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АНГЛИЙСКИЙ ЯЗЫК

Методическая разработка для студентов-бакалавров
естественно-технического факультета
по специальности программная инженерия (ЕПИ)

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TEXT 1

I. Study the following words and phrases:

1. Marvel – чудо
2. Vulnerable – уязвимый
3. Devastating – опустошающий
4. To piggyback – портить
5. Replicate – копировать
6. Sophisticated – утонченный, изощренный
7. Incredibly – невероятно
8. Wreak havoc – сеять хаос
9. Damage – вред
10. Interconnected – взаимосвязанный

II. Read the text:

How computer viruses work

Strange as it may sound, the computer virus is something of an Information Age marvel. On one hand, viruses show us how vulnerable we are – a properly engineered virus can have a devastating effect, disrupting productivity and doing billions of dollars in damages. On the other hand, they show us how sophisticated and interconnected human beings have become.

For example, experts estimate that the Mydoom worm infected approximately a quarter-million computers in a single day in January 2004. Back in March 1999, the Melissa virus was so powerful that it forced Microsoft and a number of other very large companies to completely turn off their e-mail systems until the virus could be contained. The ILOVEYOU virus in 2000 had a similarly devastating effect. In January 2007, a worm called Storm appeared – by October, experts believed up to 50 million computers were infected. That's pretty impressive when you consider that many viruses are incredibly simple.

When you listen to the news, you hear about many different forms of electronic infection. The most common are:

- *Viruses* – A virus is a small piece of software that piggybacks on real programs. For example, a virus might attach itself to a program such as a spreadsheet program. Each time the spreadsheet program runs, the virus runs too, and it has the chance to reproduce (by attaching to other programs) or wreak havoc.

- *E-mail viruses* – An e-mail virus travels as an attachment to e-mail messages, and usually replicates itself by automatically mailing itself to dozens of people in the victim's e-mail address book. Some e-mail viruses don't even require a double-click – they launch when you view the infected message in the preview pane of your e-mail software [source: Johnson].
- *Trojan horses* – A Trojan horse is simply a computer program. The program claims to do one thing (it may claim to be a game) but instead does damage when you run it (it may erase your hard disk). Trojan horses have no way to replicate automatically.
- *Worms* – A worm is a small piece of software that uses computer networks and security holes to replicate itself. A copy of the worm scans the network for another machine that has a specific security hole. It copies itself to the new machine using the security hole, and then starts replicating from there, as well.

III. Answer the questions:

1. What is the computer virus?
2. How does it work?
3. What do they show us?
4. My doom worm infected, approximately a quarter – million computers, didn't it?
5. Is the virus a small piece of software, isn't it?
6. How can you describe a Trojan horse?
7. What is the main difference between viruses and worms?

IV. Insert missing words:

1. Strange as it may sound, the virus is something of an information Age marvel.
2. When you listen to the news, you hear about many different forms of infection.
3. A virus is a small piece of software that on real programs.
4. The program claims to do one thing but instead does when you run it.

V. Match words with their notions:

- | | |
|--------------------|---|
| 1. marvel | a) to connect or be connected with one another |
| 2. vulnerable | b) wonderful or astonishing thing; prodigy of miracle |
| 3. to replicate | c) open to criticism or attack; easily hurt |
| 4. sophisticated | d) to repeat or duplicate |
| 5. to interconnect | e) designed for or appealing to sophisticated people |

VI. Translate into English:

1. Вирус – это маленькая часть программного обеспечения, которая портит сами программы.
2. Как ни странно это может звучать, но компьютерный вирус – это нечто вроде информационного чуда.
3. В январе 2007 года появился червь под названием «Шторм»; к октябрю по предположению экспертов было поражено порядка 50 миллионов компьютеров.
4. Троянские кони не могут автоматически копироваться.
5. Каждый раз как запускается программа электронных таблиц, вирус тоже активируется, тем самым он воспроизводится по средствам прикрепления к другим программам или сеет хаос.

VII. Retell the text.

TEXT 2

I. Study the following words and phrases:

1. Characters – символы
2. Remarkable – замечательный
3. Powers – возможности
4. Subtraction – вычисление
5. Exponentiation – возведение в степень
6. Punched cards – перфокарта
7. The solution to a problem – решение проблемы
8. Fraction – часть
9. Carry out – выполнять
10. Instantaneously – мгновенно, моментально

II. Read the text:

What is a computer?

When you read the following text, you will probably meet words and expressions that are new to you. First try to understand their meaning from the context – read the same passage a few times. When you have read the whole text, check new words in a dictionary.

1. A computer is a machine with an intricate network of electronic circuits that operate switches or magnetize tiny metal cores. The switches, like the cores, are capable of being in one of two possible states, that is, on or off; magnetized or demagnetized. The machine is capable of storing and manipulating numbers, letters, and characters. The basic idea of a computer is that we can make the machine do what we want by inputting signals that turn cer-

tain switches on and turn others off, or that magnetize or do not magnetize the cores.

2. The basic job of computers is the processing of information. For this reason, computers can be defined as the devices, which accept information in the form of instructions called a program and characters called data, perform mathematical and/or logical operations on the information, and then supply results of these operations. The program, or part of it, which tells the computers what to do and the data, which provide the information needed to solve the problem, are kept inside the computer in a place called memory.

3. Computers are thought to have many remarkable powers. However, most computers, whether large or small, have three basic capabilities. First, computers have circuits for performing arithmetic operations, such as: addition, subtraction, division, multiplication and exponentiation. Second, computers have a means of communicating with the user. After all, if we couldn't feed information in and get results back, these machines wouldn't be of much use. However, certain computers (commonly minicomputers and microcomputers) are used to control directly things such as robots, aircraft navigation systems, medical instruments, etc.

4. Some of the most common methods of inputting information are to use punched cards, magnetic tape, disks, and terminals. The computer's input device (which might be a card reader, a tape drive or disk drive, depending on the medium used in inputting information) reads tin- inhumation into the computer.

For outputting information, two common devices used are a printer, which prints (lies new information on paper, or a CRT display screen, which shows the results on a TV-like screen.

5. Third, computers have circuits, which can make decisions. The kinds of decisions, which the computer circuits can make are not of the type: 'Who would win a war between two countries?' or 'Who is the richest person in the world?' Unfortunately, the computer can only decide three things, namely: Is one number less than another? Are two numbers equal? and, Is one number greater than another?

6. A computer can solve a series of problems and make hundreds, even thousands, of logical decisions without becoming tired or bored. It can find the solution to a problem in a fraction of the time it takes a human being to do the job. A computer can replace people in dull, routine tasks, but it has no originality; it works according to the instructions given to it and cannot exercise any value judgments. There are times when a computer seems to operate like a mechanical 'brain', but its achievements are limited by the minds of human beings. A computer cannot do anything unless a person tells it what to do and gives it the appropriate information; but because electric pulses can move at the speed of light, a computer can carry out vast numbers of arithmetic-

logical operations almost instantaneously. A person can do everything a computer can do, but in many cases that person would be dead long before the job was finished.

III. Exercises

1. Main idea

Which statement best expresses the main idea of the text? Why did you eliminate the other choices?

- 1. Computers have changed the way in which many kinds of jobs are done.
- 2. Instructions and data must be given to the computer to act on.
- 3. Computers are machines capable of processing and outputting data.
- 4. Without computers, many tasks would take much longer to do.

2. Understanding the passage

Decide whether the following statements are true or false (T/F) by referring to the information in the text. Then make the necessary changes so that the false statements become true.

T F

- 1. A computer can store or handle any data even if it hasn't received information to do so.
- 2. All computers accept and process information in the form of instructions and characters.
- 3. The information necessary for solving problems is found in the memory of the computer.
- 4. Not all computers can perform arithmetic operations, make decisions, and communicate in some way with the user.
- 5. Computers can still be useful machines even if they can't communicate with the user.
- 6. There are many different devices used for feeding information into a computer.
- 7. There aren't as many different types of devices used for giving results as there are for accepting information.
- 8. Computers can make any type of decision they are asked to.
- 9. Computers can work endlessly without having to stop to rest unless there is a breakdown.

3. Understanding words

Refer back to the text and find synonyms (i.e. words with a similar meaning) for the following words:

- 1. complex intricate
- 2. fundamental
- 3. a way
- 4. uninterested
- 5. accomplishments

Now refer back to the text and find antonyms (i.e. words with an opposite meaning) for the following words:

- 6. large tiny
- 7. receiving
- 8. reject
- 9. unusual
- 10. small

4. Content review

Try to think of a definition for each of these items before checking in the Glossary. Then complete the following statements with the appropriate words. (Some can be used more than once.) Make sure you use the correct form, i.e. singular or plural.

| | | |
|---------------------|----------|--------|
| Core | Device | Data |
| Circuit | Terminal | Switch |
| Program CRT display | Memory | Medium |

- 1. Every computer has circuits for performing arithmetic operations, operating or magnetized
- 2. A with a screen is normally referred to as a unit.
- 3. A computer is a machine that processes information in the form of and and can store this information in a
- 4. Card readers, tape drives, or disk drives are different for inputting information.

TEXT 3

I. Study the following words and phrases:

- 1. Abacus – счеты
- 2. A bead frame – счета
- 3. A slide rule – логарифмическая линейка
- 4. Calculus – исчисление

5. Responsible – ответственный
6. Toothed gear wheel – зубчатое колесо
7. Silicon – кремний
8. Etch – оставлять след, гравировать
9. Ceramic – керамический
10. Obsolete – устарелый, вышедший из употребления

II. Read the text:

History of computers

When you read the following text, you will probably meet words and expressions that are new to you. First try to understand their meaning from the context – read the same passage a few times. When you have read the whole text, check new words in a dictionary.

1. Let us take a look at the history of the computers that we know today. The very first calculating device used was the ten fingers of a man's hands. This, in fact, is why today we still count in tens and multiples of tens. Then the abacus was invented, a bead frame in which the beads are moved from the left to the right. People went on using some form of abacus well into the 16th century, and it is still being used in some parts of the world because it can be understood without knowing how to read.

2. During the 17th and 18th centuries many people tried to find easy ways of calculating. J. Napier, a Scotsman, devised a mechanical way of multiplying and dividing, which is how the modern slide rule works. Henry Briggs used Napier's ideas to produce logarithm tables, which all mathematicians use today. Calculus, another branch of mathematics, was independently invented by both Sir Isaac Newton, an Englishman, and Leibnitz, a German mathematician.

3. The first real calculating machine appeared in 1820 as the result of the several people's experiments. This type of machine, which saves a great deal of time and reduces the possibility of making mistakes, depends on a series of ten-toothed gear wheels. In 1830 Charles Babbage, an Englishman, designed a machine that was called 'The Analytical Engine'. This machine, which Babbage showed at the Paris Exhibition in 1855, was an attempt to cut out the human being altogether, except for providing the machine with the necessary facts about the problem to be solved. He never finished this work, but many of his ideas were the basis for building today's computers.

4. In 1930, the first analog computer was built by an American named Vannevar Bush. This device was used in World War II to help aim guns. Mark I, the name given to the first digital computer, was completed in 1944. The men responsible for this invention were the Professor Howard Aiken and some people from IBM. This was the first machine that could figure out long

lists of mathematical problems, all at a very fast rate. In 1946, two engineers at the University of Pennsylvania, J. Eckert and J. Mauchly built the first digital computer using the parts called vacuum tubes. They named their new invention ENIAC. Another important advancement in computers came in 1947, when John von Neumann developed the idea of keeping instructions for the computer inside the computer's memory.

5. The first generation of computers, which used vacuum tubes, came out in 1950. Univac I is an example of these computers, which could perform thousands of calculations per second. In 1960, the second generation of computers was developed and these could perform work ten times faster than their predecessors. The reason for this extra speed was the use of transistors instead of vacuum tubes. Second-generation computers were smaller, faster and more dependable than the first-generation computers. The third-generation computers appeared on the market in 1965. These computers could do a million calculations a second, which is 1000 times as many as the first-generation computers. Unlike the second-generation computers, these are controlled by tiny integrated circuits and are consequently smaller and more dependable. The fourth-generation computers have now arrived, and the integrated circuits that are being developed have been greatly reduced in size. This is due to microminiaturization, which means that the circuits are much smaller than before; as many as 1000 tiny circuits now fit onto a single chip. A chip is a square or rectangular piece of silicon, usually from 1/10 to 1/4 inch, upon which several layers of an integrated circuit are etched or imprinted, after which the circuit is encapsulated in plastic, ceramic or metal. The fourth-generation computers are 50 times faster than the third-generation computers, and can complete approximately 1,000,000 instructions per second.

6. At the rate computer technology is growing, today's computers might be obsolete by 1988 and most certainly by 1990. It has been said that if the transport technology had developed as rapidly as computer technology, a trip across the Atlantic Ocean today would take a few seconds.

III. Exercises

1. Main idea

Which statement best expresses the main idea of the text? Why did you eliminate the other choices?

1. Computers, as we know them today, have gone through many changes.
2. Today's computer probably won't be around for long.
3. Computers have had a very short history.

2. Understanding the passage

Decide whether the following statements are true or false (T/F) by referring to the information in the text. Then make the necessary changes so that the false statements become true.

T F

- 1. The abacus and the fingers are two calculating devices still in use today.
- 2. The slide rule was invented hundreds of years ago.
- 3. During the early 1880s, many people worked on inventing a mechanical calculating machine.
- 4. Charles Babbage, an Englishman, could well be called the father of computers.
- 5. The first computer was invented and built in the USA.
- 6. Instructions used by computers have always been kept inside the computer's memory.
- 7. Using transistors instead of vacuum tubes did nothing to increase the speed, at which calculations were done.
- 8. As computers evolved, their size decreased and their dependability increased.
- 9. Today's computers have more circuits than previous computers.
- 10. Computer technology has developed to a point, from which new developments in the field will take a long time to come.

IV. Locating information

Find the passages in the text, where the following ideas are expressed. Give the line references.

- 1. During the same period in history, logarithm tables and calculus were developed.
- 2. It wasn't until the 19th century that a calculating machine was invented which tried to reduce manpower.
- 3. Integrated circuitry has further changed computers.
- 4. People used their fingers to count.
- 5. The computers of the future may be quite different from those in use today.
- 6. Today's computer circuits can be put on a chip.
- 7. Then an instrument with beads was invented for counting before a mechanical way for multiplying and dividing was devised.
- 8. Transistors replaced vacuum tubes.

V. Understanding words

Refer back to the text and find synonyms (i.e. words with a similar meaning) for the following words:

- 1. machine
- 2. designed
- 3. a lot
- 4. errors
- 5. solve

Now refer back to the text and find antonyms (i.e. words with an opposite meaning) for the following words:

- 1. old
- 2. a few
- 3. to include
- 4. contemporaries
- 5. still in use

VI. Content review

Match the following words in column A with the statements in column B. The first one is done for you.

A

- 1. Abacus.
- 2. Calculus.
- 3. Analog computer.
- 4. Digital computer.
- 5. Vacuum tubes.
- 6. Transistors.
- 7. Chip.
- 8. Microminiaturization.
- 9. Slide rule.
- 10. Logarithm tables.

B

- a. Instrument used for doing multiplication and division.
- b. Used in the first digital computers.
- c. An instrument used for counting.
- d. Used in mathematics.
- e. Circuitry of fourth-generation computers.
- f. Invented by Americans in 1944.
- g. Made computers smaller and faster.
- h. Used to help aim guns.
- i. The reduction of circuitry onto a chip j. a branch of mathematics.

VI. Focus review

Focus A Contextual reference.

Now look back at the text 'History of Computers' and find out what the words in **bold** typeface refer to.

1. **That** we know today
2. And **it** is still being used
3. **Which** all mathematicians use today
4. **Which** saves a great deal of time
5. **That** was called 'The Analytical Engine'
6. **That** could figure out long lists
7. **They** named their new invention
8. **Which** could perform
9. And **these** could perform
10. **That** are being developed

TEXT 4

Computer structure

The definition of a computer is as follows:

A computer is a collection of resources, including digital electronic processing devices, stored programs and sets of data, which, under the control of the stored programs automatically inputs, outputs, stores, retrieves and processes the data, and may also transmit data to and receive it from other computers. A computer is capable of drawing reasoned conclusions from the processing it carries out.

From the hardware point of view, the essential features of this definition are 'a collection of... digital electronic processing devices'.

Computers vary enormously in size, processing power and cost. Nevertheless, all computers consist of one or more functional devices, each carrying out one or more of the tasks described above. Each device performs a precisely specified task connecting to the other modules via defined interfaces. Modules of the same type of computer may be exchanged and new modules are added without modification to their internal workings. The phrase 'plug-compatible' describes units, which may be connected in this manner.

Mainframes, Minis and Micros.

Very broadly speaking, there are three classes of computers according to their size and complexity. These classes are known as mainframes, mini-computers (or minis) and microcomputers (or micros).

Mainframes are large computers comprising a number of free-standing units. Mainframes are generally housed in specially designed, air-conditioned rooms. Connections between the units are made by the wires running beneath the floor of the room. Mainframes are very powerful, and support a number of

applications running concurrently. Examples of the mainframes are the ICL 2900 series, the IBM 3000 series and the Burroughs B6700 series. Very large mainframes are known as supercomputers. These include the Cyber 205 and the Cray 2.

Minicomputers are smaller than mainframes, with several functional devices mounted on a rack in a single unit. Minicomputers do not generally require an air-conditioned environment. They are often found in laboratories, factories and offices. Minicomputers can support more than one application running concurrently, though not as many as mainframes. The Digital Equipment Vax series is the most popular minicomputer. Others are made by Prime, Data General and Hewlett Packard. Microcomputers are the newest addition to the computer family. They are small and cheap, and are (generally) contained in a few small units. Their distinguishing feature is that processing is carried out on a single microprocessor chip. Although they are very versatile microcomputers can only support one application at any one time. Examples of microcomputers are the IBM PC, the Apple Macintosh and the Research Machines Nimbus.

The classification of computers into mainframes, minis and micros is only very approximate. Computers are getting smaller and more powerful all the time. Micros are being introduced with the capability of minis only a few years ago. Minicomputers are incorporating microprocessors to assume the capability of the mainframes.

I. Answer the following questions:

1. What do you understand by the expression 'plug compatible'?
2. Describe the way in which mainframes are usually accommodated?
3. How are the free-standing units of a mainframe connected?
4. Do the mainframes run applications concurrently?
5. What features of a minicomputer (apart from its size) differ from those of a mainframe?
6. What is the single most distinctive feature of the microcomputer?
7. Is it possible for a microcomputer to support more than one application running concurrently?
8. Why do you think the writer ends by saying that this classification (of computers) is only very approximate?

II. Match words or notions:

1. computer a) variable or changeable.
2. hardware b) a comprehensive collection of related data organized for quick access generally by computer.

- | | |
|-------------------|---|
| 3. device | c) a miniaturized integrated circuit that performs all the functions of central processing unit. |
| 4. interface | d) mechanical equipment (contrasted with information and programmes). |
| 5. versatile | e) a thing is made usually for a particular working purpose. |
| 6. processing | f) equipment or programs designed to communicate information from one system of computing devices or programs to another. |
| 7. microprocessor | g) an electronic device, which stores information (data) on discs, analyses it and produces further information, as required. |
| 8. database | h) to put (data) into a memory unit 18. |
| 9. to store | i) treat or prepare by the semiparticular processing. |
| 10. digital | j) involving or using numerical digits expressed in a scale of notation to represent all variables occurring in a problem. |

III. Complete the sentences:

1. A computer is
2. Modules of the same type
3. Mainframes are very powerful and
4. Minicomputers can support
5. Micros are being introduced with

IV. Translate the sentences from Russian into English:

1. Компьютер способен делать определенные заключения на основе обработки, которую он производит.
2. Компьютеры бывают самых различных размеров, мощности обработки и стоимости.
3. Микрокомпьютеры универсальны в своем применении, однако они могут выполнять только одну задачу на данный момент.
4. Существуют три класса компьютеров в соответствии с их размером и сложностью.
5. Соединение между модулями осуществляется через провода.

V. Retell the text.

VI. Make up a dialogue and act it out.

TEXT 5

I. Study the following words and phrases:

1. A high level language – высокоуровневый язык, язык программирования
2. Problem-oriented – проблемно-ориентированный
3. Machine-oriented – машинно-ориентированный
4. A sequence – последовательность, ряд
5. To perform a particular task – выполнить конкретную задачу, задание
6. A feature – особенность, характерная черта, свойство
7. Portable – переносимый, машинно-независимый
8. Conciseness – краткость, сжатость, сокращение
9. To carry – доходить, доводить, достигать
10. Ability – способность, умение
11. Readability – удобочитаемость, читабельность, способность считывать или получать информацию с диска
12. To reign supreme – господствовать, превалировать, доминировать
13. To gain – достигать, добиваться
14. To specify – точно определять, устанавливать, конкретизировать
15. Relevant – имеющий отношение к делу, относящийся к делу
16. Explicitly – детально, подробно, ясно, точно
17. Declarative – повествовательный, описательный
18. Procedural – процедурный

II. Read the text:

What is a high level language?

A high level language is a problem-oriented programming language, whereas a low level language is machine-oriented. In other words, a high level language is a convenient and simple means of describing the information structures and sequences of actions required to perform a particular task.

A high level language is independent of the architecture of the computer, which supports it. This is has two major advantages. Firstly, the person writing the programs does not have to know anything about the computer, on which the program will be run. Secondly, programs are portable, that is, the same program can be run on the different types of computer. However, this feature of machine independence is not always achieved in practice.

In most cases, the programs in high level languages are shorter than the equivalent programs in low level languages. However, conciseness can be carried too far, to the point where programs become impossible to understand. More important features of a high level language are its ability to reflect clearly the structure of programs written in it, and its readability.

High level languages may be broadly classified as general-purpose or special-purpose. General-purpose languages are intended to be equally well suited to business, scientific, engineering or systems software tasks. The commonest general-purpose languages are Algol68 and PL/1. The language Ada also falls into this category. Because of their broad capabilities, these languages are large and relatively difficult to use.

The commonest categories of the special purpose languages are commercial, scientific and educational. In the commercial field, Cobol still reigns supreme, while Fortran is still the most widely used scientific language. In the computer education field, Basic is widely used in schools, with Logo and Prolog gaining popularity. Pascal is the most popular language at universities. Pascal is a powerful general-purpose language in its own right.

Another way of classifying high level languages is as procedural and declarative languages. Procedural languages state how a task is to be performed, often breaking programs into procedures, each of which specifies how a particular operation is to be performed. All the early high level languages are procedural, with Algol, Pascal and Ada as typical examples. Declarative programming languages describe the data structures and relationships between the data relevant to a particular task, and specify what the objective of the task is. The process, by which the task is to be carried out, is not stated explicitly in the program. This process is determined by the language translation system. Prolog is an example of a declarative programming language.

III. Answer the questions:

- If a low level language is machine oriented, how would you describe the relationship of the high level language to the computer, which supports it?
- What are the major advantages of the relationship mentioned above?
- What can happen when a high level language becomes too brief?
- What problems are associated with those programming languages, which have broad capabilities?
- Can you define the difference between the general-purpose and the special-purpose languages?
- Give the definition of procedural and declarative languages. Name 2 or 3 high level languages, which can be classified as procedural or declarative.
- Explain the function of the language translation system.
- In your own words try to explain what readability is.

IV. Match words or notions:

- | | |
|--------------|--|
| 1. low level | a) stating of much shortly and clearly |
| 2. relevant | b) making a statement |
| 3. portable | c) aim |

- | | |
|-----------------|--|
| 4. declarative | d) characteristics |
| 5. readability | e) making steps in sequence |
| 6. procedural | f) designating a computer language based on the machine language and requiring translation by an assembler |
| 7. feature | g) specific |
| 8. particular | h) to the point |
| 9. purpose | i) the ability to access data from a disk or to be understandable |
| 10. conciseness | j) that can be carried |

V. Complete the sentences:

- A high level language is a convenient
- More important features of a high level language are
- General-purpose languages are intended
- Procedural languages state how
- Declarative programming languages describe

VI. Translate the sentences from Russian into English:

- Высокоуровневый язык – это проблемно-ориентированный язык программирования, в то время как низкоуровневый язык – машинно-ориентированный.
- Высокоуровневый язык – это удобное и простое средство описания информационных структур и последовательности действий, необходимых для выполнения конкретной задачи.
- Высокоуровневый язык не зависит от архитектуры компьютера на котором он работает.
- Все ранние высокоуровневые языки являются процедурными.
- Процедурные языки указывают, как должно быть выполнено задание, часто разбивая программу на отдельные структуры, каждая из которых определяет то, как каждая отдельная задача (операция) должна быть выполнена.
- Декларативные языки программирования описывают структуру данных и взаимоотношения между данными, соответствующими конкретной задаче, и определяют какова цель задачи.
- Более важными чертами высокоуровневого языка являются его способность ясно отражать структуру программы, а также его понятность (читабельность).

VII. Make a short summary of the text.

VIII. Try to describe a computer language of the future.

TEXT 6

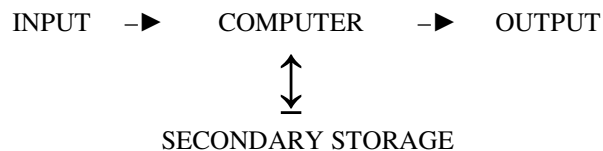
I. Read the text:

Characteristics

When you read the following text, remember to try and understand the meaning of new words and expressions from the context. Don't check new words in the dictionary until you have read the whole text. Most of the words in bold typeface are explained in the Glossary at the end of the book.

1. Computers are machines designed to process, electronically, specially prepared pieces of information which are termed data. Handling or manipulating the information that has been given to the computer, in such ways as doing calculations, adding information or making comparisons is called processing. Computers are made up of millions of electronic devices capable of storing data or moving them, at enormous speeds, through complex circuits with different functions.

2. All computers have several characteristics in common, regardless of make or design. Information, in the form of instructions and data, is given to the machine, after which the machine acts on it, and a result is then resumed. The information presented to the machine is the input; the internal manipulative operations, the processing; and the result, the output. These three basic concepts of input, processing, and output occur in almost every aspect of human life whether at work or at play. For example, in clothing manufacturing, the input is the pieces of cut cloth, the processing is the sewing together of these pieces, and the output is the finished garment.



3. The table shows schematically the fundamental hardware components in a computer system. The centerpiece is called either the computer, the processor, or, usually, the central processing unit (CPU). The term 'computer' includes those parts of hardware in which calculations and other data manipulations are performed, and the high-speed internal memory in which data and calculations are stored during actual execution of programs. Attached to the CPU are the various peripheral devices such as card readers and keyboards (two common examples of input devices). When data or programs need to be saved for long periods of time, they are stored on various secondary memory devices or storage devices such as magnetic tapes or magnetic disks.

4. Computers have often been thought of as extremely large adding machines, but this is a very narrow view of their function. Although a computer can only respond to a certain number of instructions, it is not a single-purpose machine since these instructions can be combined in an infinite number of sequences. Therefore, a computer has no known limit on the kinds of things it can do; its versatility is limited only by the imagination of those using it.

5. In the late 1950s and early 1960s when electronic computers of the kind in use today were being developed, they were very expensive to own and run. Moreover, their size and reliability were such that a large number of support personnel were needed to keep the equipment operating. This has all changed now that computing power has become portable, more compact, and cheaper.

6. In only a very short period of time, computers have greatly changed the way in which many kinds of work are performed. Computers can remove many of the routine and boring tasks from our lives, thereby leaving us with more time for interesting, creative work. It goes without saying that computers have created whole new areas of work that did not exist before their development.

II. Exercises

1. Main idea

Which statement or statements best express the main idea of the text? Why did you eliminate the other choices?

1. Computers have changed the way in which we live.
2. All computers have an input, a processor, an output and a storage device.
3. Computers have decreased man's workload.
4. All computers have the same basic hardware components.

2. Understanding the passage

Decide whether the following statements are true or false (T/F) by referring to the information in the text. Then, make the necessary changes so that the false statements become true.

T F

1. All information to be processed must be prepared in such a way that the computer will understand it.
2. Because of the complex electronic circuitry of a computer, data can be either stored or moved about at high speeds
3. Not all computers can process data given to them and produce results.
4. The basic concepts of data processing are restricted to computers alone.

- □ 5. The processor is the central component of a computer system.
- □ 6. All other devices used in a computer system are attached to the CPU.
- □ 7. Memory devices are used for storing information.
- □ 8. Computers are very much restricted in what they can do.
- □ 9. Computers today cost less, are smaller, and need fewer people to operate them than in the past.
- □ 10. Computers haven't changed our working conditions very much.

III. Locating information

Find the passages in the text where the following ideas are expressed. Give the line references.

- 1. All computers are basically the same.
- 2. Then arithmetic and/or decision-making operations are performed.
- 3. Computers are limited by man's imagination more than anything else.
- 4. All the equipment used in a computer system is the hardware.
- 5. Computers are electronic machines used for processing data.
- 6. If programs or data need to be kept for a long time, they are stored on tapes or disks.
- 7. First the computer accepts data.
- 8. Finally, new information is presented to the user.

IV. Understanding words

Refer back to the text and find synonyms (i.e. words with a similar meaning) for the following words:

- 1. called
- 2. tremendous
- 3. ideas
- 4. react
- 5. take away

Now refer back to the text and find antonyms (i.e. words with an opposite meaning) for the following words:

- 1. taken away
- 2. wide
- 3. limited
- 4. immovable
- 5. after

V. Word forms

First choose the appropriate form of the words to complete the sentences. Then check the differences of meaning in your dictionary.

- 1. imagination, imagine, imaginable, imaginative, imaginary.
 - a. A computer is limited in its ability by the of man.
 - b. Some people are good at inventing stories.
 - c. It is practically impossible to the speed at which a computer calculates numbers.
- 2. addition, add, added, additional, additionally, additive.
 - a. Many terminals can be to a basic system if the need arises.
 - b. and subtraction are two basic mathematical operations.
 - c. When buying a system there is often no charge for the programs.
- 3. complication, complicate, complicated, complicating, complicatedly.
 - a. There can be many involved in setting up a computer in an old building.
 - b. It is sometimes a very process getting into a computer installation for security reasons.
 - c. It is sometimes very to explain computer concepts.
- 4. difference, differ, different, differently, differential, differentiate.
 - a. There isn't a very big in flowcharting for a program to be written in Cobol or Fortran.
 - b. There are many computer manufacturers today, and a buyer must be able to between the advantages and disadvantages of each.
 - c. The opinions of programmers as to the best way of solving a problem often greatly.
- 5. reliably, rely on, reliable, reliability.
 - a. Computers are machines.
 - b. If you don't know the meaning of a computer term, you cannot always an all-purpose dictionary for the answer.
 - c. Computers can do mathematical operations quickly and

TEXT 7

I. Study the following words:

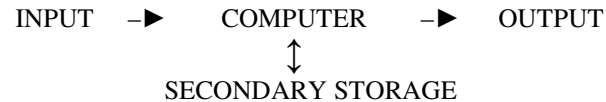
- 1. Hardware – аппаратное обеспечение
- 2. Software – программное обеспечение
- 3. Applications software – прикладное программное обеспечение
- 4. Peripherals – периферийные устройства
- 5. To attach – прикреплять
- 6. To blend – смешивать
- 7. Supplier – поставщик
- 8. Turnkey – пригодный к немедленной эксплуатации

II. Read the text:

Hardware and software

1. In order to use computers effectively to solve problems in our environment, computer systems are devised. A 'system' implies a good mixture of integrated parts working together to form a useful whole. Computer systems may be discussed in two parts.

2. The first part is hardware – the physical, electronic, and electromechanical devices that are thought of and recognized as 'computers'. The second part is **software** – the programs that control and coordinate the activities of the computer hardware and that direct the processing of data.



3. The table shows diagrammatically the basic components of computer hardware joined together in a computer system. The centerpiece is called either the computer, the processor, or usually the central processing unit (CPU). The term 'computer' usually refers to those parts of the hardware in which calculations and other data manipulations are performed, and to the internal memory in which data and instructions are stored during the *actual* execution of programs. The various peripherals, which include input and/or output devices, various secondary memory devices, and so on, are attached to the CPU.

4. Computer software can be divided into two very broad categories – systems software and applications software. The former is often simply referred to as 'systems'. These, when brought into internal memory, direct the computer to perform tasks. The latter may be provided along with the hard-'ware by a systems supplier as part of a computer product designed to answer a specific need in certain areas. These complete hardware/software products are called turnkey systems.

5. The success or failure of any computer system depends on the skill with which the hardware and software components are selected and blended. A poorly chosen system can be a monstrosity incapable of performing the tasks for which it was originally acquired.

III. Exercises

1. Main idea

Which statement best expresses the main idea of the text? Why did you eliminate the other choices?

1. Only hardware is necessary to make up a computer system.
2. Software alone doesn't constitute a computer system.
3. A computer system needs both hardware and software to be complete.

2. Understanding the passage

Indicate whether the following ideas are stated or not stated (S/NS) in the text.

S NS

- 1. A system implies a good mixture of parts working together.
- 2. Input and output devices operate more slowly than the decision-making devices.
- 3. The control unit and the arithmetic-logical unit are part of the processor.
- 4. The 'computer' is the hardware.
- 5. Software is the programs on cards, tapes and disks.
- 6. The processor is usually referred to as the CPU.
- 7. The word 'computer' means the processor and the internal memory.
- 8. Systems software is usually referred to as programs.
- 9. Complete hardware/software products are called turnkey systems.
- 10. Computers process specially prepared items of information.

IV. Locating information

Find the passages in the text where the following ideas are expressed. Give the line references.

- 1. The hardware consists of the physical devices of the computer.
- 2. In order to solve problems, an appropriate computer system must be developed.
- 3. The 'computer' is the CPU and the internal memory.
- 4. The success or failure of a computer system depends on the proper mixture of hardware and software.
- 5. There are two parts to a computer system.
- 6. Computer software can be divided into two parts.
- 7. The software is the programs.
- 8. The peripheral devices are attached to the CPU.

V. Understanding words

Refer back to the text and find synonyms for the following words:

- 1. developed
- 2. infers
- 3. joined
- 4. chosen

Now refer back to the text and find antonyms for the following words:

1. segregated
2. useless
3. narrow
4. well

VI. Content review

Match the words in column A with the words or statements in column B.

- | A | B |
|--------------------------|--|
| 1. hardware | a. the computer |
| 2. software | b. input/output and secondary memory devices |
| 3. processor | c. short for central processing unit |
| 4. peripherals | d. physical electronic and electromagnetic devices |
| 5. systems software | e. hardware plus software |
| 6. applications software | f. hardware/software packages |
| 7. turnkey systems | g. used for a specific job |
| 8. computer systems | h. direct the computer |
| 9. CPU | i. the programs |

TEXT 8

I. Study the following words and phrases:

1. Peripheral – внешнее устройство
2. Visual display unit (VDU) – устройство визуального отображения
3. Bi-directional – двунаправленный, действующий в двух направлениях
4. Dot matrix – точечная матрица
5. Droplet – капелька
6. Drum – барабан

II. Read the text:

Peripherals

The terms that are often used when people talk about computers are hardware, software and peripherals.

The computer hardware can best be described as the actual parts that go together to make up the computer such as wires, switches, electronic circuits, microprocessors and anything else that is involved in the working parts.

Software refers to the programs that are input into the computer. Disks and cassettes are often referred to as software once they have computer programs on them but they are really peripherals.

The peripherals of the computer are the devices for input, output or storage of data and include the keyboard, visual display unit, cassettes, disk

drivers and printers. The VDU is also known as the monitor and the program and the results of the processing can be seen on this as well as the data entered. The printer will produce the print-out of the results of the processing. This is often referred to as hard copy.

The highest quality of printer available is the daisy wheel. This consists of a wheel with flexible stems radiating from the center. The letters are well-defined and can be read clearly. The printer moves bi-directionally printing both ways from left to right and then right to left. Remember that what is to be exists in the memory of the computer and the daisy wheel does not have to type in sequence as it would be expected from a human brain. The carriage, therefore, need not waste time returning at the end of each line.

The dot matrix is usually faster than the daisy wheel. This printer has a print head consisting of a row of needles. It moves speedily over the place where a letter has to be printed using dots to make up the letter. The needles print on to a special typewriter ribbon. The quality of print-out is not of a very high standard and would not generally be used at high business levels. However, it is often used for the production of rough drafts. Characters of different sizes can be built up with dot-matrix printers and some may have two-color ribbons.

An ink-jet printer forms dot matrix characters by applying ejected droplets of ink, vibrated at an appropriate frequency towards special absorbent paper. A charged electrode is placed electrostatic technique the ink drops can be directed to particular parts of the paper. The printers use information that is stored digitally.

Thermal printers require heat sensitive paper which is marked by a heated needle-like writing implement known as a stylus.

Laser printers are very fast and can use different sizes of paper. Since they are non-impact printers they are very quiet and can produce good graphics. The laser printer works by beaming a laser on to an electrically charged drum which substance, called toner, is poured over it. When the paper is brought into contact with the drum the image melts on to the paper as it headed.

The keyboard is where the data or information is input into the computer. It is usually arranged like an ordinary typewriter keyboard with a number of other keys added which carry out special functions.

Some computer programs display what are called icons on the computer screen. The icons may represent items of furniture in an office, for instance. The user is able to instruct the computer by the use of a tiny moveable device known as a mouse which is connected to the computer by a cable and) can be moved about the top of a desk. The desk represents the VDU screen and as the mouse moves about it moves with the short bright line known as the cursor, on the screen.

III. Do assignments

1. Which terms do people use when they talk about computers?
2. Give another name for the visual unit and tell about its function.
3. How would you explain the term 'hard copy'?
4. There are a number of different types of printer. Can you say which produces the best quality printing and which is the fastest?
5. Explain why the daisy wheel carriage doesn't need to return at the end of each line.
6. Identify four features of laser printers.
7. In what way(s) does a computer keyboard differ from a conventional typewriter?
8. Describe (in computing terms!) what is the function of a mouse.

IV. Matching words or notions:

- | | |
|---------------|--|
| 1. dot | a) pertaining to hardware separate or separable from a computer |
| 2. keyboard | b) a small, hand guided electronic device for positioning the cursor and executing commands in a computer program |
| 3. peripheral | c) a device or arrangement for observing or recording the operation of a machine or system |
| 4. software | d) machine that produces an output of printed alphanumeric characters |
| 5. printer | e) any of written programs |
| 6. mouse | f) a movable marker, as a blinking bar or light, that indicates the current position for entry of data on a computer |
| 7. monitor | g) the row or set of keys in a computer |
| 8. cursor | h) a small roundish mark made with or as with a pen |
| 9. hardware | i) a picture, image |
| 10. icon | j) any electronic equipment used in association with data processing |

V. Complete the sentences:

1. The computer hardware can best be described as
2. The VDU is also known as
3. The peripherals of the computer are
4. The laser printer works by beaming a laser on
5. The user is able to instruct the computer by the use

VI. Translate the sentences from Russian into English:

1. Периферийные устройства компьютера – это устройства для ввода, вывода и хранения информации; включают в себя клавиатуру, блок визуального отображения, кассеты, диски и принтеры.
2. Принтер движется двунаправленно, печатая в обе стороны: слева направо и справа налево.
3. Струйные принтеры формируют точечную матрицу символа, используя выделение капель чернил, вибрацию с соответствующей частотой на специальной поглощающей бумаге.
4. Пользователь может управлять компьютером посредством крошечного подвижного устройства, известного как мышь, которое присоединено кабелем к компьютеру, и его можно передвигать по поверхности стола.
5. Принтеры используют информацию, хранящуюся в цифровом виде.

VII. Retell the text.

VIII. Make up a dialogue and reproduce it.

ТЕХТ 9

I. Study the following words:

1. To refer to – относится к
2. Immense – безмерный
3. Tremendous – огромный, гигантский
4. Bulky – большой, объемный
5. Measurement – измерение, система мер
6. Accomplish – совершать, выполнять
7. Analog – аналоговый
8. Whereas – несмотря на
9. Consumption – потребление, расход

II. Read the text:

Mainframes

1. Large computer systems, or mainframes, as they are referred to in the field of computer science, are those computer systems found in computer installations processing immense amounts of data. These powerful computers make use of very high-speed main memories into which data and programs to be dealt with are transferred for rapid access. These powerful machines have a larger repertoire of more complex instructions which can be executed more quickly. Whereas smaller computers may take several steps to perform a particular operation, a larger machine may accomplish the same thing with one instruction.

2. These computers can be of two types: digital or analog. The digital computer or general-purpose computer as it is often known makes up about 90 per cent of the large computers now in use. It gets its name because the data that are presented to it are made up of a code consisting of digits – single-character numbers. The digital computer is like a gigantic cash register in that it can do calculations in steps, one after another at tremendous speed and with great accuracy. Digital computer programming is by far the most commonly used in electronic data processing for business or statistical purposes. The analog computer works something like a car speedometer, in that it continuously works out calculations. It is used essentially for problems involving measurements. It can simulate, or imitate different measurements by electronic means. Both of these computer types – the digital and the analog – are made up of electronics-components that may require a large room to accommodate them. At present, the digital computer is capable of doing anything the analog once did. Moreover, it is easier to program *and* cheaper to operate. A new type of scientific computer system called the hybrid computer has now been produced that combines the two types into one.

3. Really powerful computers continue to be bulky and require special provision for their housing, refrigeration systems, air filtration and power supplies. This is because much more space is taken up by the input/output devices – the magnetic tape and disk units and other peripheral equipment – than by the electronic components that do not make up the bulk of the machine in a powerful installation. The power consumption of these machines is also quite high, not to mention the price that runs into hundreds of thousands of dollars. The future will bring great developments in the mechanical devices associated with computer systems. For a long time these have been the weak link, from the point of view of both efficiency and reliability.

III. Exercises

1. Main idea

Which statement best expresses the main idea of the text? Why did you eliminate the other choices?

1. Hybrid computers are a combination of digital and analog computers.
2. Digital computers are used more than any other type of computer.
3. There are three types of mainframes.
4. Analog computers can do more varied work than digital or hybrid computers.

2. Understanding the passage

Decide whether the following sentences are true or false (T/F) by referring to the information in the text. Then make the necessary changes so that the false statements become true.

T F

- 1. A mainframe is the type of computer that can sit on top of a desk.
- 2. Mainframes are very powerful and can execute jobs very rapidly and easily.
- 3. Digital computers are used more than analog computers.
- 4. The analog computer is far smaller than a digital computer and therefore occupies very little space.
- 5. The hybrid computer is a combination of both the digital and the analog computer.
- 6. The analog computer does its calculations one step at a time.
- 7. The digital computer continuously works out calculations.
- 8. Mainframes are huge powerful machines whose peripheral equipment takes up a lot of space.
- 9. Mainframes are expensive to buy and operate.
- 10. Mainframe technology has reached the end of the road. No further development is needed.

IV. Locating information

Find the passages in the text where the following ideas are expressed. Give the line references.

- 1. Smaller computers may take longer to perform an operation.
- 2. More technological development is necessary in the mechanical devices associated with computer systems.
- 3. Mainframes can operate quickly and execute more complex instructions.
- 4. The hybrid computer is a combination of both digital and analog computers.
- 5. Digital computers are used more than analog computers.
- 6. Mainframes are large powerful computers.
- 7. An analog computer is comparable to a car speedometer in the way it operates.
- 8. Digital computers do calculations, one after another, quickly and exactly.

V. Understanding words

Refer back to the text and find synonyms for the following words:

1. area
2. acted on

3. do
4. composed of
5. principally

Now refer back to the text and find antonyms for the following words:

1. ignored
2. seldom
3. little
4. small
5. weak

VI. Word forms

First choose the appropriate form of the words to complete the sentences. The check the differences of meaning in your dictionary.

1. permission, permit, permissible, permitted
 - a) It is usually not to smoke, in a computer installation.
 - b) Computers people to use their time more effectively.
 - c) Building is usually required before starting any renovations to building for a computer department.
2. continuation, continue, continuing, continuously
 - a) If microcomputer sales to increase, it won't be long before every household has one.
 - b) Computers can do repetitive operations without getting bored.
 - c) There is an interest in discovering new areas where computers can be used.
3. measurement, measure, measured, measurable
 - a) The analog computer is essentially used for problems involved.
 - b) Because computer equipment is often bulky, the area used for a computer installation must be out carefully.
 - c) The number of employees a computer company has can be seen as a of its success in the business world.
4. association, associate, associated
 - a) Computers are with speed and accuracy.
 - b) There are many computer around the world to which computer professionals belong.
 - c) Business in different cities often communicate with each other via their computers.
5. efficiency, efficient, efficiently
 - a) Using a hand calculator to do simple mathematics is an way of working.
 - b) Computers can solve problems faster and more than humans.
 - c) is important in any service industry.

TEXT 10

I. Study the following words:

1. Interchangeably – попеременно, поочередно
2. Switch – выключатель
3. Circuit – цепь, контур, схема
4. Sequence – последовательность
5. Tape – магнитофонная лента
6. Multiplication – умножение
7. Exponentiation – объяснение
8. To load – загружать

II. Read the text:

The Central Processing Unit

CONTROL UNIT
ARITHMETIC-LOGICAL UNIT
MEMORY or MAIN STORAGE

1. It is common practice in computer science for the words 'computer' and 'processor' to be used interchangeably. More precisely, 'computer' refers to the central processing unit (CPU) together with an internal memory. The internal memory or main storage, control and processing components make up the heart of the computer system. Manufacturers design the CPU to control and carry out basic instructions for their particular computer.

2. The CPU coordinates all the activities of the various components of the computer. It determines which operations should be carried out and in what order. The CPU can also retrieve information from memory and can store the results of manipulations back into the memory unit for later reference.

3. In digital computers the CPU can be divided into two functional units called the control unit (CU) and the arithmetic-logical unit (ALU). These two units are made up of electronic circuits with millions of switches that can be in one of two states, either on or off.

4. The function of the control unit within the central processor is to transmit coordinating control signals and commands. The control unit is that portion of the compute that directs the sequence or step-by-step operations of the system, selects instructions and data from memory, interprets the program instructions, and controls the flow between main storage and the arithmetic-logical unit.

5. The arithmetic-logical unit, on the other hand, is that portion of the computer in which the actual arithmetic operations, namely, addition, subtraction, multiplication, division and exponentiation, called for in the instructions are performed. It also performs some kinds of logical operations such as

comparing or selecting information. All the operations of the ALU are under the direction of the control unit.

6. Programs and the data on which the control unit and the ALU operate, must be in internal memory in order to be processed. Thus, if located on secondary memory devices such as disks or tapes, programs and data are first loaded into internal memory.

7. Main storage and the CPU are connected to a console, where manual control operations can be performed by an operator. The console is an important, but special purpose, piece of equipment. It is used mainly when the computer is being started up, or during maintenance and repair. Many mini and micro systems do not have a console.

III. Exercises

1. Main idea

Which statement best expresses the main idea of the text? Why did you eliminate the other choices?

1. Main storage is not a part of the processor.
2. The CPU is made up of the control unit, the arithmetic-logical unit and internal memory.
3. The CPU is composed of the arithmetic-logical unit and control unit only.

2. Understanding the passage

Decide whether the following statements are true or false (T/F) by referring to the information in the text. Then make the necessary changes so that the false statements become true.

T F

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. The central processing unit is made up of three components. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. The CPU is responsible for all the activities taking place within a computer. |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. The processor itself has three components. |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. The control unit directs the flow of information within the processor. |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. The arithmetic-logical unit of the processor is responsible for the interpretation of program instructions. |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. The arithmetic-logical unit is also responsible for choosing and comparing the appropriate information within a program. |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. The processor cannot operate on any information if that information is not in main storage. |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Secondary memory and internal memory are located in the same place in the computer system. |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. Only after the data has been processed by the CPU can results be transmitted to an output device. |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Computers can solve problems more quickly if they operate on new information. |

IV. Locating information

Find the passages in the text where the following ideas are expressed. Give the line references.

- 1. The processor is the control unit and the arithmetic-logical unit.
- 2. The processor operates on information that is in internal storage.
- 3. The CPU directs all the activities of the computer.
- 4. The control unit coordinates the sequencing of events within the processor
- 5. The word "computer" usually refers to the CPU plus internal memory.
- 6. The CPU can get information from memory and put old or new information back into memory.
- 7. The arithmetic-logical unit does the calculations and decision-making operations.

V. Understanding words

Refer back to the text and find synonyms for the following words:

1. specific
2. decides
3. job
4. movement
5. situated

Now refer back to the text and find antonyms for the following words:

1. exceptional
2. generally
3. not needed
4. taken out
5. shutdown

VI. Word forms

First choose the appropriate form of the words to complete the sentences. Then check the differences of meaning in your dictionary.

1. function, functional, functionally
 - a) Learning to program is a part of any course in computer science.
 - b) The central processing unit has many
 - c) In order for the computer to properly, there should be no fluctuation in the electric current.

2. sequence, sequential, sequentially
 - a) The control unit of the CPU directs the operations of the system.
 - b) Data must be presented to the processor unless the computer is programmed otherwise.
 - c) A program must be a detailed account of the the processor must follow to solve the problem.
3. logic, logical, logically
 - a) To be a good programmer, one must be in ones approach to a problem.
 - b) Theoperations performed by the arithmetic-logical unit are under the control of the control unit.
 - c) A program must be organized if successful results are to be obtained.
4. connection, connect, connected, connective
 - a) On-line equipment is usually to the computer.
 - b) Multifunctioning equipment can often be traced to a bad electrical
 - c) Whether one is writing computer science related information or not, the use of is very important.
5. computer, compute, computerized, computed, computation
 - a) The banking industry has become more and more
 - b) It is a fact that humans cannot as fast as
 - c) The requirements necessary to produce the payroll for a large company take a very long time.

TEXT 11

I. Study the following words and phrases:

1. To work out – разработать
2. To search – искать
3. A move – ход
4. A counter-move – ответный ход
5. Nougats and crosses – игра «крестики-нолики»
6. To achieve – достигать
7. Breadth – широта, ширина
8. Depth – глубина
9. Consequent – последовательный
10. To assess – оценивать
11. Reasoning – выводы из данных фактов
12. A pattern – образец
13. Proof – доказательство
14. Adjacent – смежный
15. Aid – помощь

16. A passage – отрывок
17. Semantics – семантика, смысловое значение
18. To compose – составлять, состоять
19. To evolve – развиваться (в процессе эволюции)
20. To alter – изменяться
21. To cope with – справиться с чем-либо
22. Restricted – ограниченный
23. Capability – способность
24. To modify – изменять, менять

II. Read the text:

Game playing program

Much of (he progress in artificial intelligence has come through work on game playing programs. Games such as chess have the advantage of being simple enough to represent on a computer, while requiring a high level of intelligence on the part of the player. A number of successful strategies for playing games have been worked out. They are all based on searching a large number of possible moves and counter-moves, and selecting the best one to make. In some games, such as noughts and crosses, it is possible to search right through to the end of the game for each possible next move. In other games, notably chess, this is not possible, as the number of moves is too large even for the most powerful computer. The best chess programs achieve the right balance between the breadth of the search (the number of possible moves investigated), the depth of the search (the number of consequent moves investigated for each possibility) and the way of assessing the favorability of the moves.

Many of the methods used for game playing programs are being transferred to other fields of artificial intelligence.

Reasoning programs have been used to solve the kind of pattern recognition problems found in intelligence tests, and to solve problems in formal logic. An example of programs of this sort is the use of a computer to assist in the proof of the Four Color Theorem. It has been known for centuries that no more than four colors are needed to color in any map, so that no two adjacent zones have the same colors. The theorem was finally proved with the aid a computer program in 1976.

Computers cannot interpret continuous passages in a natural language. Nevertheless, computers can cope with individual words and phrases, and longer passages of natural language in specific topics. A major topic of artificial intelligence research has been the recognition of natural language by computer. There are two aspects of this work: **syntax** and **semantics**.

Natural languages are composed of structures such as sentences, which are constructed according to rules of syntax. For example, the sentence: *The*

boy stood on the burning deck can be analysed as: < subject > < verb > < object > where < subject > ("the boy") can be further parsed as < article > < noun > etc.

The problem with syntax analysis is that the rules for sentence construction are very complex, there are many exceptions, and the rules are gradually modified as languages evolve.

In order to understand a passage in a natural language, the **semantics** or meaning of the piece must be studied. This depends on the context and what has been said before, as well as the meanings of individual words. Semantics is very difficult. In some cases an alternative interpretation of a single word can alter the meaning of a whole passage.

Computer programs have been devised which will cope with the syntax and semantics of complete sentences, but only within limited contexts. Even for these restricted situations, the programs are very complex. However, if current research into fifth generation computers is successful, systems with a much more powerful natural language capability will be available during the 1990s.

III. Answer the questions:

1. Which games lend themselves to representation on computers?
2. What do such games have in common?
3. What are the special characteristics of the best chess programs?
4. What kind of programs can solve problems in formal logic?
5. When and by what means was the Four Color Theorem proved conclusively?
6. What do you understand by the term "a natural language"?
7. Which two aspects of natural language are computers known to cope with at the moment?
8. What problems with syntax and semantics does a computer face while interpreting?
9. What improvements are hoped for the future?

IV. Match words or notions:

- | | |
|-----------------------|---|
| 1. favorability | a) continuous to investigate |
| 2. adjacent | b) going on without interruption |
| 3. sentence structure | c) practical ability |
| 4. capability | d) translate into machine language and execute it, statement by statement |
| 5. semantics | e) a move made in opposition |
| 6. passage | f) lying near or close to something |
| 7. counter | g) to search into so as to learn the facts |
| 8. interpret | h) to the advantage of |

- | | |
|------------|---|
| 9. syntax | i) notional meaning |
| 10. speech | j) a short segment of a written work or |

V. Complete the sentences:

- a. All game playing programs are based on
- b. In some games, as naughts and crosses, it is possible
- c. Reasoning programs have been used to
- d. Nevertheless, computers can cope with
- e. In order to understand a passage in a natural language
- f. Computer programs have been devised, which

VI. Translate the sentences form Russian into English:

- a. Такие игры как шахматы, имеют то преимущество, что их достаточно легко (просто) переложить на компьютер, тогда как со стороны игрока такие игры требуют высокого уровня интеллекта.
- b. Самым лучшим шахматным программам удается достичь нужного равновесия между широтой поиска (количество возможных изученных ходов), глубиной поиска (количество последовательных изученных ходов) и приемами, которые позволяют оценить предпочтительность тех или иных ходов.
- c. Компьютеры не в состоянии интерпретировать длинные отрывки, подаваемые на «живом» языке.
- d. Основным вопросом исследований, проводимых при помощи искусственного интеллекта, было приятие (узнавание) «живого» языка компьютером.
- e. Проблема синтаксического анализа состоит в том, что правила построения предложения очень сложны; существует множество исключений, более того, правила постепенно меняются с развитием языка.
- f. В некоторых случаях вольная интерпретация одного слова может изменить смысл всего отрывка.
- g. Если современные исследования в области компьютеров пятого поколения окажутся успешными, то в ближайшем будущем к нашим услугам будут программы, обладающие более мощными способностями, характерными для «живого» языка.

VII. Take an interview from a teenager who devotes all his free time to playing computer games.

VIII. Speak on the "Influence of computer games on people".

TEXT 12

I. Study the following words and phrases:

1. Via – через
2. Tiny – крошечный
3. To compress – сжимать, сокращать
4. A router – маршрутизатор
5. To store – хранить
6. Headphones – наушники
7. Handset – телефонная трубка
8. Transitional – переходный
9. Dual-mode – двухрежимный
10. To shift – перемещать

II. Read the text:

How VoIP phone systems work

VoIP (Voice over Internet Protocol) phone systems work by sending data via the Internet in tiny packets. This is called packet switching. It works like this:

- Your voice signal, which is analogue, is converted into digital data. If you have a standard phone, you need an extra piece of hardware to do this called an ATA {Analogue telephone adaptor}. If you have an IP phone, it produces a digital signal so you don't need an adaptor. You can also use your PC and a microphone as a telephone.
- The sending computer uses software to compress the digital data, much like MP3 files.
- The data is divided into packets, each one 30 , milliseconds long.
- The packets are sent to a router which decides the best path through the Internet for each packet. They will travel by many different paths. They will arrive at different times and some may even be lost.
- The receiving computer uses special software to store the packets and put them in the right order. Because the packets are so small, you won't hear the difference if some are lost.
- The data is converted back to voice and played through your standard phone, IP phone, or PC headphones.

If you have a wireless VoIP handset, you can make and receive calls anywhere near a wireless hotspot. Some mobile phones are dual-mode. You can use a mobile phone network or wireless VoIP, depending where you are.

III. Answer the questions:

1. What does VoIP stand for?
2. When don't you need an adaptor?

3. What is a packet?
4. What is a wireless hotspot?
5. Will the packets arrive at certain time or at different time?
6. Why does the smart phone become the dominant VoIP phone?
7. What are the features of VoIP?
8. VoIP offers much cheaper calls than traditional telephone systems, doesn't it?

IV. Put the steps in the correct order to make a flowchart showing how this type of VoIP phone system works.

- a. The packets are sent to a router.
- b. The digital data is compressed by the sending computer.
- c. The data is converted back to voice.
- d. The receiving computer puts the packets back together again.
- e. The voice signal is converted to digital.
- f. The digital data is divided into very small packets.
- g. The router sends each packet through the Internet by the best available path.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

V. Match words or notions:

- | | |
|-------------|--|
| 1. data | a) the programs, etc. used to operate a computer. |
| 2. adaptor | b) information that is stored by a computer. |
| 3. software | c) an electronic machine that can store organize and find information, do calculations and control other machines. |
| 4. computer | d) a device for connecting more than one piece of equipment to the same socket. |
| 5. device | e) a device that is placed inside a car engine clock etc. and that produces the electricity that manes it work. |
| 6. feature | f) a piece of equipment that has been designed to do a particular job. |
| 7. battery | g) something important, interesting or typical of a place or thing. |

VI. Translate the sentences from Russian into English:

1. Если у вас есть стандартный телефон, вам необходима дополнительная часть аппаратного средства для осуществления звонка АТА. (аналоговый телефонный адаптер).
2. Информация преобразуется в голос и воспроизводится через обычный телефон, IP телефон и наушники компьютера.
3. Пакеты отправляются в роутер, который выбирает самый лучший путь через интернет для каждого пакета.
4. Информация делится на пакеты, продолжительность каждого 30 миллисекунд.
5. Если у вас беспроводной Vo IP телефон вы можете принимать и совершать вызовы где-нибудь около точки доступа.

VII. Retell the text.

VIII. Make up a story about VoIP.

You are a Telecommunications Technician. You work for a company which provides phone systems for business use, especially banks.

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