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Кафедра иностранных языков

АНГЛИЙСКИЙ ЯЗЫК

*Сборник текстов и упражнений
для студентов, обучающихся по направлению бакалавриата
«Информационные системы и технологии»*

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PART I

Unit 1

1. Read the following words.

Industry, especially, manufacture, supply, instruction, service, data, operator, determine, information, solve, rapidly, involve, prepare, traditionally, circulation, job.

2. Read and translate the following word combinations.

Computer industry, to supply products and services, mathematical operations, to involve different functions, business operations, public utilities, an essential tool, to make a decision, high level.

Text 1. COMPUTERS

The computer industry is one of the largest in the world. It includes companies that manufacture, sell and lease computers, as well as companies that supply products and services for people working with computers.

A computer cannot think. A human operator puts data into the computer and gives instructions. The operator writes instructions which determine the mathematical operations on information. A computer solves mathematical problems very rapidly. Traditionally, computers in business are used to process data. This involves different administrative functions such as preparation of payrolls, inventory control in manufacturing, warehousing and distribution operations, customer accounting, public utilities. Computers are widely used by banks, insurance companies, mass circulation magazines, etc. Now the computer takes on new kinds of jobs. It has become more involved in business operations as an essential tool in making decisions at the highest administrative level.

3. Read and memorize the active vocabulary to the text.

to give instructions

давать инструкции

to put data

закладывать данные

to solve mathematical problems	решать математические задачи
to process data	обрабатывать данные
preparation of payrolls	подготовка ведомостей
inventory control	инвентаризационный контроль
warehousing	складирование товаров
distribution operations	распределительные операции
customer accounting	расчет с клиентом

4. Answer the questions that follow.

1. What does the computer industry include?
2. In which way does a computer operate?
3. How are computers traditionally used in business?
4. What new kinds of jobs does the computer take on?

5. Fill in the gaps with the suitable words and word combinations on the right.

- | | |
|---|--------------------------|
| 1. Distribution operations, preparation of payroll are ... functions that the computer performs for business. | 1. process data |
| 2. Computer is programmed to ... fast and accurately. | 2. inventory control |
| 3. A programmer feeds the ... into the computer. | 3. processing |
| 4. Many companies use the computers for their | 4. administrative |
| 5. A computer solves problems by ... information. | 5. data and instructions |

6. Read and translate the following words and word combinations.

To realize, great changes, computer fans, to carry out, familiar, hardware, software, generation, to worry about, to become familiar with, to suffer from, to discover.

7. Read the text and give it a title.

Thirty years ago few people realized that computers were about

to become part of our everyday lives. This short period of time has seen great changes in business, education and public administration. Jobs which took weeks to do in past, are now carried out in minutes. Schoolchildren have become as familiar with hardware and software as their parents were with pencils and exercise books. They don't worry about mistakes having a computer.

Another generation of computer fans has arrived. They are neither spotty schoolchildren nor intellectual professors, but pensioners who are learning computing with much enthusiasm. It is particularly interesting for people suffering from arthritis as computers offer a way of writing nice clear letters. Now pensioners have discovered the Internet and at the moment they make up the fastest growing membership.

Unit 2

1. Read the following words.

Citizens, computer-literate, potential, opportunity, application, key, influence, achievement, computing, significant, effectively, to embrace, concept, rapidly, sufficient, to assist, instructions.

2. Read and translate the following word combinations.

Information-dependent society, problem-solving devices, quality of life, economic and social changes, computer applications, to pursue career goals, design of computers.

Text 2. COMPUTER LITERACY

Informed citizens of our information-dependent society should be computer-literate, which means that they should be able to use computers as everyday problem-solving devices. They should be aware of the potential of computers to influence the quality of life.

There was time when only privileged people had an opportunity to learn the basics, called the three R's: reading, writing and arithmetic. Now, as we are quickly becoming an information society, it is time to restate this right as the right to learn reading, writing and compu-

ting. There is little doubt that computers and their many applications are among the most significant technical achievements of the century. They bring both economic and social changes. “Computing” is a concept that embraces not only the old third R, arithmetic, but also a new idea – computer literacy.

Because computers have moved into society so rapidly and so completely, you need basic computer skills just to pursue your career goals and function effectively in society. In short, you need computer literacy, sufficient computer knowledge to prepare you for working and living in a computerized society.

For many people, computer literacy means simply knowing which key to press. That knowledge is important, but isn’t enough. You need to understand some fundamental concepts about how computer systems are set up and how they work.

In an information society a person who is computer-literate need not be an expert on the design of computers. He needn’t even know much about how to prepare programs which are instructions that direct operations of computers. All of us are ready to become computer-literate. Just think of your everyday life. If you receive a subscription magazine in the post-office, it is probably addressed to you by a computer. If you buy something with a bank credit card or pay a bill by check, computers help you process the information. When you check out at the counter of your store, a computer assists a checkout clerk and a store manager. When you visit your doctor, your schedules and bills and special services, such as laboratory tests, are prepared by computer. Many actions that you have taken or observed have much in common. Each relates to some aspect of data processing system.

3. Match the following English words and word combinations with the Russian equivalents.

device	создавать компьютерные системы
be aware of	компьютерная грамотность
quality of life	устройство
significant achievements	знать
application	достаточное знание компьютера
computer literacy	система обработки данных
basic computer skills	качество жизни

sufficient computer knowledge
to set up computer systems
data processing system

значительные достижения
применение
основные навыки работы с компьютером

4. Complete the sentences choosing the best variant corresponding to the contents of the text.

1. Informed citizens of our information-dependent society
 - a) should know which key to press.
 - b) should be able to use computers as everyday problem-solving devices.
 - c) should be able to use the Internet.
2. You need sufficient computer knowledge
 - a) to buy something with a bank credit card.
 - b) to receive a subscription magazine in the post-office.
 - c) to prepare you for working and living in a computerized society.
3. . . . , computers help you process the information.
 - a) If you are an expert on the design of computers
 - b) If you buy something with a bank credit card or pay a bill by check
 - c) If you need computer literacy
4. You need to understand some fundamental concepts about
 - a) how computer systems are set up and how they work.
 - b) how to use the Internet.
 - c) how laboratory tests are prepared by computer.

5. Answer the questions that follow.

1. What does to be computer-literate mean?
2. Why are computers considered to be the most significant technical achievements of the century?
3. What do people need basic computer skills for?
4. What helps citizens to prepare for working and living in a computerized society?
5. Does computer literacy mean simply knowing which key to press?
6. Does a computer-literate person need to be an expert on the design of computers? Why?

7. What is the use of computers in our everyday life?

6. Retell the text “Computer Literacy”.

7. Read the following text and discuss it with your group-mates or teacher.

Computers are a great technological invention of the 20th century. Their advantages are numerous yet much can be said against them. The main disadvantage of computers is that looking at a screen for long periods of time is bad for the eyes, and sitting on a chair for hours is not healthy. Also, people who use computers have a tendency to become anti-social and stay at home. The strongest argument against the use of computers is that the more jobs which are done by computers, the less are done by people.

Unit 3

1. Read the following words.

Creating, processing, widespread, to maintain, transition, customer, image, communicating, environment, to manufacture.

2. Read and translate the following word combinations.

To become commonplace, research institutes, communication services, computer-controlled robots, management of economy, daily operations, automatic piloting, automatic navigation, military systems, performing the assigned task, computer application.

Text 3. APPLICATION OF COMPUTERS

At present a great deal of the work force of most countries is engaged in creating, processing, storing, communicating and just working with information. Computers have become commonplace in homes, offices, stores, schools, research institutes, plants.

The use of computers in business, industry and communication services is widespread today. Computer-controlled robots are able to improve the quality of manufactured products and to increase productivity. Computers can control the work of power stations, plants and

docks. They help in making different decisions and in management of economy.

The work of banks depends upon computer terminals for millions of daily operations. Without these terminals, records of deposits and withdrawals would be difficult to maintain, and it would be impossible to make inquiries about the current status of customer accounts.

Computers form a part of many military systems including communication and fire control. They are applied for automatic piloting and automatic navigation. Space exploration depends on computers for guidance, on-board environment and research.

Weather forecasting, library information services can benefit from computers too. It is interesting to note that computers are widely used in medicine. They became valuable medical diagnostic tools. Computers are used for optical scanning and image processing, ranging from pattern recognition to image processing. Technicians can operate computer tomography scanners which combine X-rays with computer technology to give sectional views of the body of patients. The views then can be combined into a single image shown on the screen.

It should be noticed that learning on a computer can be fun. Students spend more time with computer-aided instruction performing the assigned task, as compared with conventional classroom.

Air traffic control is impossible without computer application. It fully depends on computer-generated information.

Many other uses of computer that we cannot imagine at present will become commonplace in the transition from an industrial to post industrial, or information society.

3. Match the following English word combinations with the Russian equivalents.

computer terminals
to store information
to improve the quality
to make decisions
to make inquiries
information services
image processing

информационные услуги
обработка изображений
обучение на компьютере
компьютерные терминалы
улучшить качество
компьютерная информация
принимать решения

computer technology
to show on the screen
learning on a computer
computer-generated information

делать запросы
хранить информацию
показать на экране
КОМПЬЮТЕРНЫЕ ТЕХНОЛОГИИ

4. Match the beginning of the sentences on the left with a suitable item on the right. Use each item once only.

- | | |
|---------------------------|--|
| 1. Computers | a. is widespread today. |
| 2. The work of banks | b. can be fun. |
| 3. Space exploration | c. depends on computers for guidance, on-board environment and research. |
| 4. Learning on a computer | d. depends upon computer terminals |
| 5. Air traffic control | e. fully depends on computer-generated information. |
| 6. The use of computers | f. have become commonplace in homes and offices. |

5. Answer the questions that follow.

1. Why have computers become commonplace in homes, offices, stores, schools, research institutes, plants?
2. Where is the use of computers widespread today?
3. What does the work of banks depend on? Why?
4. Computers form a part of many military systems and space exploration, don't they?
5. How are computers used in medicine?
6. What do you think of learning on a computer?
7. Is air traffic control possible without computer application?

6. Give a brief overview of computer application.

Unit 4

1. Read the following words.

Formulate, symbols, microphone, calculation, manipulate, modify, core, to refer, represent, available, score, permanent.

2. Read and translate the following word combinations.

A variety of shapes and sizes, a series of stored instructions, common characteristics, computer system, computer program, kinds of input, audio signals, electronic signals, to sort lists of words or numbers, to draw graphs, computer's "brain".

Text 4. A COMPUTER IS ...

Most people can formulate a mental picture of a computer, but computers do so many things and come in such a variety of shapes and sizes that it might seem difficult to distill their common characteristics into an all-purpose definition. At its core, a computer is a device that accepts input, processes data, stores data, and produces output, all according to a series of stored instructions.

Computer input is whatever is typed, submitted, or transmitted to a computer system. Input can be supplied by a person, by the environment, or by another computer. Examples of the kinds of input that a computer can accept include words and symbols in a document, numbers for a calculation, pictures, temperatures from a thermostat, audio signals from a microphone, and instructions from a computer program. An input device, such as a keyboard or mouse, gathers input and transforms it into a series of electronic signals for the computer to store and manipulate.

In the context of computing data refers to the symbols that represent facts, objects, and ideas. Computers manipulate data in many ways, and this manipulation is called processing. The series of instructions that tell a computer how to carry out processing tasks is referred to as a computer program, or simply a "program". These programs form the software that sets up a computer to do a specific task. Some of the ways that a computer can process data include performing calculations, sorting lists of words or numbers, modifying documents and pictures, keeping track of your score in a fact-action game, and drawing graphs. In a computer, most processing takes place in a component called the central processing unit (CPU), which is sometimes described as the computer's "brain".

A computer stores data so that it will be available for processing. Most computers have more than one place to put data, depending on

how the data is being used. Memory is an area of a computer that temporarily holds data waiting to be processed, stored, or output. Storage is an area where data can be left on a permanent basis when it is not immediately needed for processing.

Output is the result produced by a computer. Some examples of computer output include reports, documents, music, graphs, and pictures. An output device displays, prints, or transmits the results of processing.

3. Match the following English words and word combinations with the Russian equivalents.

an all-purpose definition	собирать входные данные
to accept input	преобразовывать
to process data	мышь
to store data	центральный процессор
to produce output	обрабатывать данные
input device	универсальное определение
keyboard	принимать входные данные
mouse	устройство ввода
to gather input	клавиатура
to transform	сохранять данные
central processing unit	формировать выходные данные

4. Match the words with the definitions below.

- | | | |
|-----------------------|-------------------|---------------------|
| 1. A computer | 2. Computer input | 3. An input device |
| 4. A computer program | 5. CPU | 6. Memory |
| 7. Storage | 8. Output | 9. An output device |

- a) is an area of a computer that temporarily holds data waiting to be processed, stored, or output.
- b) is the component in which most processing takes place.
- c) is whatever is typed, submitted, or transmitted to a computer system.
- d) is a device that accepts input, processes data, stores data, and produces output.
- e) gathers input and transforms it into a series of electronic signals for the computer to store and manipulate.

- f) is the series of instructions that tell a computer how to carry out processing tasks.
- g) displays, prints, or transmits the results of processing.
- h) is the result produced by a computer.
- i) is an area where data can be left on a permanent basis when it is not immediately needed for processing.

5. Mark the following statements as True or False.

1. A computer can be defined by its ability to perform different mathematical and logical operations according to a set of instructions.
3. There is no any significant difference between memory and storage.
4. Computer programs and software mean the same.
5. CPU is a part of a computer that controls all other parts of the system.
6. Most computers have more than one place to put data.

6. Complete the following sentences choosing one of the variants given.

1. If you don't back up regularly, you can lose all your
 a) CPU b) programs c) data d) storage
2. A computer ... input, processes and stores data, produces output according to a series of instructions.
 a) accepts b) submits c) emerges d) transmits
3. Reports, documents, graphs and pictures can be ... to as computer output.
 a) performed b) supplied c) transformed d) referred
4. A computer can perform various tasks such as word processing or sending messages that ... it from any calculator.
 a) set up b) distinguish c) keep track d) mean
5. Memory is the part of a computer where data and instruction are stored
 a) permanently b) available c) temporarily d) versatile
6. Data is processed in the ... according to the instructions that have been loaded into the computer memory.
 a) CPU b) variety c) storage d) output

7. Answer the following questions.

1. What is a computer?
2. What can be called computer input?
3. How can input be supplied?
4. What kinds of input can a computer accept?
5. What input devices can you name?
6. What is a keyboard or mouse used for?
7. What does processing mean?
8. What is a computer program?
9. What do computer programs form?
10. Why do we need software?
11. How does a computer process data?
12. Why is CPU described as the computer's "brain"?
13. What do we call memory?
14. What is storage?
14. How do memory and storage differ?
15. What is the result produced by a computer called?
16. What computer output can we get?

Unit 5

1. Read the following words.

Education, adults, youth, specific, digital, include, powerful, to create, shape, addition, purpose, minicomputers, supercomputers.

2. Read and translate the following word combinations.

Science and technology, rapid development, human activities, special-purpose computers, the world of information, to be of great importance, in recent years, electronic products, high-speed computers, notebook computers, the highest class of computers, large research centers.

Text 5. COMPUTER CATEGORIES

The rapid development of science and technology has changed the world. In recent years computers have been used in all fields of human activities: business, industry, education, culture, health care

service, economics, politics, mass media, arts, in everyday life of different people. At present people have to keep step with the time not to be lost in the world of information. So computers are becoming of great importance for most adults and youth. Computers come in many sizes and shapes such as special-purpose, laptop, desktop, minicomputers, supercomputers.

Special-purpose computers can perform specific tasks and their operations are limited to the programs built into their microchips. These computers are the basis for electronic calculators and can be found in thousands of electronic products, including digital watches and automobiles. Basically, these computers do the ordinary arithmetic operations such as addition, subtraction, multiplication and division.

General-purpose computers are much more powerful because they can accept new sets of instructions. The smallest fully functional computers are called notebook computers. Most of the general-purpose computers known as personal or desktop computers can perform almost 5 million operations per second.

Minicomputers are high-speed computers that have greater data manipulating capabilities than personal computers do. These machines are primarily used by larger businesses or by large research and university centers. The speed and power of supercomputers, the highest class of computers, are almost beyond comprehension, and their capabilities are continually being improved. The most complex of these machines can perform nearly 32 billion calculations per second and store 1 billion characters in memory at one time, and can do in one hour what a desktop computer would take 40 years to do. They are used commonly by government agencies and large research centers. Linking together networks of several small computer centers and programming them to use a common language has enabled engineers to create the supercomputer. The aim of this technology is to elaborate a machine that could perform a trillion calculations per second.

3. Match the following English words and word combinations with the Russian equivalents.

to keep step with the time
laptop computer

ВОЗМОЖНОСТЬ
ОСНОВА

desktop computer	портативный компьютер
general-purpose computers	цифровой
basis	разработать
to perform	настольный компьютер
digital	идти в ногу со временем
capability	выполнять
to elaborate	компьютеры общего назначения

4. Match the terms with the appropriate definitions.

- | | |
|------------------------|---|
| 1. A desktop computer | a) this computer is especially suited for storing and distributing data on a network; these machines do not include features such as sound cards, DVD players, and other fun accessories; they don't require specific hardware and just about any computer can be configured to perform such work; |
| 2. A notebook | b) these are powerful desktop computers designed for specialized tasks; they can tackle tasks that require a lot of processing speed, most have circuitry specially designed for creating and displaying three-dimensional and animated graphics and often dedicated to design tasks; |
| 3. A tablet computer | c) it's a large and expensive computer capable of simultaneously processing data for hundreds or thousands of users; used by businesses or governments to provide centralized storage, processing and management for large amount of data in situations where reliability, data security and centralized control are necessary; |
| 4. A handheld computer | d) it fits on a desk and runs on power from an electrical wall outlet; its keyboard is typically a separate component, connected to the main unit by a cable; |
| 5. A workstation | e) it's a portable computing device featuring a touch-sensitive screen that can be used as a writing or drawing pad; |

- | | |
|-------------------------|--|
| 6. A mainframe computer | f) it's one of the fastest computers in the world; can tackle complex tasks such as breaking codes, modeling worldwide weather systems and simulating nuclear explosions; |
| 7. A super-computer | g) it features a small keyboard or touch-sensitive screen and is designed to fit into a pocket, run on batteries and be used while you are holding it; also called a PDA (personal digital assistant), it can be used as an electronic appointment book, address book, calculator and notepad; |
| 8. A server | h) it's a small lightweight personal computer that incorporates screen, keyboard, storage and processing components into a single portable unit, also referred to as a "laptop". |

5. Discuss the following questions.

1. What are the characteristics of desktop computers?
2. How do notebook computers differ from desktops?
3. What is a tablet computer?
4. What is a hand held and what is it used for?
5. What type of computers can be classified as workstations?
6. What's so special about a mainframe computer?
7. How powerful is a supercomputer?
8. What makes a computer a "server"?
9. What does a personal computer system include?
10. What's a peripheral device and can a hard disk be called so?

Unit 6

1. Read the following words.

Location, goal, previous, effort, to require, equivalent, the Internet, to connect, message, virtually.

2. Read and translate the following word combinations.

International computer-using community, several users, survive a nuclear attack, right destination, science-oriented discussions, to expand at a phenomenal rate, to exchange data, government agencies.

Text 6. NET ORIGIN

1) In the 1960s, researchers began experimenting with linking computers. They wanted to see if computers in different locations could be linked using a new technology known as packet switching. This technology, in which data meant for another location is broken up into little pieces, each with its own “forwarding address” had the promise of letting several users share just one communications line. Their goal was not the creation of today’s international computer-using community, but the development of a data network that could survive a nuclear attack.

2) Previous computer networking efforts had required a line between each computer on the network, sort of like a one-track train route. The packet system allowed to create data highway. Each packet was given the computer equivalent of a map and a time stamp, so that it could be sent to the right destination, where it would then be reassembled into a message the computer or a human could use. This system allowed computers to share data and researchers to exchange electronic mail, or e-mail. In itself, e-mail was something of a revolution, offering the ability to send detailed letters at the speed of a phone call.

3) As this system grew, some college students developed a way to use it to conduct online conferences. These started as science-oriented discussions, but they soon branched out into virtually every other field, as people recognized the power of being able to “talk” to hundreds, or even thousands, of people around the country.

4) In the 1980s, this network of networks, which became known as the Internet, expanded at a phenomenal rate. Hundreds, then thousands of colleges, research companies and government agencies began to connect their computers to this worldwide Net. Some companies unwilling to pay the high costs of the Internet access (or unable to meet strict government regulations for access) learned how to link their own systems to Internet, even if “only” for e-mail and conferences. Some of these systems began offering access to the public. Now anybody with a computer and modem, persistence and a small amount of money could tap into the world.

3. Match the following English word combinations with the Russian equivalents.

linking computers	адрес перенаправления
packet switching	электронная почта
share a communications line	проводить онлайн-конференции
data network	всемирная сеть
to share data	доступ к Интернету
electronic mail	соединение компьютеров
forwarding address	пакетная коммутация
to conduct online conferences	сеть передачи данных обмени-
worldwide Net	ваться данными
the Internet access	совместно использовать линию
	связи

4. Mark the following statements as True, False or No Information.

1. Students can reach library resources through the Internet.
2. Some college students began experimenting with linking computers in the 1960s. 3. A packet switching technology was designed to create a computer-using community. 4. E-mailing gave people the opportunity to send letters at the speed of a phone call. 5. In the 1960s, this network of networks, which became known as the Internet, expanded at a phenomenal rate.

5. Relate each of the following sentences to the corresponding paragraph (1, 2, 3, 4) of the text.

1. Highway systems created, worldwide Net could be expanded at a phenomenal rate. 2. Some systems of public access to Internet are not too expensive for their users.

6. Answer the following question choosing one of the given variants.

What is the main advantage of the packet system?

1. The main advantage of this system is in the fact that it helped to create many-track data route. 2. The main advantage of this system is in the fact that it serves as a means of surviving nuclear attacks. 3. The main advantage of this system is in the fact that it supports the development of new projects. 4. The main advantage of this system is in the

fact that it doesn't allow numerous users to share a communication line.

7. Identify the main idea of the text using the given variants.

1. "Talking" around the country. 2. E-mail service provided by the Internet nowadays. 3 The development of the Internet in the 20th century. 4. Online conferences as science-oriented discussions.

8. Read the following text and discuss it with your group-mates or teacher.

Computer games are a multimillion dollar industry, but people who really enjoy games are not satisfied with playing against the computer. They want to play against real people and most computer games allow you to do that just by joining up with other players on the Internet. Regular players say that this is where their true enjoyment of games can be found. With some games up to 60 people can take part. It's a good way to meet people and it gives you something to talk about.

PART II

SUPPLEMENTARY READING

Text 1. Personal Computer Systems

The term "computer system" usually refers to a computer and all the input, output, and storage devices that are connected to it. A personal computer system usually includes the following equipment:

System unit. The system unit is the case that holds the main circuit boards, microprocessor, power supply, and storage devices. The system unit the notebook computer holds a built-in keyboard and speakers, too.

Display device. Most desktop computers use a separate monitor as a display device, whereas notebook computers use a flat panel LCD screen (liquid crystal display screen) attached to the system unit.

Keyboard. Most computers are equipped with a keyboard as the primary input device.

Mouse. A mouse is an input device designed to manipulate on-screen graphical objects and controls.

Hard disk drive. A hard disk drive can store billions of characters of data. It is usually mounted inside the computer's system unit. A small external light indicates when the drive reading or writing data.

CD and DVD drives. A CD drive is a storage device that uses laser technology to work with data on computer or audio CDs. A DVD drive can work with data on computer CDs, audio CDs, computer DVDs, or DVD movie disks. Some CD and DVD drives are classified as "read only" devices that cannot be used to write data onto disks. They are typically used to access data from commercial software, music, and movie CDs or DVDs. "Writable" CD and DVD drives, however, can be used to store and access data.

Floppy disk drive. A floppy disk drive is a storage device that reads and writes data on floppy disks.

Sound card and speakers. Desktop computers have a rudimentary built-in speaker that's mostly limited to playing beeps. A small circuit board, called a sound card, is required for high-quality music, narration, and sound effects. A desktop computer's sound card sends signals to external speakers. A notebook's sound card sends signals to speakers that are built into the notebook system unit.

Modem and network cards. Many personal computer systems include a built-in modem that can be used to establish an Internet connection using a standard telephone line. A network card is used to connect a computer to a network or cable Internet connection.

Printer. A computer printer is an output device that produces computer-generated text or graphical images on paper.

The term peripheral device designates equipment that might be added to a computer system to enhance its functionality. Popular peripheral devices include printers, digital cameras, scanners, joysticks, and graphics tablets.

The word "peripheral" is a relatively old part of computer jargon that dates back to the days of mainframes when the CPU was housed in a giant box and all input, output, and storage devices were housed separately. Technically, a peripheral is any device that is not housed within the CPU.

Although a hard disk drive seems to be an integral part of a

computer, by the strictest technical definition, a hard disk drive would be classified as a peripheral device. The same goes for other storage devices and the keyboard, monitor, LCD screen, sound card, speakers, and modem. In the world of personal computers, however, the use of the term “peripheral” varies and is often used to refer to any components that are not housed inside the system unit.

Text 2. Digital Computers

There are two fundamentally different types of computers: analog and digital. In current usage, the term “computer” usually refers to high-speed digital computers. These computers are playing an increasing role in all branches of economy.

Digital computers are based on manipulating discrete binary digits (1s and 0s). They are more effective than analog computers: they are faster; they can transfer huge data bases more accurately; and their coded binary data are easier to store and retrieve than analog signals.

For all their apparent complexity, digital computers are considered to be simple machines. Digital computers are able to recognize only two states in each of its millions of switches, “on” or “off”, or high voltage or low voltage. By assigning binary numbers to these states, 1 for “on” and 0 for “off”, and linking many switches together, a computer can represent any type of data from numbers to letters and musical notes. It is this process of recognizing signals that is known as digitization.

The power of computers influences the characteristics of memory-storage devices. Most digital computers store data both internally, in what is called main memory, and externally, on auxiliary storage units. As a computer processes data and instructions, it temporarily stores information internally on special memory microchips.

Output devices let a user see the results of the computer’s data processing. Being the most commonly used output device, the monitor accepts video signals from a computer and shows different kinds of information such as text, formulas and graphics on its screen. With the help of various printers information stored in one of the

computer's memory systems can be easily printed on paper in a desired number of copies.

Programs, also called software, are detailed sequences of instructions that direct the computer hardware to perform useful operations. In large corporations software is often written by groups of experienced programmers, each person focusing on a specific aspect of the total project. For this reason, scientific and industrial software sometimes costs much more than do the computers on which the programs run.

Text 3. The Computer Hardware and Software

The term hardware refers to the physical parts of the computer. The parts of a computer you can touch, such as the monitor or the Central Processing Unit (CPU) are hardware. Computer hardware is versatile – what it does depends on the computer program you use. All hardware except the CPU and the working memory are called peripherals. Computer programs are software. The operating system (OS) is software that controls the hardware. Most computers run the Microsoft Windows OS. MacOS and Linux are other operating systems. The CPU controls how fast the computer processes data. We measure its speed in megahertz (MHz) or gigahertz (GHz). The higher the speed of the CPU, the faster the computer will run. You can type letters and play computer games with a 500 MHz CPU. Watching movies on the Internet needs a faster CPU and a modem.

We measure the Random Access Memory (RAM) of the computer in megabytes (MB). RAM controls the performance of the computer when it is working and moves data to and from the CPU. Programs with a lot of graphics need a large RAM to run well. The hard disk stores data and software programs. We measure the size of the hard disk in gigabytes (GB). Computer technology changes fast, but a desktop PC (Personal Computer) usually has a tower, a separate monitor, a keyboard and a mouse. The CPU, modem, CD-ROM and floppy disk drives are usually inside the tower. A notebook is a portable computer with all these components inside one small unit. Notebooks have a screen, not a monitor, and are usually more expensive than desktops with similar specifications.

Text 4. The Desktop

For most users, what's inside the system unit – the big box that contains the processing circuitry and the storage devices – is a mystery. Yet a little knowledge of what's inside that box is essential for computer literacy. It is important that you know enough about processing to make intelligent selections when buying a computer.

The desktop is the screen that appears after you boot up, or turn on, your computer. It shows a number of icons on a background picture or colour. When you buy a new computer and boot up for the first time, the desktop will only show a small number of icons. In the Windows operating system, these usually include My Computer and the Recycle Bin. Double-clicking on an icon with the mouse opens a computer program, a folder or a file. Folders usually contain other files. You can move icons around the desktop add new ones or remove them by deleting them. Deleted files go to the Recycle bin. People usually put the programs they use most often on the desktop to find them quickly. When you double-click on My Computer another screen appears. This screen shows the A drive icon for floppy disk, the C drive icon, which usually contains all of the main programs and folders on your computer, the D drive icon, which is usually the CD-ROM drive, and the Control Panel folder.

When you double-click on Control Panel, another screen appears that shows many other icons, such as the Display icon and the Date/Time icon. Double-clicking on Display opens a box that lets you personalize your desktop by changing the screen saver (the moving image that appears when no one is using the computer) or the background picture.

Text 5. Hardware (1)

Computer hardware can be divided into four categories: input hardware, processing hardware, storage hardware, output hardware.

The purpose of the input hardware is to collect data and convert it into a form suitable for computer processing. The most common input device is a keyboard. It looks very much like a typewriter. The mouse is a handheld device connected to the computer by a small ca-

ble. As the mouse is rolled across the mouse pad, the cursor moves across the screen. When the cursor reaches the desired location, the user usually pushes a button on the mouse once or twice to signal a menu selection or a command to the computer.

The light pen uses a light sensitive photoelectric cell to signal screen position to the computer. Another type of input hardware is optic-electronic scanner that is used to input graphics as well as typeset characters. Microphone and video camera can be also used to input data into the computer. Electronic cameras are becoming very popular among the consumers for their relatively low price and convenience.

The purpose of processing hardware is to retrieve, interpret and direct the execution of software instructions provided to the computer. The most common components of processing hardware are the Central Processing Unit and main memory. The CPU is the brain of the computer. It reads and interprets software instructions and coordinates the processing activities that must take place. The design of the CPU affects the processing power and the speed of the computer, as well as the amount of main memory it can use effectively. With a well-designed CPU you can perform highly sophisticated tasks in a very short time.

Hardware (2)

The purpose of storage hardware is to store computer instructions and data in a form that is relatively permanent and retrieve when needed for processing. Storage hardware serves the same basic functions as do office filing systems except that it stores data as electromagnetic signals. The most common ways of storing data are hard disk, floppy disk and CD-ROM.

Hard disk is a rigid disk coated with magnetic material, for storing programs and relatively large amounts of data. Floppy disk – thin, usually flexible plastic disk coated with magnetic material, for storing computer data and programs. CD-ROM (compact disk read-only memory) is a compact disk on which a large amount of digitized read-only data can be stored. CD-ROMs are very popular now because of the growing speed which CD-ROM drives can provide nowadays.

The purpose of output hardware is to provide the user with the

means to view information produced by the computer system. Information is output in either hardcopy or softcopy form. Hardcopy output can be held in your hand, such as paper with text (word or numbers) or graphics printed on it. Softcopy output is displayed on a monitor.

Monitor is a component with a display screen for viewing computer data or television programs. Printer is a computer output device that produces a paper copy of data or graphics. Modem is an electronic device that makes possible the transmission of data to and from computer via telephone or other communication lines. Hardware comes in many configurations, depending on what the computer system is designed to do.

Text 6. Memory

Many people confuse memory and storage. Memory is temporary. When you turn off the computer, everything in memory is lost. Storage is usually permanent. On most computers, storage also has far greater capacity than memory.

Most computers have several types of memory: RAM, virtual memory, cache memory, and ROM. Memory has many different names. It is called random-access memory – or just RAM – as well as primary memory. And sometimes, just to confuse things further, memory is called primary storage. This storage is in contrast to storage devices that are referred to as secondary storage, such as disks. Generally speaking, the more memory the better. With most personal computers, the computer's motherboard is designed so that you can easily add more memory – you just add memory chips. Most memory chips are now mounted on boards, and all you need to do is to plug the board into a slot on the motherboard. Adding more memory chips may be necessary to run large or graphics-intensive applications. RAM is fast, but it has one drawback, it is volatile – all the data disappears if the power fails.

Cache memory is a specialized chip used with the computer's memory. Cache chips are faster and more expensive than regular RAM chips. The computer stores the most frequently used instructions and data in cache. Cache has a relatively small storage capacity but can significantly increase the system's speed.

The instructions to start the computer are stored in read-only

memory chips, which are not volatile. ROM chips are manufactured with instructions stored permanently on them. The instructions to start the computer are on a special chip known as a ROM BIOS (Basic Input/Output System) chip.

Text 7. What Is World Citizenship?

World citizenship is the concept that all human beings are born citizens of the world, rather than merely citizens of a particular nation. Proponents of the idea of world citizenship believe that the concept of national citizenship is no longer valid now that technology and commerce have united the world into a global community. Advocates of this concept point out that advances in technology can now permit open communications between all persons inhabiting the world, as well as free travel between all nations of the world. Proponents of world citizenship believe that modern people have a duty to see themselves as part of a singular, diverse human culture, and that all nations should recognize and promote human rights for all peoples, including the right to travel and reside freely throughout the world. Organizations such as the World Government of World Citizens typically espouse the unity and common rights of all people, and even go so far as to issue world passports to applicants.

The concept of world citizenship is believed to have originated with a man named Emery Reves, an American who renounced his United States citizenship in the years immediately following World War II. Reves declared himself a sovereign citizen because he had come to believe, during the course of his military service during the war, that all people are united in one human family and that nationalism contributes only to war and disunity. In The Ellsworth Declaration, which Reves delivered in Ellsworth, Maine, United States in September 1953, Reves points out that historical figures such as Socrates and Thomas Paine declared themselves to be members of a worldwide human community, and that the concept of world citizenship therefore dates back to antiquity. Since the mid-20th century, the concept of world citizenship, with its central idea that individuals have responsibilities to the global community, have become more widespread.

Proponents of world citizenship and global responsibility point out that, as technology makes global communication, travel, and commerce easier, the impacts of events around the globe are widened. Advocates point out that many global events, such as pollution, deforestation, war, and economic turmoil, now impact not just those people living in the local region, but all people, everywhere. In light of evidence suggesting that events in an isolated region of the globe can have far-reaching effects on people of the entire world, advocates of world citizenship feel that the time is right for individual humans to take responsibility for governing themselves and coping with world problems. Advocates of world citizenship believe that eliminating national boundaries in favor of a unified, diverse, and tolerant world government could be the path to peace among all nations and help humankind to solve the global problems that affect all of us.

Text 8. What Is the Global IT Industry?

Information technology (IT) is the branch of engineering that involves computer development and security, as well as the storage, receiving, and sending of data. The global IT industry therefore refers to the worldwide industry that develops and optimizes online programs and telecommunications. This industry is thought by many to be the largest industry in the world, for it encompasses a large number of jobs and opportunities. Nearly every business and organization in the world that uses some kind of computer system depends on services provided by the global IT industry.

This industry provides a number of different services for organizations across the globe. A common service provided by the global IT industry is systems architecture. This refers to the design and development of operating systems. An operating system is responsible for controlling the execution of computer programs and services. Some common operating systems are Windows® and LINUX®.

Another important service provided by the global IT industry is networking. A network is a connection between a number of computers and their components. This term may be used to describe a wireless Internet connection. It may also be used to describe the connection between a number of computers that access the same server. A

server is a primary computer database that allows a number of computers on the network to share information and programs.

Security is another commonly used service provided by the global IT industry. An IT professional might secure a network by restricting the access of those who are not permitted to join the network. It is also used on the Internet in order to protect information that is sent and received online.

Many IT professionals concentrate on maintenance and troubleshooting. These professionals are often hired by companies and organizations that need specialists to ensure the optimized performance of networks and software. These same specialists will often perform network development that improves the performance of the network and its various components.

Much work in the global IT industry is performed online or through other telecommunication methods, so many professionals in this field have the opportunity to work from a number of different locations. Nevertheless, many IT specialists are considered to be in-house, which means that they are kept on the premises of a particular business. Larger corporations with a number of different locations will often have an IT center that controls the company-wide networks and databases used by its different entities.

Global IT companies sell a number of different products and services to businesses and other organizations all over the world. Products tend to be software, such as computer programs, and hardware, which refers to a computer's physical components. Successful vendors in the global IT sector are thought by many economic and financial specialists to be some of the most lucrative businesses in the world.

Text 9. What Is the Relationship Between Information Technology and Economic Development?

Information technology (IT) can play a part in economic development by providing a thriving industry in its own right that increases employment and boosts exports. The industry also may contribute to broader economic development within a country by creating greater efficiency across industrial sectors, helping to reduce costs and in-

crease the quality of industrial production. Information technology and economic development also link together when service industries are enabled to deliver their services across a greater geographical area. Government services may be improved by the introduction of information technology, assisting back office services and leading to greater efficiency in record keeping. Management of sectors such as transport and utilities also may be improved by the use of specialized information technology services.

Countries that encourage the development of a competitive IT industry often see a close connection between information technology and economic development. The barriers to entry into the IT industry are not as great as for other industries and relatively little capital expenditure may be required. A country that has a pool of skilled engineers and computer scientists may have a competitive advantage in IT services. An example in recent history is India, which developed a software industry by means of tax incentives and other incentives for software developers and exporters, building a thriving industry on the basis of a workforce that possesses the relevant IT and language skills. Information technology and economic development are linked when IT services spur innovation and efficiency throughout the economy. Greater ease of communication and introduction of IT systems may reduce costs, promote efficiency and increase the quality of products and services. The use of collaborative technology facilitates the spread of knowledge within a firm and between firms in an industry, improving communication and collaboration with customers and suppliers. Digital processing, storage and communication of information add to efficiency in back office services such as accounting, payroll, inventory management and various production operations. Financial institutions may increase efficiency by using information technology that leads to more efficient processing of loans and management of micro-finance operations.

Government services may be operated more efficiently through the use of IT in areas such as data collection and record keeping. Important government operations such as tax collection may be made more efficient and the electronic submission of tax returns may reduce the administrative burden on government. The electronic storage of data by government also may help transparency by enabling easier

access by the public to government data that are relevant to them. The operation of utilities such as electricity and water services may be improved by the introduction of IT systems. Information technology and economic development also may be linked through the expansion of the education system through distance learning or the use of IT in schools.

Text 10. What Is the Relationship Between Innovation and Economic Development?

The relationship between innovation and economic development lies in the manner in which innovation can be applied to the economic development of a country. One of the links between innovation and economic development is the fact that innovation creates new entrepreneurial opportunities with the attendant avenues for economic development. The most direct link between innovation and economic development is the leveraging of the knowledge or human capital required for higher incidence of innovation to the benefit of the economy.

An analysis of the connection between innovation and economic development will lead to the conclusion that a country blessed with a significant number of innovators will reflect the benefits from such a wealth through the development of the economy. Innovation requires the application of knowledge toward the creation of opportunities, which may not be apparent to those who lack the same quality of human capital. In this sense, there is a link between innovation and education. Countries with well-developed educational systems usually have a higher number of people with the human capital necessary for high levels of innovation in comparison to those countries that do not. The economic benefit to the country can be seen in the way in which the citizens of the country use their knowledge to develop the economy.

Entrepreneurship is a direct offshoot of innovation due to the fact that most of the new ideas need some sort of business structure to implement them. For instance, an innovative entrepreneur who decides to apply his or her ideas to a business venture will need to hire employees, rent a place of business, and generally make other types of

property and human capital investments, including the payment of taxes to the government. Where the idea is a solid one, the business will grow, leading to the establishment of other subsidiaries, partnerships with foreign investors, reduction of unemployment, and other avenues for the development of the economy.

Some countries with fewer natural resources, especially Asia, rely to a large extent on their abundance of human capital as a means to achieving economic development. The innovative spirit of the citizens of such nations can be seen in their achievements in many areas, including science and technology. An application of this innovation combined with entrepreneurial opportunities is a formula that has led to the great economic achievements evident in the perception of such countries as some of the economic powerhouses in the world.

Text 11. What Is ITES?

ITES stands for information technology enabled services. It refers to the outsourcing of numerous processes in which the provider utilizes telecommunication technologies and the Internet to provide those services, mainly for companies in non-information technology (IT) fields. It covers a wide range of areas such as manufacturing, healthcare, banking, insurance, telecommunications and finance. Some of the services provided are call center services, payroll, medical transcription, bio-tech research, insurance claims and credit card processing. Other services include customer care, human resources administration, web marketing, back-office data processing and accounting.

This has been an extremely fast-growing global industry, and many businesses and large companies frequently outsource services to ITES providers in other countries. The company saves a substantial amount of money on costs. It also helps the country that provides the offshore service, because it creates a large number of jobs. This boosts the economic progress of the country providing the service. ITES providers help global corporations meet their business goals and provide a valuable service with the aid of information technology.

ITES was established near the start of the 21st century when companies started to outsource simple processes such as data entry to

offshore vendors. The growth of the Internet and the rapid progress made in related fields such as telecommunications made it possible for companies to outsource more diverse services over time. ITES providers offer e-commerce solutions to businesses from e-enabled sites. Services such as knowledge process outsourcing (KPO), games process outsourcing (GPO) and knowledge management all fall under the banner of ITES services.

Many companies located in developed countries outsource services to firms offering IT-enabled services in countries such as China, India and the Philippines. This is more economical for the company involved. The companies also usually can choose from a large set of offshore service providers that offer competitive rates. Firms also take advantage of the attractive policies and friendlier tax plans offered by the governments of the respective countries.

Aside from low costs, companies also get to work with firms in developing countries that feature an intelligent English-speaking labor force and whose IT infrastructure meets global standards. Many ITES providers offer services around the clock and seek to integrate more services in one delivery mechanism. A corporation can be classified as an ITES company if it outsources services through the Internet and other electronic means of communication and utilizes information technology from the initial process specification stage to the final delivery of the service.

Text 12. How Do I Get a Bachelor of Science in Information Technology?

Information technology is a frequently changing field that works well for students who plan to update their skills continuously. People who earn a bachelor of science in information technology study both the technical field of computer science and the business fields of management and communication. Working on a bachelor of science in information technology requires excelling in both the methodology and business sides of the computer science field.

The requirements for a bachelor of science in information technology typically include learning how to code software applications. Courses in computer science will teach either one language in depth or

beginner information in multiple languages. Computer science requirements also typically include learning about artificial intelligence and the theory of programming. The purpose of learning the computer science field is that the information technologist works to evaluate the requirements of projects for applications developers. These course requirements tend to be lighter for information technology majors than for traditional computer science students.

On the business side, students need courses in operations management, introductory accounting and financial management. These classes prepare information technology graduates to work in the field as business analysts and project managers. Students will learn how to communicate with programmers, who often use technical jargon, as well as clients, who have more interest in the business side of development projects. By taking quality business courses, information technology students will be able to create proposals for projects, budget out the

Students who are getting a bachelor's degree in information technology also should consider working in an internship or a cooperative learning job, also called a co-op. A co-op is paid, though usually the pay is not significant, and an internship often is unpaid. Either an internship or a co-op can give the information technology student real-world experience working in the field. Students will get an idea for whether they like the field and where they might fit within the industry.

When a student decides to begin working toward an information technology degree, he or she should make sure to check all requirements for earning the degree. Information technology requires students to enroll in both computer science and business courses, so the student should be sure that he or she will be able to get all of the required courses in the proper order. Variety and perseverance are necessary for someone trying to get a bachelor's degree in information technology.