its implementation in

Apple Inc.'s Macintosh and Microsoft Corporation's Windows operating system, the GUI has replaced the arcane and difficult textual interfaces of earlier computing with a relatively intuitive system that has made computer operation not only easier to learn but more pleasant and natural.

Basic components of a GUI. Graphical user interfaces, such as Microsoft Windows and the one used by the Apple Macintosh, feature the following basic components:

• pointer: a symbol that appears on the display screen and that you move to select objects and commands, open files or starts software. The pointer also drags files to different folders. Usually, the pointer appears as a small angled arrow;

• pointing device: a device, such as a mouse or a trackball, that enables you to select objects on the display screen;

• icons: small pictures that represent commands, files, windows. By moving the pointer to the icon and pressing a mouse button you can execute a command or convert the icon into a window;

• desktop: the area on the display screen where icons are grouped is often referred to as the desktop because the icons are intended to represent real objects ion a real desktop;

• windows: you can divide the screen into different areas. In each window, you can run a different program or display a different file. You can move windows around the display screen and change their shape and size at will;

• menus: most graphical user interfaces let you execute commands by selecting a choice from a menu.

In addition to their visual components, GUI also makes it easier to move data from one application to another. A true GUI includes standard formats for representing text and graphics. Because the formats are well-defined, different programs that run under a common GUI can share data. This makes it possible, for example, to copy a graph created by a spreadsheet program into a document created by a word processor.

Text 5. Word Processing

Word processing refers generally to the creation, editing, formatting, storage and output of both printed and on-line or electronic documents. Word processing is undoubtedly the most used business application for personal computers, perhaps alongside World Wide Web browsers and e-mail applications.

Word processing software includes basic applications designed for casual business or home users and powerful, advanced applications capable of meeting the most demanding needs of businesses. Many word processing applications are designed for use as part of a suite or integrated group of

word processing and presentation programs. For example, Microsoft Word, probably the most widely used word processing software, is part of the Microsoft office suite, which includes Microsoft's Power Point presentation program and Excel. Corel Word Perfect, a less widely used but very popular word processing program, is part of Corel's Word perfect Office suite, which includes Quattro Pro software and Presentations multimedia slide-show software.

Word processing means little more than typing up a document by inserting text, space and punctuation. Word processing implies a far greater range of features, including animated clip art, tables, graphs, headers and footers and formatting styles that can be applied to an entire document.

Word processors vary considerably, but all of them support the following basic features:

- insert text: allows you to insert text anywhere in the document;
- delete text: allows you to erase characters, words, lines, or pages;
- cut and paste: allows you to remove a section of text from one place in a document and insert it somewhere else;
- copy: allows you to duplicate a section of text;
- page size and margins: allows you to define various page sizes and margins and the word processor will automatically readjust the text;
- search and replace: allows you to search for a particular word or phrase;
- word wrap: the word processor automatically moves to the next line when you have filled one line with text, and it will readjust text if you change the margins;
- print: allows you to send a document to a printer.

Word processors that support only these features are called *text editors*. Most word processors, however, support additional features that enable you to manipulate and format documents in more sophisticated ways. These more advanced word processors are sometimes called *full-featured word processors*. They usually support the following features:

- file management: many word processors contain file management capabilities that allow you to create, delete, move and search for files;
- font specifications: allows you to change fonts within a document. For example, you can specify bold, italics and underlining;
- footnotes and cross-references: automates the numbering and placement of footnotes and enables you to easily cross-reference other sections of the documents;
- graphics: allows you to embed illustrations and graphs into a document;

- headers, footers and page numbering: allows you to specify customized headers and footers that the word processor will put at the top and bottom of every page;
- layout: allows you to specify different margins within a single document and to specify various methods for indenting paragraphs;
- macros: *a macro* is a character or word that represents a series of keystrokes. They can represent text or commands:
- spell checker: a utility that allows you to check the spelling of words. It will highlight any words that it does not recognize;
- tables of contents and indexes: allows you to automatically create a table of contents and index based on special codes that you insert in the documents;
- thesaurus: a built-in thesaurus that allows you to search for synonyms without leaving the word processor;
- windows: allows you to edit two or more documents at the same time. Each document appears in a separate *window*;
- WYSIWYG (what you see is what you get): with WYSIWYG a document appears on the display screen exactly as it will look when printed.

Text 6. Computer Networks

A network is a group of computers that are connected to each other for the purpose of communication. A computer network allows computers to communicate with many other computers and to share resources (such as printers and CDs), exchange files. The computers on a network may be linked through cables, telephone lines, radio waves, satellites. You can connect one computer to another. This can be done using their serial ports. This is possible because almost every computer has a serial port. The solution is to use a central object that the computers and other resources can connect to, and then this object becomes responsible to "distribute" or manage network traffic.

The most regularly used types of network distributors are the hub, the router, and the switch.

Hub. A hub is a rectangular box that is used as the central object on which computers and other devices are connected. To make this possible, a hub is equipped with small holes called ports. Depending on its type, a hub can be equipped with 4, 5, 12, or more ports. In most cases for a home-based or a small business network, you may not need a hub.

Routers: wired or Wireless. Router is another type of device that acts as the central point among computers and other devices that are part of a network. A router functions a little differently than a hub. Like a hub, the computers and other devices are connected to a router using network cables.

To make this possible, a router is equipped with holes, called ports, in the back. There are wireless routers. With this type the computers and devices connect to the router using microwaves.

Network cables. A cable is used to connect computers. Although we may use wireless networking, you should always have cables with you. The most commonly used cable is referred to as Category 5 cable RJ-45. You can purchase this cable in a computer store.

Network cards. In order to connect to a network, a computer must be equipped with a device called a network card. If you buy a computer from one of those popular stores or big companies on the Internet, most of their computers have a network card tested and ready. If you have a computer that doesn't have a network card, you can install one.

Networks are classified:

• Depending on their scale and purpose: as Local Area Network (LAN), Wide Area Network (WAN), Metropolitan Area Network (MAN), Personal Area Network (PAN), campus Area Network (CAN);

• According to the network topology upon which the network is based: bus, star, tree (hierarchical), ring, mesh, linear. The network topology defines the ways in which computers, printers and other devices are connected, physically and logically.

Local Area Network. LAN is a computer network covering a small physical area, like a home, office or a small group of buildings, such as a school or an airport. The defining characteristics of LANs, in contrast to WANs, include their higher data transfer rates, smaller geographic range and lack of a need for leased communication lines. Computers connected to a network are broadly categorized as servers or workstations. Servers are generally not used by humans directly, but rather run continuously to provide "services" to the other computers and their human users) on the network. Services provided can include printing and faxing, software hosting, file storage and sharing, messaging, data storage and retrieval, complete access control (security) for the network's resources, and many others. On a single LAN computers and servers may be connected by cables or wirelessly. Wireless access to a wired network is possible by wireless access points (WAPs). Nearly always servers will be connected by cables to the network, because the cable connections remain the fastest.

Wide area Network. WAN is a computer network that covers a broad geographic area. The most well-known and best example of a WAN is the Internet which is a network comprised of many smaller networks. The Internet is considered to be the largest network in the world. An example of this is a multinational business that uses a Wan to interconnect their offices

in different countries. A WAN involves communication through the use of a wide range of different technologies. These technologies include Point-to Point WANs such as Point-to-Point Protocol (PPP) and High-Level data Link Control (HDLC), Frame Relay, ATM (Asynchronous Transfer Mode) and Sonet (Synchronous Optical Network).

Metropolitan Area Network. A MAN is a network that is too large for even the largest of LAN's but is not on the scale of a WAN. In other words, it is a network that connects two or more local area networks or campus area networks together but does not extend beyond the boundaries of the town/city.

Personal Area Network. A PAN is a computer network used for communication among computer devices close to one person. Some examples of devices that are used in a PAN are personal computers, printers, fax machines, telephones, PDAs, scanners and even video game consoles. Such a network may include wired and wireless connections between devices.

Campus Area Network. A CAN is a computer network made up of interconnected LANs within a limited geographical area. A CAN is larger than a LAN but smaller than a Wan. The main aim of a CAN is to facilitate students and professors accessing the Internet and university resources.

Text 7. The Internet and the World Wide Web

The terms "Internet" and "World Wide Web" are often used in every day speech without much distinction. However, the Internet and the WWW are not one and the same. The Internet is the backbone of the World Wide Web. It is the global data communication system, i.e. the hardware and software infrastructure. It provides connectivity between the Internet-based resources and services and the users of those facilities.

In contrast, the Web is only one of the services communicated via the Internet. The WWW is a huge set of interlinked documents, images and other resources, linked by hyperlinks and URLs. These hyperlinks and URLs allow the web servers and other machines that store originals, and cached copies of these resources to deliver them as required using HTTP (Hypertext Transfer Protocol). Web services use HTTP to allow software systems to communicate in order to share and exchange business logic and data.

Through such Internet search engines like Yahoo! And Google, millions of people worldwide have easy, instant access to a vast and diverse amount of on-line information, compared to encyclopedias and traditional libraries, the World Wide Web has enabled a sudden and extreme decentralization of information and data.

Using the Web, it is also easier than ever before for individuals and

organizations to publish ideas and information to an extremely large audience.

Anyone can find ways to publish a web page, a blog or build a website for very little initial cost. Many individuals and some companies and groups use web blogs, which are largely used as easily updatable online diaries.

The Internet originated in the early 1970s when the United States wanted to make sure the people could communicate after the nuclear war. This needed a free and independent communication network without a centre and it led to a network of computers that could send each other e-mail through cyberspace.

Tim Berners-Lee invented the World Wide Web (WWW) when he discovered a way to jump to different files on his computer using the random or unplanned links between them. He then wrote a simple coding system, called HTML (Hyper Text Markup Language) to create links to files on any computer connected to the network. This was possible because each file had an individual address, or URL (Uniform Resource Locator). He then used a set of transfer rules, called HTTP (Hyper Text Transfer Protocol) to link Web files together across the Internet. Berners-Lee also invented the world's first browser. This lets you locate and view Web pages and also navigate from one link to another.

The WWW became available to everyone in 1991 and the number of Internet users grew from 600,000 to 40 million in five years. Today, that number is miles larger and there are now many browsers that provide Web pages, information and other services. You can also do research, download music files, play interactive games, shop, talk in chat rooms and send and receive e-mail on the WWW.

Text 8. Shaping the Internet Age
(Bill Gates Chairman and Chief Software Architect, Microsoft Corp.)

Less than a quarter century ago, the Internet was an obscure network of large computers used only by a small community of researchers. At the time, the majority of computers were found in corporate information technology (IT) departments or research laboratories, and hardly anyone imagined that the Internet would play such an important role in our lives as it does today. In fact, the very idea of a personal computer seemed absurd to all but a handful of enthusiasts. Today, the Internet is far from being obscure – it's the center of attention for businesses, governments and individuals around the world. It has spawned entirely new industries, transformed existing ones, and become a global cultural phenomenon. We've seen a lot of amazing things so far, but there is much more to come. We are only at the dawn of the Internet Age.

In the years ahead, the Internet will have an even more profound effect on

the way we work, live and learn. By enabling instantaneous and seamless communication and commerce around the globe, from almost any device imaginable, this technology will be one of the key cultural and economic forces of the early 21st century.

Why is the Internet such a powerful and compelling technology?

First and foremost, from its conception in the academic community (largely as a result of government-sponsored research) to its subsequent development and commercialization by the private sector, the Internet has evolved into a uniquely independent information exchange – one that is able to grow organically, can operate reliably with little centralized management, and is built entirely on common standards.

It is those common standards that helped make the Internet so successful. From TCP/IP to HTML and XML, common standards have opened up the Internet to anyone who speaks its language. And since the language of the Internet is universal and easily grasped, any business can create products and services that make use of it.

As the Web's popularity surged among students, researchers and other Internet enthusiasts, an entirely new industry emerged to create software and content for the Web. This explosion of creativity made the Web more compelling for users, which encouraged more individuals and businesses to get connected to the Internet. As recently as 1994, there were only 500 fairly modest Web sites worldwide; today the Web has close to 3 billion pages. We can expect this growth cycle to continue and even accelerate, thanks to more powerful and cheaper computers, higher-speed Internet access on a wide range of devices, and advanced software that makes it all work together.

Text 9. Breaking Down Barriers

The main advantage of any new technology is that it amplifies human potential. In the 20th century, electricity, the telephone, the automobile and the airplane all made he world more accessible to more people, transforming our economy and society in the process. The Internet has the same revolutionary impact – individuals and businesses can overcome geographical. Cultural and logistical barriers and improve the way they live and work. Because it amplifies our potential in so many ways, it's possible that the long-term impact of the Internet could equal that of electricity, the automobile and the telephone all rolled together. How?

The Internet makes the world smaller. The ability to communicate and exchange information instantaneously and across vast distances has enabled mire individuals and businesses to participate in the economy, regardless of their location. Large companies can connect with employees, suppliers and partners around the globe, and small businesses can find their customers any-

where in the world.

The Internet brings people closer together. Before the Internet, it was possible to keep in touch with relatives and friends across the country or around the world – but it was also expensive. Today, communicating with a friend across town, and families regularly use the Internet to keep in touch with far-flung relatives. Millions of people with shared interests – no matter how obscure – exchange information and build communities through Web sites, email and instant messaging software. Using innovative accessibility aids, people with disabilities can use the Internet to help overcome barriers that prevent them from leading more productive and fulfilling lives.

The Internet makes the world simpler. For businesses, the Internet breaks down logistical barriers, offering greater flexibility and power in the way they do business. It shrinks time and distance, simplifies complex business processes, and enables more effective communication and collaboration. And it gives consumers the ability to shop smarter, to find the best products at the right prices.

Text 10. Computer Crime.
Prevention of Computer Crimes in Banking

Computer crime (cybercrime, e-crime, hi-tech crime) generally refers to criminal activity where a computer or network is the source, tool, target or place of a crime. Computer crime can broadly be defined as criminal activity involving an information technology infrastructure, including illegal access (unauthorized access), illegal interception, data interference (unauthorized damaging, deletion, alteration of computer data), system interference, forgery (ID theft) and electronic fraud.

A common example is when a person starts stealing information from sites, or cause damage to a computer or computer network. There are also problems of privacy when confidential information is lost, say, when an e-mail is intercepted whether through illegal hacking, legitimate monitoring (increasingly common in the workplace) or when it is simply read by an unauthorized person.

A computer can be the tool, used, for example, to plan or commit an offence such as larceny or the distribution of child pornography. The growth of international communication and in particular the Internet has made these crimes both more common and more difficult to police. Types of computer crimes: cyber crime, malicious code, hacking, computer virus, cyber terrorism, information warfare, fraud and identity theft, phishing, virtual crime.

Applying the modern technical means of the information security has become the significant element of the computer crime prevention in banking (prevention implies the access restriction or the use of the whole computer system or just part of it). The Regulations about technical information security in-

dicates that technical information security with the restricted access in the automated systems and means of computer engineering is directed on preventing the disturbance of data integrity with the restricted access and its leaking in the way of:

- unauthorized access;
- in-taking and analyzing the collateral electromagnetic radiations and inducing;
- the use of the laying devices';
- the implementation of computer viruses.

There are main means of information security: physical measures, hardware means, software means, hardware and software means, cryptographic and organizational methods.

The physical means of protection are the measures which are necessary for outer protection of a computer, the territory and the objects on the basis of computer engineering which are specially meant for creating the physical obstacles on possible ways of penetration and access the potential infringes to the components of information systems and data which are under protection.

The main functions of *hardware means* of security are:

- the inhibition of the unauthorized remote access to the distant user;
- the protection of software integrity.

These functions are carried out in the way of:

- identification of the subjects (users, maintenance staff) and the objects (resources) of a system;
- authentication of the subject in accordance with the given identifier;
- inspection of authorities which implies checking the permit for certain kinds of work;
- registration (logging) with reference to the forbidden resources;
- registration of the attempts of unauthorized access.

Software security means are necessary to accomplish logical and intellectual functions of security which embedded in the software tools of the system. There are some aims of the safety which are realized with the help of software security means:

- check of the loading and login with the help of a password system;
- delimitation and check of access rights to the system resources, terminals, constant and temporary data sets;
- file protection from viruses;
- automatic control of users' operations in the way of logging their activity.

The hardware and software security means are the means, which are based on the synthesis of program and hardware means. These means are widely used in authentication of users of the automated banking systems. Authentication is

the inspection of the user's identifier before its access to the system resource. The use of smart cards containing passwords and users' codes are widespread in the automated banking systems.

The organizational security means of the computer information make up the set of measures concerning staff recruitment, inspection and training of the staff who participate in all stages of information process.

Text 11. Types of Viruses

Some viruses do little but replicate, while others can cause severe harm or adversely affect the program and performance of the system. A virus should never be assumed harmless and left on a system. There are different types of viruses which can be classified according to their origin, techniques, types of files they infect, where they hide, the kind of damage they cause, the type of operating system, or platform they attack. Let us have a look at few of them.

- *Memory Resident Virus (резидентный вирус)*. These viruses fix themselves in the computer memory and get activated whenever the OS runs and infects all the files that are then opened. It gets control over the system memory. It can corrupt files and programs that are opened, closed, copied, renamed, etc. To protect your computer install an antivirus program.

- *Direct Action Viruses (вирусы прямого действия)*. The main purpose of this virus is to replicate and take action when it is executed. When a specific condition is met, the virus will go into action and infect files in the directory or folder that are specified in the AUTOEXEC.BAT file path. Basically, it is a file-infecter virus. Examples: Vienna virus.

- *Boot Sector Virus (загрузочные вирусы)*. This type of virus affects the boot sector of a hard disk. This is a crucial part of the disk, in which information of the disk itself is stored along with a program that makes it possible to boot (start) the computer from the disk. This type of virus is also called Master Boot Sector Virus or Master Boot Record Virus. It hides in the memory until DOS accesses the floppy disk, and whichever boot data is accessed, the virus infects it. The best way of avoiding boot sector viruses is to ensure that floppy disks are write-protected. Also, never start your computer with an unknown floppy disk in the disk drive.

- *Macro Virus (макровирусы)*. Macro viruses infect files that are created using certain applications or programs that contain macros, like .doc, .xls, .pps, .mdb, etc. The viruses automatically infect the file that contains macros, and also infects the templates and documents that the file contains. It is referred to as a type of e-mail virus. They hide in documents that are shared via e-mail or networks. The best protection technique is to avoid opening e-mails from unknown senders. Also, disabling macros can help to protect your useful data.

• *Directory Virus (файловые вирусы).* Directory viruses (also called Cluster Virus/File System Virus) infect the directory of your computer by changing the path that indicates the location of a file. When you execute a program file with an extension .EXE or .COM that has been infected by a virus, you are unknowingly running the virus program, while the original file and program is previously moved by the virus. Once infected, it becomes impossible to locate the original files. It is usually located in only one location of the disk, but infects the entire program in the directory. All you can do is to reinstall all the files from the backup that are infected after formatting the disk.

• *Polymorphic Virus (полиморфные вирусы).* Polymorphic viruses encrypt or encode themselves in a different way (using different algorithms and encryption keys) every time they infect a system. This makes it impossible for antivirus software to find them using signature searches (because they are different in each encryption). The virus then goes on to create a large number of copies. Install a high-end antivirus as the normal ones are incapable of detecting this type of virus.

• *Companion Viruses (вирусы-спутники).* Companion viruses can be considered as a type of file infector virus, like resident or direct action types. They are known as companion viruses because once they get into the system they 'accompany' the other files that already exist. In other words, to carry out their infection routines, companion viruses can wait in memory until a program is run (resident virus), or act immediately by making copies of themselves (direct action virus). These generally use the same filename and create a different extension of it. For example: If there is a file "Me.exe", the virus creates another file named "Me.com" and hides in the new file. When the system calls the filename "Me", the ".com" file gets executed, thus infecting the system. Install an antivirus scanner and also download Firewall.

• *FAT Virus (FAT вирусы).* The file allocation table (FAT) is the part of a disk used to store all the information about the location of files, available space, unusable space, etc. FAT virus attacks the FAT section and may damage crucial information. It can be especially dangerous as it prevents access to certain sections of the disk where important files are stored. Damage caused can result in loss of information from individual files or even entire directories. Before the virus attacks all the files on the computer, locate all the files that are actually needed on the hard drive, and then delete the ones that are not needed. They may be files created by viruses.

• *Worms (вирусы-репликторы).* A worm is a program very similar to a virus; it has the ability to self-replicate and can lead to negative effects on your system. But they can be detected and eliminated by an antivirus software. These generally spread through e-mails and networks. They do not infect files or

damage them, but they replicate so fast that the entire network may collapse. Install an updated version of antivirus.

- *Trojans.* Another unsavory breed of malicious code are Trojans or Trojan horses, which unlike viruses, do not reproduce by infecting other files, nor do they self-replicate like worms. In fact, it is a program which disguises itself as a useful program or application.

Text 12. Software Reliability

An important facet of software quality is software reliability. With the advent of the computer age, computers, as well as the software running on them, are playing a vital role in our daily lives. We may not have noticed, but appliances such as washing machines, telephones, TVs and watches, are having their analog and mechanical parts replaced by CPUs and software. The computer industry is booming.

Software does not age, rust, wear-out, deform or crack. Furthermore, software has no shape, color, material, mass. It can not be seen or touched, but it has a physical existence and is crucial to system functionality.

Optimists would think that once the software can run correctly, it will be correct forever. A series of tragedies and chaos caused by software proves this to be wrong. Software can make decisions, but can be just as unreliable as human beings. The British destroyer Sheffield was sunk because the radar system identified an incoming missile as "friendly".

Soft ware errors cost the U.S. economy $60 billion annually in rework (переделка), lost productivity and actual damages (реальные убытки): Hartford Coliseum Collapse (1978, Connecticut, USA) cost $70 million plus another $20 million damage to the local economy. Just hours after thousands of fans had left the Hartford Coliseum, the steel-latticed roof (стальная решетчатая крыша) collapsed under the weight of wet snow. What was the cause? The programmer of the CAD (САПР) software used to design the Coliseum, incorrectly assumed the steel roof supports (опора) would only face pure compression. But when one of the supports unexpectedly buckled (подкосилась) from the snow, it set off a chain reaction that brought down (сбила) the other roof sections like dominoes.

In 1999 the U.K. Passport Agency implemented a new Siemens computer system, which failed to issue passports on time for a half million British citizens. The Agency had to pay millions in compensation, staff overtime and umbrellas for people queuing in the rain for passports. It cost the Agency £12, 600 million and caused mass inconvenience. The cause was that the passport Agency rolled out its new computer system without adequately testing it or training its staff. At the same time, a law change required

all children under 16 travelling abroad to obtain a passport, resulting in a huge spike (всплеск) in passport demand that overwhelmed (захлестнул) the buggy (глючная) new computer system.

Software can also have small unnoticeable errors or drifts that can culminate into a disaster. On February 25, 1991, during the Gulf war, a software rounding system (ошибка округления) incorrectly calculated the time, causing the Patriot system to ignore the incoming Scud missile. The missile destroyed an American Army barracks. 28 soldiers died, 100 were injured.

There are more scary stories to tell. This makes us wondering whether software is reliable at all. You can hardly ruin your clothes if the embedded software in your washing machine issues erroneous commands; but in airplanes, radiation therapy machines, a software error can easily claim people's lives. The reliability of software is simply a matter of life and death.

Text 13. Some Fun Microsoft Facts You Might Not Know

Despite ever-increasing Mac sales, Microsoft has an undisputed dominance (неоспоримое превосходство) over the computer industry. Much has already been written about Microsoft: its history, its products, even Bill gates. For those itching to know even more, we've dug up some facts that you might not have heard before.

1. "Micro-soft's" first ever mention. The first ever mention of Microsoft was in a letter from Bill Gates to co-founder Paul Allen in 1975. Gates initially wrote the company name as Micro-soft, considering it's a "microcomputer" and "software". Losing the hyphen, Microsoft was officially registered as a company in November 1976 in New Mexico where Gates and Allen were working with their first major customer, MITS. Microsoft did not move to its current campus in Redmond, Washington until 1986. The Microsoft logo has changed several times over the years.

2. Microsoft's favorite food is pizza. Microsoft has around 35 cafeterias serving ~ 37,000 people each day. Pizza tops the list of the most popular meal.

3. The average "softie". The average Microsoft employee, or "softie" as they call themselves, is a 38-year-old-male with the average salary for a developer coming in at $ 106,000. Microsoft currently employs 88,180 people who work across 32,404,796 square feet of Microsoft's premises (помещения), over 50,000 of which are U.S. based. The male to female ratio is very high among Microsoft's American employees with a staggering (ошеломляющий) 76% male workforce.

4. Microsoft celebrates anniversaries with M&Ms. All companies have their little in-house traditions, and Microsoft is not an exception. It seems it's customary (обычное дело) for softies to celebrate t heir yearly employment

anniversaries with candy, and more specifically, M&Ms. each anniversary, a Microsoft employee is expected to provide one pound of M&Ms for every year they've worked. That means that if Bill Gates had followed the tradition, he should have turned up with 33 pounds of M&Ms on June 27, 2008.

5. Microsoft has a huge art collection. No, we are not talking about Clip Art. Microsoft is one of the largest corporate collectors of artworks with over 5,000 contemporary pieces including painting, works on paper, photographs, ceramics, multimedia works. A large proportion of the works are on display at more than 150 Microsoft's many campuses. The company believes that art in the workplace reduces stress, increases productivity and encourages discussions and expression of opinions.

6. Microsoft asks strange interview questions. Microsoft has a reputation in the industry for asking strange questions during its job interviews. For example, "Why is an amanhole (канализационный люк) cover round?". It's certainly true that Microsoft uses a very unusual and forward-thinking (дальновидный) interview process. Rather than plain "Where do you see yourself in 5 years?" question, Microsoft is more likely to ask you to solve a logic puzzle or think over a problem like "Design a coffee maker that will be used by astronauts". Obviously, Microsoft isn't planning to go into the coffee-in-space industry, but the process serves to find candidate that can think creatively.

Text 14. Emoticons

The word *emoticon* comes from a combination of two words: *emotion* and *icon* and it is a sequence of characters that is intended to represent a human face and its appearance or emotion. The basic form contains eyes [:], perhaps the nose [–], and the mouth, which can be happy [ )] or sad [( ]. People also add hair, beards, glasses, etc. depending on the situation. In the west emoticons are written from left to right, so the hair or eyes are normally first, followed by a nose and then the mouth. If you put your head on one side, towards your left shoulder, you can recognize them more easily.

An early example of using text to represent a face appeared in the New York Herald Tribune in 1953 to advertise the film *Lili*: 'Today – You'll laugh :) You'll cry :(You'll love <3 *Lili*'.

People from East Asia often use a style of emoticons known as verticons (vertical + icon) or 'kaomoji' in Japanese, which literally means 'face letters'. You can recognize these emoticons 'straight on', i.e. without turning your head to one side. The style of these faces is similar to the style in Japanese anime and manga comic books.

Nowadays people often use emoticons in email messages but people shouldn't use emoticons in more formal situations. One reason is because some

programs automatically replace emoticons with images. For example, one man was discussing his department's financial plan by e-mail with his boss. He wrote 401 (k) in his email (k = £ 1,000), but the software automatically replaced (k) with a pair of lips giving a big kiss, and that's what his boss saw instead of 401 (k)!

Text 15. Programming Languages

A programming language in computer science is an artificial language used for writing a sequence of instructions. Similar to natural languages, such as English, French, programming languages have a vocabulary, grammar and syntax. However, natural languages are not suited for programming, because they are ambiguous, meaning that their vocabulary and grammatical structure may be interpreted in multiple ways. The languages used for programming must have simple logical structures, and the rules for their grammar, spelling and punctuation must be precise.

Programming languages can be classified as low-level and high-level languages. Examples of high-level languages are COBOL (Common business oriented language, used for commercial purposes, was first introduced in 1959), PASCAL and FORTRAN (used for solving scientific and mathematical problems, 1954, the USA), BASIC (Beginner's all purpose symbolic instruction code, developed in 1965 at Dartmouth College in the USA for students who require a simple language to begin programming).

C is a programming language developed by Dennis Ritchie at Bell Laboratories in 1972 to support the UNIX OS. C is a compiled language that contains a small set of built-in functions that are machine dependent.

C++ is a general purpose programming language; it was developed by Biorn Straustrup in 1979 at Bell Laboratories as an enhancement to the C programming language and was initially named "C with Classes". It was renamed to C++ in 1983. It is widely used in the software industry.

Java is a programming language developed by James Gosling at Sun Microsystems and released in 1995 as a core component of Sun Microsystems' Java platform. Its original name was OAK. It was used for writing client's applications and server software.

PACAL is a high-level general purpose programming language. It's one of the most famous languages and is widely used in industrial programming as well as in teaching programming at high school. This language is a base for a great number of other languages. It was designed in 1970 by Niklaus Wirth. The most famous version of PASCAL is TURBO PASCAL.

C# was developed by Microsoft as part of the . NET initiative and later approved as a standard by ECMA. It has an object-oriented syntax based on C++ and is heavy influenced by Java.

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