МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ ОБРАЗОВАТЕЛЬНОЕУЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«СЕВЕРО-КАВКАЗСКИЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ»

МЕТОДИЧЕСКИЕ УКАЗАНИЯ

по выполнению практических работ
по дисциплине «Иностранный язык в сфере профессиональной коммуникации»
для студентов направления подготовки
10.04.01 «Информационная безопасность»
Направленность (профиль)
«Информационная безопасность киберфизических систем»

Ставрополь
2026

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ВВЕДЕНИЕ (INTRODUCTION)

1. Цели и задачи освоения дисциплины:

На современном этапе технологического процесса, в эпоху компьютеризации, актуальным является изучение информационных систем и технологий на многих специальностях.

Владение компьютерными технологиями является абсолютно необходимым для каждого грамотного человека. Неотъемлемым компонентом компьютерной грамотности следует признать должный уровень владения определенным набором понятий и терминов языка компьютерных технологий. Такого плана языковые знания полезны для уверенной ориентации пользователя в мире информации и повышения его технологических возможностей при работе с компьютером в дальнейшем.

Цель данного учебного пособия обучить будущего магистра по направлению подготовки 10.04.01 «Информационная безопасность» языковым средствам для эффективного общения с компьютером, пониманию специальных научно-технических текстов в области компьютерных технологий, умению использовать информацию при подготовке рефератов и аннотаций на английском языке.

Учебное пособие содержит тексты из оригинальной литературы, посвященные теме «Компьютерные и информационные системы»; учебные задания, способствующие усвоению и запоминанию специальных терминов по компьютерным технологиям; задания для развития навыков чтения; упражнения по усвоению грамматических явлений, а также упражнения, которые позволят правильно строить высказывания на иностранном языке и научиться грамотно излагать содержание специального текста.

2. Перечень планируемых результатов обучения по дисциплине (модулю), соотнесённых с планируемыми результатами освоения образовательной программы

Код, формулировка компетенции	Код, формулировка индикатора	Планируемые результаты обучения по дисциплине (модулю), характеризующие этапы формирования компетенций, индикаторов
УК-4Способен применять современные коммуникативные технологии, в том числе на иностранном(ых) языке(ах), для академического и профессионального взаимодействия	ИД-1 УК-4 выбирает приемлемый стиль делового общения на государственном(-ых) и иностранном(-ых) языках, вербальные и невербальные средства взаимодействия с партнерами в устной и письменной формах	- выбирает приемлемый стиль делового общения на государственном(-ых) и иностранном(-ых) языках, вербальные и невербальные средства взаимодействия с партнерами в устной и письменной формах
	ИД-2 УК-4 применяет современные коммуникационные технологии для повышения эффективности профессионального взаимодействия, поиска необходимой информации в процессе решения стандартных коммуникативных задач на государственном(-ых) и иностранном(-ых) языках	- применяет современные коммуникационные технологии для повышения эффективности профессионального взаимодействия, поиска необходимой информации в процессе решения стандартных коммуникативных задач на государственном(-ых) и иностранном(-ых) языках

LESSON 1

FROM THE HISTORY OF THE COMPUTER [2]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The introduction of agriculture revolutionized ancient man's social, economic, and cultural potential. This was the first great step in the evolution of civilization. The more recent Industrial Revolution, vastly increasing man's productive capabilities, was the next great step and brought forth our present highly mechanized economic and interdependent social civilization.

Nowadays we have another new kind of revolution, based on machines that greatly increase man's thinking capabilities of planning, analysing, computing, and controlling. Hundreds of millions of computers are already in daily use penetrating almost all spheres of our modern society, from nuclear energy production and missile design to the processing of bank checks and medical diagnoses.

The development of mechanical calculating machines made the digital computers necessary. An ordinary arithmometer and a desk key calculator have given rise to electronic digital computers. Digital computers came into being in the first half of the 17th century. Many outstanding Russian and foreign mathematicians of the time created mechanical calculating devices.

The famous Russian scientist M.V. Lomonosov compiled a lot of calculating tables and several computing devices concerning different fields of science and engineering.

In 1874 the Russian engineer V.T. Ordner invented a special counter wheel named after him the Ordner's wheel which is used in modern arithmometers and calculators.

P.L. Chebyshev, academician, made a valuable contribution to the field of computing machine. He is known to have many good ideas in mathematics, some of which have been named after him. For example, the Chebyshev's polynomials play a unique role in the field of orthogonal functions. In 1878 he constructed the original computing machine which was exhibited in Paris. In 1882 P.L. Chebyshev

invented an arithmometer performing automatically multiplication and division. The principle of automatization put into tins computing machine is still widely used all over the world when developing the most modern computers.

In 1884 Russia began to manufacture computing machines. In the period of World War I the output of computing machines ceased and was resumed later.

At the end of the 1930s computing engineering began the new era. Electronic computers operating at high speed appeared, with electronic devices and units being applied.

The rapid advance of computers followed the success achieved by electronics. There appeared a possibility to solve complex mathematical problems within an unusually short time. The modern computing engineering enables to do the amount of calculations and researches within a week's time which would have required years of laborious work of large groups of people before.

Invention of electronic computers is one of the greatest achievements of mankind. The significance of it can be compared with the invention of the steam-engine at the end of the 18th century and the utilization of atomic energy.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What was the first step in the evolution of civilization?
2. What is already in daily use penetrating all spheres of modern society?
3. What made the digital computers necessary?
4. Who invented a special counter wheel?
5. Who made a great contribution to the field of computing machine?
6. What did he construct?
7. When did Russia begin to manufacture computing machines?

Task 3. Translate the following words and word-combinations into Russian:

Задание 3. Прочтите следующие слова и словосочетания и переведите их на русский язык:

introduction, social, recent, increase, capability, penetrate, digital, concern, valuable, contribution, exhibit, division, appear, rapid, enable.

Task 4. Make the sentences interrogative:

Задание 4. Поставьте следующие предложения в вопросительную форму:

1. The rapid advance of computers followed the success achieved by electronics.

2. In 1884 Russia began to manufacture computing machines.

3. The development of mechanical calculating machines made the digital computers necessary.

4. Invention of electronic computers is one of the greatest achievements of mankind.

5. Hundreds of millions of computers are already in daily use penetrating almost all spheres of our modern society.

Task 5. Fill in the blanks with the following words given below:

Задание 5. Вместо пропусков вставьте соответствующие слова из текста:

devices, machine, evolution, contribution, came, solve.

1. Digital computers …….. into being in the first half of the 17th century.

2. There appeared a possibility to …… complex mathematical problems within an unusually short time.

3. Many outstanding Russian and foreign mathematicians of the time created mechanical calculating ……. .

4. This was the first great step in the …… of civilization.

5. P.L. Chebyshev, academician, made a valuable …… to the field of computing …….. .

LESSON 2

WHAT IS A COMPUTER? [2]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

1. Suppose you sit down with a pencil and paper and center your attention on adding a set of figures. You add first all the digits in the right - hand column, then all the digits in the next column, and so on - until you finally arrive at the answer. When you do this, you are computing.

2. When you stop at a street corner, looking first to the left for any coming car, then to the right, to cross the street or to wait on the sidewalk - you are computing.

3. When you are walking along a poorly marked path in the woods, thinking if you are really on the path or have lost it - you are computing.

4. When you are taking in information or data, performing reasonable operations (mathematical or logical operations) on the data, and are producing one or more answers - you are computing.

5. A machine can also do this. It can take in information or data perform a sequence of reasonable operations on the information which it has received, and put out answers. When it does this, it is computing.

6. A very simple example of a computer is the ordinary business adding machine which prints on paper tape the number entered into its keyboard, and also prints a total when you press the total key. A complex example of a computer is a modern automatic digital computer which in each second can perform more than 100,000,000 additions, subtractions, multiplications, or divisions.

7. A computing machine can take in and store information because the hardware inside the machine expresses arithmetical and logical relations, such as adding or subtracting, comparing or selecting. A computer can also put out information, display the answers when it receives them. Hardware is useless without software which is computer instructions and programs.

8. The modern computers are of three kinds called analog, digital, and

hybrid. An analog computer computers by using physical analogs of numerical measurements. A digital computer computes by using the numbers (digits) and yeses and noes expressed usually in l's and 0's. A hybrid computer is a machine which combines some of the properties of digital and analog computers.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. How many operations does a modern computer perform?
2. What kinds of operations does an automatic digital computer perform?
3. What is a computer?
4. What is a very simple example of a computer?
5. Why does a computer take in and store information or data?
6. What kinds of modern computers do you know?
7. How does an analog computer compute?
8. How does a digital computer compute?
9. What is a hybrid computer?
10. What is hardware?
11. What is software?

Task 3. Translate the following words and word-combinations into Russian:

Задание 3. Прочтите следующие слова и словосочетания и переведите их на русский язык:

to centre attention on; to the right; to the left; a set of figures; and so on; a sequence of reasonable operations; to put out answers; to take in information; to store information; such as; to express mathematical and logical relations; hardware is useless without software; by using physical analogs; numerical measurements.

Task 4. Find the English equivalents for the words and word-combinations given below:

Задание 4. Найдите в тексте английские эквиваленты следующих слов и словосочетаний:

налево, направо, выдавать информацию или данные, последовательность разумных операций, правый столбик, ряд цифр, и так далее,

сосредоточивать внимание.

LESSON 3

COMPUTERS MACHINE [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

All of us think about a computer. That's why we ask: "What is a computer?" A computer is one of the modern technologies using everywhere. It is a complex instrument made up of hundreds of electronic devices, miles of electronic wire. Its complex electronic brains produce information. This information is stored on magnetic tapes or punched cards. Who feeds the computer information? An operator can feed figures and symbols into the machine. When an operator wants to receive answers, he asks the machine in a special language to process the information taken from storage. The electronic machine can give any answer or a combination of possible answers. At a panel desk connected to the instrument, the machine can flash its answers on a screen, can print them on paper, and store them away on magnet tapes or cards.

Of cause, more than 100.000 pieces of information can be stored in one machine. The computer can do a lot of operations. For example, the computer can multiply large numbers. How long does it take the computer to multiply large numbers? In one third of a second a computer can multiply two 127-digit numbers. In one whole second, it can add 4.000 five-digit numbers. In two seconds it can complete 320 long-division problems. The same machine does the work of thousands of trained mathematicians in any given time period and without the mistakes. But ... human beings do thinking, feed information to the machines. The computer only helps us to find answers and produce facts faster and more accurately. Machines work for us, but they do not think for us.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is a computer?
2. What functions has a computer?
3. Why do people extremely need a computer nowadays?

4. What is the connection between computer brains and man's mind?
5. Is the electronic system of a computer very complex or simple?
6. Do electronic brains of a computer produce information?
7. How many pieces of information can be stored in one machine?
8. What does the computer machine flash?

Task 3. Match the words given below with the definitions:

Задание 3. Соотнесите следующие ключевые слова с соответствующим определением:

- Computer ……☐……. ……
- Fax (machine) …☐…….. ……
- E-mail ……☐……. ……
- Telephone ……☐……. ……
- The Internet ……☐……. ……

☐ a The machine which is used for sending or receiving copies of primed material, letters, pictures, etc. along a telephone line.

☐ b An international network of computers. It has electronic mail and provides a large amount of information.

☐ c An electronic machine that can store and recall information, do many processes on it.

☐ d An electronic system which joins a group of computers. People can send messages to each other on their computers.

☐ e A system for sending or receiving speech over long distances.

Task 4. Find the words and word-combinations given below in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

• An electronic system of a computer;

• To take from storage;

• To feed the information to the machine;

• A punched card;

• To complete long-division problems;

• To flash answers on a screen;

• To store on magnet tapes.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1. The electronic ... is very complex.
2. More than 100.000 pieces of .....

and when the operator wants answers, he asks ... and for solving the problem.

3. In one third of ... two 127 digit ...
4. The same machine does ... in any given time period, and ...
5. The machine can flash ...
6. ... can give any answer or ...
7. But it is ..., who do the thinking, who ... to find answer and .... .
8. Machines ... for us, but they do not ... for us.
9. ... of electronic devices, miles of electronic wire.
10. ... an operator feeds facts, figures and symbols into the machine, to be .. .

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. The electronic system of a computer is very simple.
2. More than 50 pieces of information can be stored in one machine.
3. In second a computer can multiply two 970 digit numbers.
4. Machines think for us, but they do not work for us.
5. The computer can not do a lot of operations.

LESSON 4

ANALOGUE AND DIGITAL COMPUTERS [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

An analog computer is a device that simulates the behavior of another *(system, person)* usually a physical system. A very simple and widely used analogue *(computer, car)* is the slide-rule on which distances are equivalent to logarithms of numbers. The *(devices, pictures)* known as analogue computers are assemblies of electronic or electrical circuits the behavior of which is analogous to another (mechanical) system's *(behavior, progress).*

The evolution of the adding *(machine, glass)* has culminated in electronic digital computers in which electronic *(signals, system)* are used as the operative discrete signals. The simplest *(digital, electronic)* computer is the human hand, from which the decimal *(system, pictures)* is derived. The first man-made digital computer was probably the ***abacus,*** which is still used in many *(countries, signals).* The basic sections of digital computers are therefore:

Input: receives the "raw data" and *(instructions, person)* from external sources and converts them into a suitable form for a computer to work on.

Store: memorizes *(numbers, countries)* and instructions.

Calculator: does mathematical operations.

Control: initiates and follows the *(operations, countries).*

Output: presents the result of the calculations in an acceptable form.

When an ordinary *(desk, pictures)* calculating machine is used, the operator controls the sequence of *(operations, signals).* He supplies the input data and records the results. Also he may have to provide additional *(information, numbers)* from tables and other sources during the calculation. In the case of electronic *(computers, glass)* working at extremely high speeds, the human operators are replaced by automatic devices. It is necessary to provide a store to hold both the numbers that are fed into the (compeer, *countries)* and the operating instruction.

The digital computer differs from the analogue computer in that it deals with numbers and not physical quantities.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. How many types of computers do you know? What are they?
2. What are their advantages and disadvantages, comparing one to another?
3. What are the basic sections of digital computers?
4. What is a device that simulates the behavior of another system in all its states?
5. What differs the analogue computer?
6. What computer is still used in many countries?
7. Has the evolution of the adding machine culminated in electronic digital computers?
8. When does the operator control the sequence of operations?
9. What does the operator supply?
10. What are the basic sections of digital computers?

Task 3. Match the English words given below with their Russian equivalents:

Задание 3. Соотнесите следующие ключевые слова с соответствующим переводом:

• to simulate	• цифровой
• circuits	• превращение
• a quantity	• последовательность операций
• to derive	• обеспечивать
• an instruction	• калькулятор
• to provide	• величина
• input data	• устанавливать
• raw data	• команда
• to supply	• снабжать
• a sequence of operations	• входные данные

• to convert	• необработанные данные
• digital	• цепи
• a calculator	• моделировать

Task 4. Find these words and word-combinations in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

- a decimal system;
- operative discrete signals;
- a calculating machine;
- automatic devices;
- a sequence of operations;
- electronic signals;
- external sources.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1. An analogue computer is ... .
2. The devices known as analogue computers are ... .
3. The digital computer differs from the .... .
4. The simplest digital computer is .... .
5. The evolution of the adding machine has .... .
6. He supplies the ... .
7. The first man-made digital computer was .... .
8. A very simple and widely used ... of numbers.
9. ... the operator controls the sequence of operations.
10. ... is used ... the sequence of operations.

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. A digital computer is a device that simulates the behavior of another system, often a physical system, in all its states.

2. A very complex widely used analogue computer is the slide-rule on which distances are equivalent to logarithms of numbers.

3. The digital computer doesn't differ from the analogue computer.

4. The second man-made digital computer was probably the abacus, which is still used in many regions.

5. A very simple and widely used analogue computer isn't the slide-rule on which distances are equivalent to logarithms of number.

6. The simplest digital computer isn't the human hand.

7. The evolution of the adding machine has culminated in electronic digital computers in which electronic signals are not used as the operative discrete signals.

8. When an ordinary desk calculating machine is used, the operator can't controls the sequence of operations.

9. The human operators are replaced by automatic devices.

Task 7. Translate the sentences from Russian into English:

Задание 7. Переведите с русского языка на английский:

1. Цифровой компьютер отличается от аналогового компьютера тем, что он работает только с числами.

2. Оператор управляет последовательностью действий, выполняемых компьютером; он вносит данные в компьютер и делает запись полученных результатов.

3. Аналоговый компьютер-устройство, которое моделирует поведение другой системы.

4. Первый искусственный цифровой компьютер был, вероятно, «абака», который все еще используется во многих странах.

5. Развитие счетной машины завершилось развитием электронных цифровых компьютеров.

6. Память: запоминает числа и инструкции.

7. Вывод: предоставляет результат вычислений в приемлемой форме.

8. Калькулятор выполняет математические действия.

Task 8. Make the sentences negative and interrogative:

Задание 8. Преобразуйте следующие предложения в вопросительную и отрицательную формы:

1. An analog computer is a device.
2. The digital computer differs from the analogue computer.
3. The first man -made digital computer was probably the abacus.
4. The human operators are replaced by automatic devices.
5. Store memorizes numbers and instructions.

Task 9. Write the plural form of the following nouns:

Задание 9. Образуйте множественное число следующих существительных:

a computer, a system, a state, a distance, a number, a device, a circuit, a quantity, a hand, a country, a signal, an operator, an instruction, a source, an operation, a result, a table, speed.

LESSON 5

THE INTERNET [3]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The Internet, a global computer network which embraces millions of users all over the world, began in the United States of America in 1969 as a military experiment. It was designed to survive a nuclear war. Information sent over the Internet takes the shortest path available from one computer to another. Because of this, any two computers on the Internet will be able to stay in touch with each other as long as there is a single route between them. This technology is called packet switching. Owing to this technology, if some computers on the network are knocked out (by a nuclear explosion, for example), information will just route around them. One such packet-switching network already survived a war. It was the Iraqi computer network which was not knocked out during-the Gulf War.

Most of the Internet host computers (more than 50%) are in the United States, while the rest are located in more than 100 other countries. Although the number of host computers can be counted fairly accurately, nobody knows exactly how many people use the, Internet, there are millions, and their number is growing by thousands each month worldwide. The most popular Internet service is e-mail. Most of the people, who have access to the Internet, use the network only for sending and receiving e-mail messages. However, other popular services are available on the Internet: reading USENET News, using the World-Wide Web, telnet, FTP, and Gopher.

In many developing countries the Internet may provide businessmen with reliable alternative to the expensive and unreliable telecommunications systems of these countries. Commercial users can communicate over the Internet with the rest of the world and can do it very cheaply. When they send e-mail messages, they only have to pay for phone calls to their local service providers, not for calls across their countries or around the world. But who actually pays for sending e-mail messages over the Internet long distances, around the world? The answer is very

simple: a user pays his service provider a monthly or hourly fee. Part of this fee goes towards its costs to connect to a larger service provider. And part of the fee got by the larger provider goes to cover its cost of running a worldwide network of wires and wireless stations.

But saving the money is only the first step. If people see that they can make money from the Internet, commercial use of this network will drastically increase. For example, some western architecture companies and garment centers already transmit their basic designs and concepts over the Internet into China, where they are reworked and refined by skilled – but expensive – Chinese computer – aided – design specialists.

However some problems remain. The most important is security. When you send an e-mail message to somebody, this message can travel through many different networks and computers. The data is constantly being directed towards its destination by special computers along the route, intercept and even change the data being sent over the Internet. In spite of the fact that there are many strong encoding programs available, nearly all the information being sent over the Internet is transmitted without any form of encoding, i.e. "in the clear"'. But when it becomes necessary to send important information over the network, these encoding programs may be useful. Some American banks and companies even conduct transactions over the Internet. However, there are still both commercial and technical problems which will take time to be resolved.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is the Internet?
2. What is the most popular Internet service?
3. What are the main problems of this network?
4. What transactions can we do over the Internet?
5. What are the advantages of this network?

Task 3. Use the right prepositions and fill in the blanks:

Задание 3. Заполните пропуски предлогами:

1. Some companies even conduct transactions ……. the Internet.

2. Millions of people all …… the world use this network.

3. When people send e-mail messages they have to play ….. phone calls.

4. In spite ……. this fact, there are a lot of strong encoding programs available.

5. The Internet host computers are located ……. more than 100 countries and their number is growing ……. thousands each month worldwide.

Task 4. Make 5 different questions:

Задание 4. Задайте все типы вопросов к следующим предложениям:

1. The Internet embraces millions of users all over the world.

2. Such network already survived a war.

3. Commercial users can communicate over the Internet with the rest of the world.

4. Nobody knows how many people use the Internet.

5. This network was designed to survive a nuclear war.

LESSON 6

GOVERNMENT TO RESCUE IT? [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The Internet and computer growth in Russia has been the envy or every European and North American country during the past few years. But growth in all IT areas is expected to slow by a considerable amount. Cell-phone growth in Moscow and St. Petersburg is limited to subscribers exchanging models, while subscriber growth is limited to the regions. Mobile communication companies had hoped that 3G technology would prove to be a boom, but the lack of equipment capable of handing such a technology is holding back development.

"Informatization" of the country means simply buying more computers and increasing. The Internet usage has nearly reached the limit that current technological equipment can provide. There is not enough money to increase

capacity. The largest computer and Internet service providers in Russia will reach yearly turnover of $500 million, which is far too small of a sum to begin improving communication structures on their own.

Moreover, Russian IT faces another problem: Most of the people who need computers live in cities of one million or more, and those people have already bought them. The majority who live outside of "wired" urban areas have absolutely no reason to buy a computer.

The government did launch the Electronic Russian program, which was designed to create an electronic government that would increase interaction between citizens find their elected leaders. Different ministries and political organs could not agree on how to implement the program, and it came to nothing. The government has developed a new plan. This time a single ministry will be responsible for "informatization," and its decisions will be carried out by all government organs. The IT created office will have to have not only the necessary resources but also a fair share of political leverage. If this is not done, then Russia will have to wait many years for IT businesses to become large enough to put pressure on the government to "informatize."

The most popular Internet service is e-mail. Most of the people, who have access to the Internet, use the network only for sending and receiving e-mail messages. However, other popular services are available on the Internet: reading USENET News, using the World-Wide Web, telnet, FTP, and Gopher. In many developing countries the Internet may provide businessmen with a reliable alternative to the expensive and unreliable telecommunications systems of these countries. Commercial users can communicate over the Internet with the rest of the world and can do it very cheaply. When they send e-mail messages, they only have to pay for phone calls to their local service providers, not for calls across their countries or around the world. But who accually pays for sending e-mail messages over the Internet long distances, around the world? The answer is very simple: user pays his/her service provider a monthly or hourly fee. Part of this fee goes towards its costs to connect to a larger service provider. Part of the fee got by the

larger provider goes to cover its cost of running a worldwide network of wires and wireless stations.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. How can you describe the present day situation on the communication structures market?

2. What are the main challenges while spreading Internet?

3. What are the advantages and disadvantages of spreading computers and Internet access to more people?

4. How can the government use Internet?

5. Can you imagine and describe as much ways of using Internet as possible?

6. Has Internet and computer growth in Russia been the envy of every European and North American country during the past few years?

7. But growth in all IT areas is expected to slow by a considerable amount, isn't it?

8. Did the government launch the Electronic Russian program?

9. What does the government do for a new plan?

10. What is the most popular Internet service?

11. Who can communicate over the Internet with the rest of the world?

12. What must the government realize?

13. The largest computer and Internet service providers in Russia will reach yearly turnover of $500 million, won't it?

Task 3. Match the English words given below with their Russian equivalents:

Задание 3. Соотнесите следующие ключевые слова с соответствующим переводом:

• Internet growth	• компьютерный рост
• a considerable amount	• электронная программа
• a current technological equipment	• компании мобильных структур

• Increasing Internet usage
• mobile communication companies
• communication structures
• spreading computers
• Internet access
• a computer growth
• an electronic program

• распространение компьютеров
• структуры связи
• доступ в Интернет
• увеличение Интернет обращения
• поток технологического оборудования
• значительное количество
• расширение Интернета

Task 4. Find these words and word-combinations in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

- a mobile communication;
- e-mail messages;
- a service provider;
- a worldwide network;
- the World-Wide Web;
- a local service provider;
- a wireless station.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1. Cell phone growth in ...
2. Mobile communication companies had .... .
3. The largest computer .... .
4. The majority who .... .
5. The government, however, did not .... .
6. Let us hope that the .... .
7. The most popular Internet .... .
8. The answer is .... .
9. Commercial users can .... .

10. The IT office eventually to be .... .

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. The Internet growth in European country has been the envy of every North American country.

2. But growth in all IT system is expected to slow by a considerable amount.

3. Most of the people who need computers live outside of "wired" urban areas.

4. A smallest computer and Internet service providers in the USA will reach yearly turnover of $100 million.

5. The most popular computer service is e-mail.

6. The government, however, do launch the Electronic the USA program.

7. Part of this fee goes towards its costs to connect to a larger service providers.

8. The Internet is a local program.

9. Russian IT hasn't got any problem.

10. The government did not give up and is developing a new plan.

Task 7. Translate the sentences from Russian into English:

Задание 7. Переведите с русского языка на английский:

1. Правительство запустило электронную программу России, целью которой явилось создание с помощью электроники расширенного взаимодействия между гражданами страны и их избранными лидерами.

2. Большинство людей, особенно нуждающихся в компьютерах-это те люди, которые живут в городах свыше 1 млн жителей.

3. Выгодное распространение компьютеров и доступ к Интернету большого количества людей покрывают все затраты производителя электронных машин.

4. Наиболее популярная услуга Интернета-это электронная почта.

5. Большинство людей, имеющих доступ к Интернету, используют его в основном с целью отправки и получения сообщений по электронной почте.

Task 8. Fill in the blanks the preposition "in":

Задание 8. Вставьте предлог "in" там, где это необходимо:

1. About ten years ago telephone was the only means ... communication which people could use ... their home.

2 .... present computers make our life much more comfortable.

3. Now we can send messages ... each other ... fax, e-mail or communicate ... the Internet.

4. Those who have the Internet can communicate not only … people.

5. They can get ... information ... any library all over the world.

Task 9. Make the sentences negative and interrogative:

Задание 9. Преобразуйте следующие предложения в вопросительную и отрицательную форму:

1. The Internet and computer growth in Russia has been the enwy European and North American country during the past few years.

2. Mobile communication companies had hoped that 3G technology would prove to be a boom.

3. The Internet usage has nearly reached the limit.

4. The largest computer and Internet service providers in Russia will reach yearly turnover of $500 million.

5. Most of the people who need computer live in cities of one million or more.

6. The government did launch the Electronic Russia program.

7. Different ministries and political organs could not agree on how to implement the program.

8. The government is developing a new plan.

9. This time a single ministry will be responsible for "Informatization".

10. In many developing countries the Internet may provide businessman with a reliable alternative to the expensive and unreliable telecommunications systems of these countries.

LESSON 7

MODERN COMPUTER USAGE FOR KEEPING THE COMPUTER TECHNOLOGY HISTORY [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Unfortunately, to restore the first electronic digital machines for the demonstration of their work is practically impossible. However with the aid of modern computers it is possible to show the operation of the separate devices. One of such demonstration complexes was created on the base of plotter EC-7051M and the personal computer, which works in the medium DOS. In the 1980 years this plotter was the device for input-output information in the computers of United System and worked under control of the special block. In the computer collection of Polytechnic Museum we have this block. In the correspondence with the comprised technical task the student of Moscow Institute Electronics and Mathematics had developed the schematic of joining this plotter with the personal computer, and then he assembled a new control unit on the basis of contemporary technological base. He wrote programs of control in the algorithmic language C ++ and demonstration programs, which made it possible to derive the images selected by user from the library. The first algorithmic language was FORTRAN (1955 year), and it's graphic application was language GRAFOR, created for fulfilling the graphic works at the end of 1960 years in the Institute of Applied Mathematics named after M. V. Keldysh.

In the exposition of the Electronic Digital Machines hall for the visitors of any categories can see the input-output of information from the computer and its fixation in the form of the drawings, different diagrams, graphs and tables on the paper with the aid of the plotter ES-7051. In the 70 years in Central Research Institute of Experimental Dwelling Projects the graphic mapping program ALGRAF was created. It made possible to automate designing of architectural and town-building objects. This program made it possible to present the work of an achitecter during the presence of the planning solutions of rooms and the work of

an artist-designer during the search for the versions of complex forms and curved surfaces. Any visitor can perceive itself a little in their role.

Also in the exposition the dynamic stand of logic elements "Logical functions on the semiconductors" works under the control of the personal computer. Executed at the factory of museum in 1960 years, it was no longer subject to restoration. Now it is easy to explain during the excursions with its aid, as can be realized the basic logical functions on the basis of the use of semiconductors in the second generation computers. Now for any categories of visitors it is possible to demonstrate with PC the following slide-shows. Also with the aid of the contemporary multimedia computer it is possible to hear out the computer music.

The work accordinc to digitization of video films was done. The first 5 films are already enumerated: "Academician Lebedev", "Machine geometry and graphics" "Carved surfaces in automatization system" and others. This work is planned to be continued.

It is wonderfully to demonstrate the connection of nature, mathematics, computer technology and arts with the aid of the fraktal drawing. Fantastic patterns, FRAKTALS, carried out not possessing imagination computer, following the mathematical and artistic intention of the doctor of technical sciences, the chief researcher of Institute Information Transfer of Russian Sciency Academy Peter Nikolayev. The Computer seemingly sends point into the journey through the complex plane in accordance with some specific roles of the fulfillment of the operations on the complex numbers and obtains the whimsical band of ornament, which exits to the infinite depth. Among the variety of locks, spirals and eddies every time before us it is opened the picture of amazing beauty and appear many times the reduced copies of primordial Mandelbrot set.

In XXI century artistic software finds ever wider acceptance. During May 2002 year in Moscow the festival of media-art is passed "Software as the kind of art or artistic games with software". It was oriented to the skill, adequate to information society, to the activity, artistically and theoretically interpreting

new reality, which can be enumerated. With the aid of modern multimedia PC it is possible to look over the work of participants in this festival, which demonstrated deep properties and qualities of programming. These works are executed with the use of contemporary, but most usual, i.e., widespread software. The Programmer-artist, who creates or who uses software "differently", is capable, at least to the period, to conquer commerce and to introduce skill into the spheres, in which its presence is not primordial provided. This usage of a computer with its multimedia possibilities makes it possible substantially to supplement and to expand the set of the themes, connected with the computer technology history without any limitations.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What were the first electronic digital machines like?
2. What was the first graphic program?
3. What are the most interesting items of the electronic digital machines exposition? (Describe them in great details).
4. What is fractal?
5. How can you describe the present day significance of software?

Task 3. Match the following Russian sentences given below with their English equivalents:

Задание 3. Найдите соответствующий перевод следующих предложений:

1. В прошлом году мы проводили работу, согласно цифровым видеофильмам … .	1. Also with the aid of the contemporary multimedia computer ... .
2. Сейчас тоже некоторые категории посетителей имеют возможность …	2. In XXI century artistic software .....
3. К сожалению, восстановление первой электронной вычислительной машины …. .	3. During May 2002 year in Moscow the festival of media-art ... .
	4. Too now for any category of visitors it is possible to ... .
	5. In last year we began to conduct work

4. Теперь, с помощью современных мультимедийных компьютеров … .
5. Первый язык алгоритма …. .
6. В течение мая 2002 года в Москве на фестивале медиа-искусства … .
7. С помощью современных мультимедийных компьютеров … .
8. В XXI веке компьютерное искусство … .
9. Первые 5 фильмов уже записаны according to digitization of video films ... .
6. The first 5 films are already enumerated .... .
7. The first algorithmic language ... .
8. Unfortunately, to restore the first electronic digital machine ... .
9. All works are executed with the use of contemporary ... .

Task 4. Find these words and word-combinations in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

- electronic digital machines;
- separate devices;
- input-output of information;
- a personal computer;
- logic elements;
- a contemporary multimedia computer;
- to expand the set of the themes.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1. It was oriented to the skill, adequate to information society ….. .
2. ... is capable, at least to the period ... .
3. He had written programs of control in the ... .
4. ... and the personal computer, which works in the medium DOS.
5. ... and it's graphic application was language GRAFOR ... .
6. ... a new control unit on the basis of contemporary technological base.
7. Now it is easy to explain during the excursions ... .

8. ... of functioning of the rape perforator "ПЛ-150" ….. .

9. In the beginning 70 years in Central Research ... .

10. Among the variety of locks, spirals ..... .

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. It is wonderfully to demonstrate the connection of nature, music, history, mathematics, computer technology and arts with the aid of the fractal drawing.

2. The 6 films are already enumerated, for example, "Academician Stepanov".

3. In XXI century mathematical software finds ever wider acceptance.

4. During May 2003 year in Moscow the festival of media - art is passed "Software as the kind of art or artistic games with software".

5. In the 1955 years this plotter was me device for input-output information in the computers.

6. The second algorithmic language was FORTRAN.

7. It is not important to note mat in the created demonstration complex in the base of plotter ES 7051.

8. Of course, in the exposition of the Electronic Digital Machines hall for the visitors of any categories we show the input-output of information from the computer.

9. Any visitor can perceive itself in their role.

10. Fantastic Patterns ПЛ-150, carried out not possessing imagination computer.

Task 7. Make up the sentences:

Задание 7. Составьте предложения:

1) Polytechnic Museum, in, 1980, this, collection, we, the, of, haven't, block.

2) Electronic, in, we, Machines, for, visitors, of, the, show, of, any, Digital, the, categories, information, hall, the, input-output, of.

3) created, in, 1970, Central, of, the, graphic, the, beginning, Research, Projects, mapping, was, Institute, program, of, ALGRAF, Experimental, Dwelling.

4) the, self-producing, but, a, infinitely, beauty, whole, the, appears.

5) language, FORTRAN, the, was, year, first, 1955, algorithmic.

Task 8. Make the sentences negative and interrogative:

Задание 8. Преобразуйте следующие предложения в вопросительную и отрицательную формы:

1. Any visitor can perceive itself a little in their role.
2. In 1960 it was no longer subject to restoration.
3. In last year we began to conduct work according to digitization of video films.
4. The 5 films are already enumerated.
5. In XXI century artistic software fills ever wider acceptance.
6. It is wonderfully to demonstrate the connection of nature, mathematics, computer technology and arts with the aid of the fraktal drawing.
7. To restore the first electronic digital machines for the demonstration of their work is practically impossible.
8. In the computer collection of Polytechnic Museum we haven't this block.
9. Also in the exposition the dynamic stand of logic elements "Logical functions on the semiconductors" works under control of the personal computer.

Task 9. Translate the sentences from Russian into English:

Задание 9. Переведите с русского языка на английский:

1. В зале экспозиции электронных вычислительных машин мы демонстрируем посетителям информацию о вводе-выводе компьютерной системы.
2. С помощью современного мультимедийного компьютера возможно прослушать компьютерную музыку.
3. С помощью современных компьютеров стало возможным продемонстрировать действие отдельных механизмов.
4. Первым языком алгоритма был «фортран».

LESSON 8

THE DEVELOPMENT OF COMPUTERS IN THE USA [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

In the early 1960s, when computers were hulking mainframes that took up entire rooms, engineers were already toying with the then-extravagant notion of building a computer intended for the sole use of one person, by the early 1970s, researches at Xerox's Polo Alto Research Center (Xerox PARC) had realized that the pace of improvement in the technology of semiconductors-the chips of silicon that are the building blocks of present-day electronics-meant that sooner or later the PC would be extravagant no longer. They foresaw that computing power would someday be so cheap that engineers would be able to afford to devote a great deal of it simply to making non-technical people more comfortable with these new information-handling tools, in their labs, they developed or refined much of what constitutes PCs today, from "mouse" pointing devices to software "windows".

Although the work at Xerox PARC was crucial, it was not the spark that took PCs out of the hands of experts and into the popular imagination. That happened in January 1975, when the magazine *Popular Electronics* put a new kit for hobbyists, called the Altair, on its cover, for the first time, anybody with $400 and a soldering iron could buy and assemble his own computer. The Altair inspired Steve Wosniak and Steve Jobs to build the first Apple computer, and a young college dropout named Bill Gates to write software for it. Meanwhile, the person who deserves the credit for inventing the Altair, an engineer named Ed Roberts, left the industry he had spawned to go to medical school. Now he is a doctor in a small town in central Georgia.

To this day, researchers at Xerox and elsewhere pooh- pooh the Altair as too primitive to have made use of the technology they felt was needed to bring PCs to the masses. In a sense, they are right. The Altair incorporated one of the first single-chip microprocessor-a semiconductor chip, that contained all the basic circuits needed to do calculations-called the Intel 8080. Although the 8080 was

advanced for its time, it was far too slow to support the mouse, windows, and elaborate software Xerox had developed. Indeed, it wasn't until 1984, when Apple Computer's Macintosh burst onto the scene, that PCs were powerful enough to fulfill the original vision of researchers.

Researchers today are proceeding in the same spirit that motivated Kay and his Xerox PARC colleagues in the 1970s: to make information more accessible to ordinary people. But a look into today's research labs reveals very little that resembles what we think of now as a PC. For one thing, researchers seem eager to abandon the keyboard and the monitor that are the PC's trademarks. Instead they are trying to devise PCs with interpretive powers that are more humanlike-PCs that can hear you and see you, can tell when you're in a bad mood and know to ask questions when they don't understand anything.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Who foresaw that computing power would someday be so cheap that engineers would be able to afford to devote a great deal of it simply to making non-technical people?

2. What are researches at Xerox's Polo Alto improvement in the technology of semiconductors?

Task 3. Match the English words given below with their Russian equivalents:

Задание 3. Соотнесите следующие ключевые слова с соответствующим переводом:

- a microprocessor
- to do calculations
- to motivate
- an invention
- electronics
- a technology of semiconductors
- a keyboard

- ручное управление
- эксперт
- электроника
- технология полупроводимости
- клавиатура
- компьютерная мощьность
- изобретение

• an expert
• handling tool
• computing power
• побуждать
• микропроцессор
• делать вычисления

Task 4. Find these words and word-combinations in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

• hulking mainframes;
• a pace of improvement in the technology;
• computing power;
• non-technical people;
• researchers of Xerox;
• the first single-chip microprocessor;
• to do calculations.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1. To this day, researchers at Xerox and elsewhere pooh-pooh the Altair as ..... .

2 .... power that are more humanlike-PCs that can hear you and see you, can tell when you're in a bad mood and know to ask questions when they don't understand something.

3. The kind of computing that people ... in the early 1970s.

4. They foresaw that computing power would someday be ... in their labs, they developed or refined much of what constitutes PCs today, from "mouse" pointing devices to software "windows".

5. Although the work at Xerox PAPC was crucial ... .

6. Wosniak and Steve Jobs to build ... to write software for it.

7 ... an engineer named ED Roberts, left the industry he had spawned to go to medical school.

8 … that contained all the basic circuits needed to do calculations-called the Intel 8080.

9. Now he is a...

10. ... burst onto the scene, that PCs were powerful enough to fulfill the original vision of researchers.

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. It is impossible to predict the invention, that the Altair, crystallized new approaches in a way that captures people's imagination.

2. The Altair incorporated one of the first single-chip microprocessor a semiconductor chip, that contained all the basic circuits needed to do calculations-called the Intel 8080.

3. Although the work at Xerox PARC was crucial, it was the spark that took PCs out of the hands of experts and into the popular imagination.

4. In their labs, they developed or refined much of what constitutes PCs today, from "mouse" point devices to software "windows".

5. The Altair inspired Steve Wosniak and Steve Jobs to build the first Apple computer, and a young college dropout named Bill Gates to write software for it.

Task 7. Use "was" or "were":

Задание 7. Вставьте "was" или "were":

1. Computer ... hulking mainframes.

2. Engineer ... already toying with the then -extravagant notion of building a computer intended for the sole use of one person.

3. The work at Xerox PARC ... crucial.

4. It ... not the spark that took PCs out of the hands of expert and into the popular imagination.

5. Although the 8080 ... advanced for its time.

6. It ... far too slow to support the mouse, windows and elaborate software Xerox had developed.

7. It ... not until 1984.

8. PCs ... powerful enough to fulfill the original vision of researchers.

Task 8. Make the sentences negative and interrogative:

Задание 8. Преобразуйте следующие предложения в вопросительную и отрицательную форму:

1. Computer power would someday be so cheap.

2. Engineers would be able to afford to devote a great deal of it simply to making nontechnical people more comfortable with some information.

3. That happened in January 1975.

4. The magazine "Popular Electronics" put a new kit for hobbyists.

5. He is a doctor in a small town in central Georgia.

6. Researches at Xerox needed to bring PCs to the masses.

7. The Altair incorporated one of the first single-chip microprocessor.

8. PCs were powerful enough to fulfill the original vision of researches.

9. We made at PARC in the early 1970s.

10. It is impossible to predict the invention.

LESSON 9

THE COMPARISON OF THE COMPUTER DEVELOPMENT IN THE USA AND THE UKRAIN [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

At the time when the computer science was just uprising these two countries were one of the most noticeably influential. There were a lot of talented scientists and inventors in both of them. But the situation in the Ukraine (which at that time was one of 15 Republics of the former USSR) was complicated, on the one hand with the consequences of the Second World War and. On the other hand, at a certain period cybernetics and Computer Science were not acknowledged. Of cause, later it went to the past, but nevertheless it played a negative role on the Ukrainian computer development. It also should be noticed that in America they paid more attention to the development of computers for civil and later personal use. But in the Ukraine the attention was mainly focused on the military and industrial needs.

Another interesting aspect of the Ukrainian computer development was the process of the 70s when "sovietizing" of the IBM-360 system became the first step on the way of weakening of positions achieved by the Soviet machinery construction the first two decades of its development. The next step that led to the further lag was the mindless copying by the SU Ministry of Electronic Industry and putting into the production the next American elaborations in the field of microprocessor equipment.

The natural final stage was buying in enormous quantities of foreign computers last years and pressing to the deep background our domestic researches and developments and the computer-building industry on the whole.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Where was the attention mainly focused on the military or industrial needs?

2. Where did they pay more attention to the development of computers for civil and later personal use?

3. What was a final stage?

4. Why was the situation in Ukraine complicated?

Task 3. Match the English words given below with their Russian equivalents:

Задание 3. Соотнесите следующие ключевые слова с соответствующим переводом:

• a computer science	• министр электронной индустрии
• a computer development	• разработка
• personal use	• информатика
• a Ministry of Electronic Industry	• компьютерное развитие
• an elaboration	• персональное использование
• microprocessor equipment	• микропроцессорное оборудование

Task 4. Find the sentences with the words and word-combinations given below in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

1) the Ukrainian computer development;
2) a development of computers for civil use;
3) to put into production;
4) a field of microprocessor equipment;
5) cybernetic;
6) a computer-building industry.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1 .... of talented scientists and inventors in both of them.

2. It also should be noticed in America they paid more attention to the development of .... .

3. The next step that led to the further lag was ... and putting into production the next .... .

4. American elaborations in the field of .... .

5. Another interesting aspect of the Ukrainian computer development was .. .

6. At the time when the computer science was ... .

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. At the time when the computer science is just uprising this two countries, where one of the most noticeably influential.

2. It also should be noticed that in America they paid more attention to the development of computers for civil and later personal use.

3. But in the Ukraine the attention was mainly focuses on the military and industrial need.

4. Of cause, later it went to the future, but nevertheless it played a negative role on the Ukrainian computer development.

5. But the situation in the Ukraine was complicated.

Task 7. Translate these sentences from Russian into English:

Задание 7. Переведите с русского языка на английский:

1. Много талантливых ученых и изобретателей учавствовали в создании программнго обеспечения.

2. Ситуация на Украине была усложнена, с одной стороны, последствиями двух мировых воин и, с другой стороны, определенный период времени кибернетика и информатика не были признаны вообще.

4. Также было замечено, что в Америке уделяли больше внимания развитию компьютеров для гражданского и персонального пользования.

5. А на Украине внимание, главным образом, было сфокусировано на компьютеризации индустриальной сферы.

6. В США и Украине было и есть много талантливых ученых и изобретателей.

7. Покупка иностранных компьютерово-один из последних шагов развития компьютеризации в Украине.

Task 8. Use "was" or "were":

Задание 8. Вставьте "was" или "were":

1. At the time when the computer science ... just uprising this two countries ... one of the most noticeably influential.

2. There ... a lot of talented scientists and inventors in both of them.

3. But the situation in the Ukraine ... complicated.

4. Cybernetics and Computer Science ... not acknowledged.

5. But in the Ukraine the attention ... mainly focused on the military and industrial needs.

6. Another interesting aspect of the Ukrainian computer development ... the process of the 70s when "sovietizing" of the IBM-360 system became the first step on the way of weakening of positions achieved by the Soviet machinery construction the first two decades of its development.

7. The next step that led to the further lag ... the mindless copying by the SU Ministry of Electronic Industry and putting into production the next American elaboration in the field of microprocessor equipment.

8. The natural final stage ... buying in enormous quantities of foreign computers last years and pressing to the deep background our domestic researches, and developments, and the computer-building industry on the whole.

9. Another interesting aspect of the Ukrainian computer development .... the process of the 70s.

Task 9. Make the sentences negative and interrogative:

Задание 9. Преобразуйте следующие предложения в вопросительную и отрицательную формы:

1. It played a negative role on the Ukrainian computer development.

2. In America they paid more attention to the development of computers for civil and late personal use.

3. There were a lot of talented scientists and inventors.

4. The "sovietising" of the IBM-360 system was achieved by the Soviet machinery construction.

5. Last years the natural final stage was buying in enormous quantities of foreign computers.

LESSON 10

THE HOMECITY OF MESM [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

At first it was a model of a Big Electronic Computing Machine (BECM). Later there appeared the evident expediency of transforming BESM in a small computer. In the process of a creation it was a Model of a Small Big Electronic Computing Machine (MECM). For that reason there were added: input-output devices, magnetic drum storage, register capacity. The author of a creation was S.A. Lebedev, who was proposed to head the Institute of Energetics in Kiev. Later the Institute wild divided into two departments: the electronical one and the department of heat-and-power engineering. Lebedev became the director of the first one. He also added his laboratory of analogue computerization to the already existing ones of the electronical type. At once he began to work on computer science instead of the usual, routine researches in the field of engineering means of stabilization and structures of automated devices. Since autumn 1948 he had been directing his laboratory towards creating MESM. The most difficult part of the work was the practical creation of MESM. It might be a lot of experiences of the researches that allowed the scientist to fulfill the task perfectly. In autumn 1951 the machine executed a complex program rather stabile. S.A. Lebedev was awarded the State Prize of the USSR.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Who was proposed to head the Institute of Energetics in Kiev?
2. When did Lebedev direct his laboratory towards creating of MESM?
3. Was MESM created by S.A. Lebedev?
4. What machine did in autumn 1951 execute?
5. What is BESM?
6. When did Lebedev become the director of one of the departments?
7. What prize was Lebedev awarded?

8. What is the most difficult part of the work?
9. How many departments was the Institute of Energetics divided?

Task 3. Find the sentences with the words and word-combinations given below in the text:

Задание 3. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

- a model;
- a Big Electronic Computing Machine;
- a small computer;
- input-output devices;
- an electronic type;
- a computer science;
- a practical creation.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1. ... in the process of a creation ... .
2. He also added his ... to the already existing ones of the electronical type.
3. Since autumn 1948 Lebedev ... .
4. ... of the work was the practical creation of MESM.
5. ... the machine executed a complex program rather stabile.

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. S.A. Lebedev was proposed to head the Institute of Energetics in Novgorod.

2. At first it was call the Model of the BECM, but, later in the process of its creation there appeared the evident expediency of transforming it in a big computer.

3. Since autumn 1948 Lebedev had been directing his laboratory towards creation of MESM.

4. In autumn 1951 the machine executed a complex program rather stabile.

5. For that reason there were added: the imput-output devices, magnetic register storage, and the drum capacity.

Task 7.Translate from Russian into English:

Задание 7. Переведите с русского языка на английский:

1. МЭВМ была задумана С. А. Лебедевым и являлась моделью большой электронной вычислительной машины.

2. В процессе ее создания была проявлена очевидная целесообразность преобразования ее в маленький компьютер.

3. С. А. Лебедеву было предложено стать директором института энергетики в Киеве.

4. С осени 1948 года Лебедев руководил своей лабораторией по направлению создания МЭВМ.

5. С осени 1951 года машина выполняла комплекс программ.

Task 8. Make up your own sentences:

Задание 8. Составьте свои предложения со следующими словосочетаниями:

- a small computer;
- a model of a Big Electronic Computing Machine;
- a department of heat-and-power engineering;
- a computer science;
- automated devices;
- a practical creation;
- a complex program.

LESSON 11

THE MAIN FAULT OF THE 70-S OR THE YEARS OF "MIGHT HAVE BEEN HOPES" [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The great accumulated experience in creating computers, the profound comparison of our domestic achievements with new examples of a foreign computer technique prompted the scientists that it is possible to create computing. It means a new generation meeting the world standards. Many outstanding Ukrainian scientists of that time-Lebedev, Dorodnitsin, Glushkov and others had the same opinion. They proceeded from quite a favorable situation in the country. The computerization of national economy was considered as one of the most essential tasks. It was the decision to create the United system of computers-the machines of a new generation on integrals.

The USA was the first to create the *families* of computers. In 1963-64 the IBM Company worked out the IBM-360 system. It comprised the models with different capacities for which a wide range of software was created.

A decision concerning the third generation of computers (their structure and architecture) was to be made in the USSR in the late 60s. But instead of making the decision based on the scientific grounds concerning the future of the united system of computers the Ministry of Electronic Industry issued the administrative order to copy the IBM-360 system. The leaders of the Ministry did not take into consideration the opinion of the leading scientists of the country.

Despite the fact that there were enough grounds for thinking the 70s would bring new big progresses, those years were the step back due to the fault way dictated by the highest authorities from above.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Who proceeded from quite a favorable situation in the country?
2. What is a decision to create the united system of computers?

3. Who was the first to create the families of computers?

Task 3. Match the English words given below with their Russian equivalents:

Задание 3. Соотнесите следующие ключевые слова с соответствующим переводом:

- domestic achievements
- the united system of computers
- the machines of a new generation
- a foreign computer
- a computerization of national economy

- машины нового поколения
- компьютер иностранного производства
- внутренние достижения
- объединенная система компьютеров
- компьютеризация национальной экономики

Task 4. Complete the following sentences corresponding to the contents of the text:

Задание 4. Закончите предложения:

1. Many outstanding Ukrainian scientists of that time …. .

2. Despite the fact that there were enough grounds for thinking the 70s would bring new big progresses, ...

3 .... was considered as one of the most essential tasks.

4 .... the machines of new generation on integrals.

5 .... the Ministry of Electronic Industry issued.

Task 5. Say whether the statements given below are true or false:

Задание 5. Определите истинность или ложность следующих предложений:

1. Of that opinion was many outstanding Ukrainian scientists of that time-Lebedev, Dorodnitsin, Glushkov and others.

2. The leaders of the Ministry did not take into consideration the opinion of the leading scientists of the country.

3. A decision concern the third generation of computers was to be made in the USSR in the late 60s.

4. The USA was the first to create families of computers.

5. The leaders of the Ministry did not take into consideration the opinion of the leading scientists of the country.

Task 6. Use "was" or "were":

Задание 6. Вставьте "was" или "were":

1. Computerization of national economy ... considered as one of the most essential tasks.

2. The USA …. the first to create the families of computers.

3. It comprised the models with different capacities for which a wide range of software ... created.

4. A decision concerning the third generation of computer ... to be made in the USSR in the late 60s.

5. Despite the fact that there ... enough grounds for thinking the 70s would bring new big progresses, those years ... the step back due to the fault way dictated by the highest authorities from above.

Task 7. Make the sentences negative and interrogative:

Задание 7. Преобразуйте следующие предложения в вопросительную и отрицательную формы:

1. It was a great accumulated experience in creating computers.

2. They proceeded from quite a favorable situation in the country.

3. It was the decision to create the United system of computers-the machines of new generation on integrals.

4. The leaders of the Ministry did not take into consideration the opinion of the leading scientists of the country.

5. The computerization of national economy was considered as one of the most essential tasks.

Task 8. Write the plural form of the following nouns:

Задание 8. Образуйте множественное число следующих существительных:

an experience, a computer, an achievement, an example, a scientist, a standard, a situation, a country, a task, a decision, a generation, a machine, a system, a model, a capacity, a ground, an order, a leader, an opinion, a consideration, a fact, a step, a way.

LESSON 12

PROTECTION OF INFORMATION [2]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Rapid development of automation processes and penetration of the computers in all fields of life have led to appearance of a range of peculiar problems. One of these problems is the necessity of providing effective protection to information and means of its processing.

A lot of ways to access information, considerable quantity of qualified specialists, and vast use of special technical equipment in social production make it possible for violators practically at any moment and in any place to carry out the actions, which represent a threat to information safety.

Particular role in this process has been played by appearance of personal computer (PC), which has made computers, software and other informational technologies available to general public. Wide distribution of PC and impossibility of conducting effective control of their use have resulted in the decreasing security level of information systems.

In the current situation, data processing has moved the problems of information security forward to the rank of most important problems of national economy. Solving the problem of poor information security presupposes a complex of measures. First of all, such actions of government as development of classification system, documentation of information and protection methods, data access regulations and punishing measures against information security violators.

State informational sources. Formation of state informational sources is carried out by citizens, state authorities, organizations and social unions. Documents, which belong to a person, can be included in the state structure of informational sources, of course, if the person wishes. State informational sources are open and generally available. Documented information with limited access is divided into state secret and confidential information.

Citizen information (personal information). Personal data refers to confidential information. The collection, storage, use and distribution of private information are not allowed. The information, which breaks personal and family secret, secret of correspondence, telephone, postal, telegraph talks and other messages of a person without his/her permission, is also confidential.

Personal data may not be used with purpose of causing damage to person's property and reputation, difficulties of realization its right. Collected data must be limited to necessary information. The information, which carries strong probability of causing damage to a citizen's interests shouldn't be collected.

There are some categories of personal information: secret documents; information, which is not to be made public in accordance with legislative acts; confidential business information; information, which touches private life of a person; information of financial institutions.

Development and production of informational systems. All types of informational systems and networks, technologies and means of their providing compose a special branch of economic activity, whose development is defined by the state scientific, technological and industrial policy of informatization.

State and non-state organizations and, of course, the citizens have equal rights in terms of access to the development and producing of informational systems, technologies.

Owner of informational systems. The informational systems, technologies and means of their providing can be the property objects of juridical person, non-juridical person and state. The owner of informational system is a person, who purchased these objects or got as a gift, heredity or by any other legal way.

The informational systems, technologies and means of their providing can be considered as a good (product), if the producer rights are not broken. The owner of informational system determines the using conditions of this product.

Copyrights and property rights. Copyrights and property rights on informational systems, technologies and means of their providing can be belong to

different persons. The owner of informational systems has to protect copyrights in accordance with legislation.

Informational systems and databases, intended for citizens' and organizations' informational service, are subjected to certification according to the established rules.

The organizations, which work in the field of making design, producing the means of information protection and personal data treatment, must obtain licensees to conduct such activity. The steps for obtaining license are defined by the legislation.

Problem of information protection. The problem of information security is relatively new. Not all problems, connected with it have been figured out and solved up to now. The fact of great number of computer systems users means the definite risk to security because not all clients will carry out the requirements of its providing.

The main purpose of information protection is preventing from the leak, theft, distortion, counterfeit of information; preventing the threat to person's life and social safety, protection of the constitution and so on. The information is subjected to protection, when it may cause the harm for its owner, user or other person.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is the main purpose of information protection?
2. Why is it very difficult to solve the problems connected with information security?
3. Who and how represents a threat to information safety?
4. What caused decreasing of security level of information systems?
5. What measures are taken by the government in solving the problem of poor information security?

Task 3. Find the Russian equivalents for the following words and word-combinations:

Задание 3. Дайте русские эквиваленты следующим словосочетаниям:

information safety, decreasing security level, data processing, data access regulations, punishing measures, information security violators, established rules, personal data treatment, counterfeit of information, to obtain licenses, legislative acts.

Task 4. Complete the sentences according to the text:

Задание 4. Закончите следующие предложения и переведите их на русский язык:

1. Wide distribution of PCs has resulted in … .
2. Solving the problem of poor information security presupposes …. .
3. There are some categories of personal information … .
4. The owner of the informational system is … .
5. The main purpose of information protection is … .

Task 5. Find the Russian equivalents for the words given below:

Задание 5. Дайте определения следующим словам на английском языке:

information, computer, protection, violator, software.

Task 6. Retell the text according to the sentences given below:

Задание 6. Составьте план и перескажите текст. Постарайтесь осветить следующие пункты:

1. Wide distribution of PCs.
2. Decreasing security level of informational systems.
3. Types of information.
4. Development of informational systems.
5. The problem of information protection.

LESSON 13

COMPUTER CRIMES [2]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The development of computer technology and its wide use have lead to appearance and spread of computer crimes. Such situation causes alarm among those organizations and legislative institutions that use computer technologies and, of course, people, who use new informational services at homes.

The term "computer crime" was first used in the early 70s. However, the discussions concerning it are still actual. The top question of these discussions is "What unlawful actions are implied by computer crime". A rank of definitions of the computer crime has been composed. It often refers to crimes directly or indirectly connected to electronic computing machines and which includes a number of illegal acts, committed by means of electronic data processing system or against it. Others consider that computer crime is any action, which goes together with interfering with property rights and fulfilled by means of computers. The thirds think that computer crime can be defined as all intentional and unlawful actions, which lead to causing harm to possessions, with help of computers too.

The most dangerous individuals of computer swindle are so called "hackers", "crackers" and representatives of other groups, working in the sphere of industrial espionage. So, many security specialists advise employers to pay special attention to engaged workers-specialists in computer technologies, programming and information protection spheres.

There are many causes, when "hackers" get a job with a goal of personal enrichment. But the most danger can represent such specialists, who are in collusion with managers of commercial structures and organized criminal groups; in these situations causing damage and weight of consequences considerably increases.

There are two types of unsanctioned access: *internal* "breaking open"-the

criminal has access to the terminal, with information he interested in and can work with it for some time without somebody's control; and *external* "breaking open"-the criminal doesn't have indirect access to the computer system, but has an opportunity of penetration to the protected system by means of remote access.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is a computer crime?
2. What types of unsanctioned access do you know?
3. Who are the so called "crackers" and "hackers"?
4. What is the difference between a "cracker" and a "hacker"?
5. Why can some specialists represent a danger?

Task 3. Find the English equivalents for the words given below:

Задание 3. Найдите эквиваленты следующих слов в тексте:

включать, работодатель, советовать, обращать внимание, программирование, увеличивать, последствия, удаленный доступ, возможность, проникновение.

Task 4. Complete the sentences according to the text:

Задание 4. Закончите следующие предложения:

1. The term "computer crime" often refers to … .
2. Computer crime cause alarm among … .
3. Many computer specialists advise employers … .
4. The two types of unsanctioned access are … .
5. A computer crime can be defined as … .

LESSON 14

FROM THE HISTORY OF COMPUTER VIRUSES [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

A bit of history

2 November 1988 Robert Morris younger (Robert Morris), a graduate student of an informatics faculty of Cornwall University (USA) infected a great amount of computers, connected to Internet network. This network unites machines of university centres, private companies and governmental agents, including National Aeronautics Space Administration, as well as some military scientific centres and labs. 4 November the author of the virus-Morris-come to FBI headquarters in Washington on his own. FBI has imposed a prohibition on all materials relating to the Morris virus.

22 January 1989 a court of jurors has acknowledged Morris guilty. If denunciatory verdict had been approved without modification, Morris would have been sentenced to 5 years of a prison and 250.000 dollars of fine. However, Morris' attorney Thomas Guidoboni immediately has lodged a protest and directed all papers to the Circuit Court with the petition to decline the decision of the court... Finally Morris was sentenced to 3 months of a prison and fine of 270 thousand dollars. Cornwall University carried a heavy loss, having excluded Morris from its members. The author had to take part in the liquidation of its own creation.

It is necessary to differentiate between reproducing programs and Trojan horses. Reproducing programs will not necessarily harm your system because they are aimed at producing as many copies (or somewhat-copies) of their own as possible by means of so-called agent programs or without their help. In the later case they are referred to as "worms".

Meanwhile Trojan programs aimed at causing harm or a damage to PC's. Certainly it's a usual practice, when they are a part of "tech-organism", but they have completely different functions.

A network worm has struck 6.200 machines that formed 7.3% computers to network. Among damaged things were NASA, LosAlamos National Lab, exploratory center VMS USA, California Technology Institute, and Wisconsin University (200 from 300 systems). According to "Wall Street Journal", a virus has infiltrated networks in Europe and Australia, where there were also registered events of blocking the computers. Here are some recalls of the event participants:

Symptom: hundreds or thousands of jobs start running on a UNIX system bringing response to zero.

Systems attacked: UNIX systems, 4.3BSD UNIX and variants send mail compiled with debug. This virus is spreading very quickly over the Milnet. Within the past 4 hours, it has hit > 10 sites across the country. Well over 50 sites have been hit. Most of these are "major" sites and gateways.

Method: Someone has written a program that uses a hole in SMTP Send mail utility. This utility can send a message into another program.

Apparently what the attacker did was this: he or she connected to send mail, issued the appropriate debug command and had a small C program compiled. This program took as an argument a host number and copied two programs-one ending in VAX. OS and the other ending in SunOS-and tried to load and execute them. In those cases where the load and execution succeeded, the worm did two things: spawn a lot of shells that did nothing but clog the process table and burn CPU cycles. It used both individual host files and any other remote hosts it could locate which it had a chance of connecting to. It may have done more: one of our machines changed super user password, but because of other factors we're not sure this worm did it.

As you see, there are different types of viruses, and they have already been separated into classes and categories. For instance: dangerous, harmless, and very dangerous. No destruction means a harmless one, tricks with system halts means a dangerous one, and finally with a devastating destruction means a very dangerous virus.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What was the attacker?

2. Who infected a great amount of computers, connected to Internet network?

3. Who has imposed a prohibition on all material relating to the Morris virus?

4. When did Robert Morris infect a great amount of computers?

5. When did the author come to FBI headquarters in Washington on his own?

6. How many dollars would have been Morris sentenced?

7. Why do not Reproducing programs harm your system?

8. Why do the viruses evolve as if they were alive?

Task 3. Choose the right variant:

Задание 3. Выберите правильный вариант:

1. This …. unites machines of university centers, private companies and governmental agents.

a) engineer;

b) network;

c) man.

2. Network worm has struck … machines.

a) 6500;

b) 6200;

c) 6300;

3. ... 1988 Robert Morris in feted a great amount of computers, connected to Internet network.

a) 1 January;

b) 8 March;

c) 2 November;

4. ... the author of the virus-Morris-come to FBI headquarters in Washington on his own.

a) 22 June;

b) 17 September;

c) 4 November.

Task 4. Find the sentences with the words and word-combinations given below in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

• blocking the computers;

• to send mail;

• Morris virus;

• computer environment;

• an integral part of the virus;

• a network worm;

• to decline the decision of court;

• reproducing programs.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1. .... infected a great amount of computers, connected to Internet network.

2. According ... were also registered events of blocking the computers.

3. It is necessary to differentiate between ... .

4. ... they are a part of "tech-organism", but they have completely different functions.

5. ... tricks with system halts means a dangerous one, and finally with a devastating destruction means a very dangerous virus.

6. This virus is spreading very quickly ... .

7. Apparently what the attacker did was this ... .

8. If denunciatory verdict had been approved without modification ... .

9. It may have done more ... .

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. 2 November 1888 Robert Morris older, graduate student of information faculty of Cornwall University infected a small amount of computers, connected to Internet work.

2. Network worm had struck 3200 machine that formed 7,9 % computers to network, and has show, that UNIX okay too.

3. Symptom: hundreds or thousands of jobs start running on a UNIX system bring response to two.

4. This virus is not spreading very quickly over the Milnet.

5. Within the past 10 hours, it have hit > 10 sites across the country, both Arpaned and Milnet sites.

6. Apparently what the attacker do this: he or she connected to send mail, issue the appropriate debug command, and had a big C program compiled.

7. 22 January the author of the virus came to FBI headquarters in Washington on his own.

8. 22 January 1989 a court of jurors has acknowledged Morris guilty.

9. It was necessary to differentiate between reproduce program and Trojan horses.

Task 7. Make up the sentences:

Задание 7. Составьте предложения:

• This network unites	• because they are aimed at producing as many copies of their own as possible.
• Viruses are an area of	• 6200 machines that formed 7.3% computers to network.
• Viruses seem to be the only alive organisms	• pure programming, and carry intellectual functions on protection from being found.

• Reproducing programs will not harm your own system
• Network worm has struck
• machines of university centers, private companies and governmental agents.
• in the computer environment.

Task 8. Make the sentences negative and interrogative:

Задание 8. Преобразуйте следующие предложения в вопросительную и отрицательную формы:

1. Network worm has struck 6.200 machines that formed 7.3% computers to network.
2. This virus is spreading very quickly over the Milnet.
3. Well over 50 sites have been hit.
4. Most of these are "major" sites and gateways.
5. This utility can send a message into another program.
6. FBI has imposed a prohibition on all materials relating to the Morris virus.
7. Morris would have been sentences to 5 years of prison and 250.000 $ of fine.
8. The author had to take part in the liquidation of its own creation.
9. They have to fight for survival in complex conditions of conflicting computer systems.
10. Destructive actions are not an integral part of the virus by default.

Task 9. Translate from Russian into English:

Задание 9. Переведите предложения с русского языка на английский:

1. 2 ноября 1988 Роберт Моррис младший, выпускник факультета информатики, разработал огромное число компьютеров, подключенных к сети Интернет.
2. Эта сеть объединяет машины учебных центров, частных компаний, государственных служащих.
3. Сетевой червь поразил 6200 машин, что составляет 7,3 % всех компьютеров сети.
4. 4 ноября автор вируса Моррис приехал в Вашингтон лично.
5. 22 Января 1989 года суд присяжных признал вину Морриса.

6. Компьютерный вирус это исполнительный код, способный самовоспроизводиться.

7. Вирусы кажутся очень живучими организмами в компьютерной среде.

8. Существуют различные виды вирусов, которые делятся на классы и категории.

LESSON 15-16

WHAT IS A COMPUTER VIRUS? [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

A virus is a piece of software designed and written to adversely affect your computer by altering the way. It works without your knowledge or permission. In more technical terms, a virus is a segment of program code that implants itself to one of your executable files and spreads systematically from one file to another. Computer viruses do not spontaneously generate. They must be written and have a specific purpose. Usually a virus has two distinct functions:

• Spreads itself from one file to another without your input or knowledge. Technically, this is known as self-replication and propagation.

• Implements the symptom or damage planned by the perpetrator. This could include erasing a disk, corrupting your programs or just creating havoc on your computer. Technically, this is known as the virus payload, which can be benign or malignant at the whim of the virus creator.

A benign virus is one that is designed to do no real damage to your computer. For example, a virus that conceals itself until some predetermined date or time and then does nothing more than display some sort of message is considered benign.

A malignant virus is one that attempts to inflict malicious damage to your computer, although the damage may not be intentional. There is a significant number of viruses that cause damage due to poor programming and outright bugs in the he viral code a high percentage of them are very malignant. Some of the more malignant viruses will erase your entire hard disk, or delete files.

A malicious virus might alter one or more of your programs so that it does not work, as it should. The infected program might terminate abnormally, write incorrect information into your documents. Or, the virus might after the directory information on one of your system areas. This might prevent the partition from

mounting, or you might not be able to launch one or more programs, or programs might not be able to locate the documents you want to open.

What Viruses Do?

Some viruses are programmed specifically to damage the data on your computer by corrupting programs, deleting files, or erasing your entire hard disk. Many of the currently known Macintosh viruses are not designed to do any damage. However, because of bugs (programming errors) within the virus, an infected system may behave erratically.

What Viruses Don't Do?

Computer viruses don't infect files on write-protected disks and don't infect documents, except in the case of Word macro viruses, which infect only documents and templates written in Word 6.0 or higher. They don't infect compressed files either. However, applications within a compressed file could have been infected before they were compressed. Viruses also don't infect computer hardware, such as monitors or computer chips. They only infect software.

In addition, *Macintosh viruses* don't infect DOS-based computer software and vice versa. For example, the infamous *Michelangelo virus* does not infect Macintosh applications. Exceptions to this rule are the Word and Excel macro viruses, which infect spreadsheets, documents and templates, which can be opened by either Windows or Macintosh computers. Finally, viruses don't necessarily let you know that they are there - even after they do something destructive.

Types of Computer Viruses

Nowadays number of viruses is about 55.000. It increases constantly. New unknown types of viruses appear. To classify them becomes more and more difficult. In common they can be divided by three basic signs: a place of situating, used operation system and work algorithms. For example, according to these three classifications *virus Chernobyl* can be classified as a file infector and resident Windows virus. Further it will be explained what it means.

File Infectors

These are viruses that attach themselves to (or replace) COM and EXE files, although in some cases they can infect files with extensions SYS, DRV, BIN, OVL and OVY With this type of a virus, uninfected programs usually become infected when they are executed with the virus in memory. In other cases they are infected when they are opened (such as using the DOS DIR command) or the virus simply infects all of the files in the directory is run from (a direct infector). There are three groups of file infectors.

Viruses of the first group are called *overwriting viruses* because they overwrite their code into an infected file erasing contents. But these viruses are primitive and they can be found very quickly.

Oilier group is called *parasitic or cavity viruses.* The infected file is capable of work fully or partly. Viruses can copy itself into begin, middle or end of a file. They record their code in data known not to be used.

The third group is called *companion viruses.* They don't change files. They make double of infected file so when an infected file is being started a double file becomes managing, it means a virus. For example, companion viruses working with DOS use that DOS firstly runs COM. file. Viruses make double file with the same name and with extension COM and copies itself in this file. During start of an infected file DOS run a COM. file with a virus firstly and then a virus starts an EXE file.

Sometimes *companion viruses* rename file will be infected and record their code in a double file with old name. For example, the file XCOPY.EX is renamed into XCOPY.EXD and a virus record itself in file XCOPY.EXE. When this file is started computer runs a virus code firstly and after the virus starts original XCOPY, saved as XCOPY.EXD. Viruses like these ones were found not only in DOS. They were found in Windows and OS / 2.

It is not only one way to make double files. For example there is a subgroup of companion viruses called path-companion viruses. They use special feature of DOS-PATH: hierarchical record of file location. The virus copies itself in a file

with the same name but situated one level higher. In this case DOS will find a file with a virus.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is a computer virus?
2. How many types of viruses are there? What are they?
3. How many groups of file-Infector do you know?
4. What do companion viruses do?
5. What don't viruses do?
6. What do special feature of POS path-companion viruses use?
7. Computer viruses do spontaneously generate, don't they?
8. What viruses will erase your entire hard disk?
9. How are viruses divided?
10. Viruses don't necessarily let you know that they are there-even after they do something destructive, do they?

Task 3. Match the English words given below with their Russian equivalents:

Задание 3. Соотнесите следующие слова с соответствующим переводом:

• a symptom	• файл-инфектор
• a viral code	• повреждать
• software	• жесткий диск
• direct infector	• злостный вирус
• a bug	• монитор
• an infected program	• компьютерный вирус
• a self-replication	• программная ошибка
• a hard disk	• неопасный вирус
• destructive	• симптом
• a file infector	• программное обеспечение
• a damage	• макровирус
• executable files	• вирусный код

• a malignant virus	• место расположения
• a monitor	• главный вирус
• a computer chip	• сжатые файлы
• a computer virus	• зараженная программа
• compressed files	• резидентный вирус
• a benign virus	• самоответ
• macro virus	• исполнительные файлы
• erasing contents	• разрушение
• a work algorithm	• стирающий содержание
• an application	• алгоритм работы
• a resident virus	• компьютерные чипы
• a place of situating	• приложение

Task 4. Find the sentences with the words and word-combinations given below in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

- a segment of program code;
- executable files;
- a virus payload;
- a viral code;
- a partition from mounting;
- DOS-based computer software;
- Word and Excel macro viruses;
- to make double of infected file.

Task 5. Complete the following sentences corresponding to the contents of the text:

Задание 5. Закончите предложения:

1. Other group is called ...
2. The third group is called ... .
3. Usually a virus has two distinct functions ... .

4. Computer viruses do not ... .
5. Sometime companion viruses rename file will be.
6. Virus copies itself in ... .
7. Chernobyl can be ... .
8. Viruses also don't .... .
9. They must be ….. .
10. Viruses of the first group are called ... .
11. A virus is a piece of ... .
12. This could include erasing a disk ... on your computer.
13. Some viruses programmed ... your entire hard disk.
14. ... on write-protected disks and ... in the case of .... .
15. These are viruses that ... .

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. Some of the more malignant viruses will erase your entire hard disk, or delete files.

2. Computer viruses do infect files on write-protected disks and do infect documents, except in the case of Word macro viruses, which infect only documents and templates written in Word 6.0 or higher.

3. Usually a virus has six distinct functions.

4. There are many groups of file infectors.

5. Nowadays number of viruses is about 55.000.

6. Other group is called parasitic or overwriting viruses.

7. Viruses also don't infect computer hardware such as monitors or computer chips; they only infect software.

8. Virus is a software designed and written to adversely affect your computer.

9. Viruses didn't spontaneously generate.

10. A malignant virus is one that is designed to do no real damage to your computer.

11. A benign virus might alter one or two of your programs so that it doesn't work, as it should.

12. The infected programs second of you system area.

13. In addition, Macintosh virus doesn't infect DOS - based computer software and vice versa.

14. Finally, viruses don't necessarily let you know that they are there - even after do something destructive.

15. In this case DOS wasn't find file with virus.

Task 7. Translate from Russian into Englis:

Задание 7. Переведите с русского языка на английский:

1. Что такое компьютерный вирус?

2. Вирус-это часть программного обеспечения, написанного для того, чтобы неблагоприятно влиять на ваш компьютер, изменяя его работу без вашего ведома и согласия.

3. Вирус имеет две отличительные функции: нанесение запланированного ущерба и самораспространение.

4. Существуют безвредные вирусы и вирусы, наносящие большой ущерб компьютеру.

5. Вирусы могут повредить данные, изменить программы, удалить файлы, стереть информацию на жестком диске.

6. Вирусы не инфицируют файлы на пишущихся защищенных дисках.

7. В настоящее время вирусов около 55000.

8. Появляются новые, неизвестные типы вирусов, которые становятся все сложнее классифицировать.

9. Есть 3 группы вирусов: всепишущие; вирусы-паразиты; вирусы-компаньоны.

10. Установка антивирусных программ позволяет находить и удалять вирусы.

Task 8. Make the sentences negative and interrogative:

Задание 8. Преобразуйте следующие предложения в вопросительную и отрицательную форму:

1. A virus is a piece of software.
2. This is a significant number of viruses.
3. A malicious virus might alter one or more of your program.
4. Some viruses are programmed specifically to damage the data on your computer programs.
5. Computer viruses infect files on write-protected disks.
6. Number of viruses is about 55.000.
7. These are three groups of file infectors.
8. Viruses can copy itself into begin, middle or end of a file.
9. This is a subgroup of companion viruses path-companion viruses.
10. Virus copies itself in a file.

LESSON 17-18

SYNOPSIS [1]

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The history of computer viruses has begun recently, but it has already become legendary. Almost everyone knows a few fables about these creatures, but hardy anyone understands what a computer virus is.

A computer virus is an executable code able to reproduce itself. Viruses are an area of pure programming, and, unlike other computer programs, carry intellectual functions on protection from being found and destroyed. They have to fight for survival in complex conditions of conflicting computer systems.

Viruses seem to be the only alive organisms in the computer environment, and yet another their main goal is survival. That is why they may have complex crypting/decrypting engines, which is indeed a sort of a standard for computer viruses nowadays, in order to carry out processes of duplicating, adaptation and disguise.

Viruses are written by lone wolves or programmers groups.
Using special programs called "Virus creators" even beginners in a computer world can build their own viruses. The aim of creation of viruses in such a way is pretty obvious: the author wants to become well-known all over the world and to show his powers. The results of the attempt can be very sad, only real professionals can go famous and stay uncaught. To write something really new and remarkable programmer should have some extra knowledge and skills.

A computer virus group is an informal non-profit organization, uniting programmers-authors of viruses regardless of their qualifications. Everyone can become a member of the club, if he creates viruses, studies them for the reason of creation and spreading. You don't have to know any computer language or write any program code to become a member or a friend of the group. Programming in Assembler is preferred, Pascal, C++ and other high level languages are considered to be humiliating. There are computer virus groups all over the world, few being

more successful than others. It may be pretty hard to get in contact with them since they are quite typical representatives of a computer underground world as well as (free) wares groups. Sometimes, however, creating viruses can become a respectable occupation, bringing constant income. After all, no one but the author of the virus can bring valuable information on the way it should be treated and cured.

Developers of antiviral software gain money from selling their remedy to a new widely hyped by the mass media virus. Agitation can grow so strong that all and everyone dashes to buy an antiviral protection against even a most harmless virus. The ordinal behavior of share indexes in stock exchanges while a computer virus epidemic is to fall. Somehow, the shares of high-tech companies producing antiviral software will soar up to the sky.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is a computer virus?
2. Can you describe those who create viruses?
3. How can a person protect his PC from viruses?
4. What is this information about a computer virus group?
5. Who has written about viruses?
6. What is the aim of creation of viruses?
7. Why may viruses have complex engines?
8. How many viruses do you know?
9. Where is programming considered to be humiliating?
10. What can become a respectable occupation?
11. What is a harmful program for PC?

Task 3. Match the English words given below with their Russian equivalents:

Задание 3. Соотнесите следующие слова с соответствующим переводом:

• a history of	• чистая программа
• a computer virus	• компьютерная программа

• an executable code	• компьютерный язык
• a pure program	• создание вируса
• computer environment	• создатель вируса
• a standard for computer	• история компьютера
• programmer group	• код выполнения
• a special program	• цель вируса
• a "Virus creator"	• компьютерный вирус
• an aim of a virus	• группа компьютерных вирусов
• a computer virus group	• компьютерная среда
• a programmer-author of a virus	• стандарты для компьютера
• a computer language	• группа программистов
• a computer program	• специальная программа
• a creation of a virus	• создатели программных вирусов
• a program code	• вредящая программа
• a computer underground world	• вирус средств СМИ
• an antiviral protection	• программная версия
• a harmless virus	• вскрытая версия программы
• a computer virus epidemic	• безобидный вирус
• a version of program	• компьютерный подпольный мир
• a cracked version of program	• компьютерная вирусная эпидемия
• a harmful program	• антивирусная защита
• a mass media virus	• программный код

Task 4. Find the sentences with the words and word combinations given below in the text:

Задание 4. Найдите в тексте предложения, содержащие нижеследующие слова и выражения:

- an area of pure programming;
- to carry out processes of duplicating, adaptation and disguise;
- a computer virus group;
- a computer underground world;

• antiviral software;

• a sphere of artificial intellect development;

• using cracked versions of programs.

Task 5. Complete the following sentences:

Задание 5. Закончите предложения:

1. The history of computer viruses has begun ... .
2. A computer virus is an ... .
3. Viruses are written by ... .
4. The results of the attempt can be …. .
5. A computer virus group is … .
6. Everyone can become ..... .
7. Developers of antiviral soft ware gain money from … .

Task 6. Say whether the statements given below are true or false:

Задание 6. Определите истинность или ложность следующих предложений:

1. A computer virus is an executable code.

2. They have to fight for survival in a real life.

3. Viruses are written by writers.

4. To write something really new and remarkable programmer shouldn't have some extra knowledge and skills.

5. You didn't have to know any language and write some programs code to become a member or a friend of the group.

6. Computer viruses didn't come for a long time.

7. Developers of antiviral software gain money from selling their remedy to a new widely hyped by the mass medina virus.

Task 7. Translate from Russian into English:

Задание 7. Переведите предложения с русского языка на английский:

1. История компьютерных вирусов началась недавно, но они уже стали легендарными.

2. Вирусы должны бороться за выживание в сложных условиях противоречивых компьютерных систем.

3. Вирусы написаны «одинокими волками» или группами программистов.

4. Компьютерная вирусная группа-неофициальная некоммерческая организация, объединяющая программистов-авторов вирусов независимо от их квалификации.

5. Каждый может стать членом клуба, если он создает вирусы, изучает их по причине создания и распространения.

6. Однако иногда создание вирусов может стать представительным занятием, приносящим постоянный доход.

7. Но не забудьте, что создание, использование и распространение вредных программ для ПК-преступное нарушение, также как и использование версий программ-взломщиков.

Task 8. Find the sentences in Passive Voice in the text:

Задание 8. Найдите в тексте предложения в пассивном залоге:

СЛОВАРЬ АНГЛИЙСКИХ ТЕРМИНОВ
(VOCABULARY)

A

abacus	счеты
to abandon	отказываться; прекращать
ability	способность, возможность
abolish	отменять, исключать
about 300 B.C.	около 300 года до нашей эры
accept	принимать (информацию)
acceptable	приемлемый
access	доступ, обращение; обращаться, иметь доступ
~ time	время доступа
~ database	доступ к базе данных
sequential ~	последовательный доступ
accessible	доступный
accessories	реквизиты
accessory equipment	вспомогательные устройства
accomplish	завершать, заканчивать
accomplishment	завершение; выполнение
according	соответствующий
~ to	в соответствии с
accordingly	соответственно, соответствующим образом
account	расчет, подсчет, счет (банковский); учитывать, подсчитывать
take into ~	принимать во внимание, учитывать
accumulate	накапливать (ся), суммировать, собирать

accumulator	сумматор; накапливающий регистр; устройство суммирования
accuracy	точность; правильность; четкость
accurate	точный, правильный
achieve	достигать, завершать
achievement	достижение, завершение
acquire	приобретать, получать
acquirement	приобретение, получение
acronym	аббревиатура
act	действовать, работать
action	действие, работа, операция
put into ~	приводить в действие
activity	деятельность
A.D.	до нашей эры
adapt	адаптировать(ся); настраивать(ся); приспосабливать(ся)
adapter	адаптер
adaptive	приспосабливающийся
add	сложение, суммирование
added	добавочный, дополнительный
adder	сумматор, устройство (блок) суммирования
addition	сложение, суммирование
in to	в дополнение к; помимо
address	адрес; адресовать; касаться; затрагивать
adequate	адекватный; соответствующий; достаточный; приемлемый
adjacent	смежный; соседний; примыкающий
adjust	регулировать; настраивать, устанавливать
adjusted	достаточно точно приспособленные, чтобы вдевать

delicately enough to thread a needle under water	нитку в иголку под водой
adjuster	регулятор
adjustment	регулировка; настройка; корректировка; подгонка; поправка
advance	продвигаться(ся)
in ~	заранее
advanced	улучшенный; усовершенствованный; (более) эффективный
advancement	продвижение; улучшение; усовершенствование
advantage	преимущество; выгода
to take advantage of smth.	воспользоваться чем-либо
advent	приход; прибытие
advice	совет; рекомендация
advise	советовать; рекомендовать; консультировать
adviser	консультант; справочник
affect	влиять; воздействовать
affordable	возможный; допустимый; по средствам
AGP	ускоренный графический порт
agree	соответствовать; согласовывать (ся)
agreement	соглашение
aid	помошь; содействие
aids	средства; приспособления
aim	цель; нацеливать, направлять
algorithm	алгоритм
align	выравнивать, выстраивать в линию
allocate	распределять; размещать; предоставлять (доступ); выделять

allocation	распределение; назначение; предоставление
allow	допускать; позволять
~ for	учитывать; принимать во внимание
allowable	допустимый
alter	(из)менять(ся)
alteration	изменение; перемена
amaze	поражать; изумлять
AMD (Advanced Micro Devices)	компания AMD – производитель микропроцессоров и принадлежащая ей торговая марка
AMD64	64-битная архитектурамикропроцессора AMD64
amend	исправлять; улучшать
amendment	поправка; исправление
amount	количество; величина; размер; объем; составлять; насчитывать
of damage	степень повреждения
of memory	объем памяти
of time	интервал времени
proper	необходимое количество
amplification	усиление
amplifier	усилитель
amplify	усиливать (ся)
analog	аналог; аналоговый
analog-digital	аналого-цифровой
analyst	аналитик; (системный) разработчик
to anticipate	ожидать; предчувствовать; приближать
aperture	отверстие; скважина; дыра; дырка; щель
appeal	привлекать
appear	появляться; возникать; оказываться

appearance	появление; вид
to append	присоединять
appliance	устройство; прибор
application	приложение; применение; употребление; использование; (прикладная) программа
applied	прикладной
apply	применять (ся); использовать
approach	приближение; подход; метод; приближаться, подходить
top-down	принцип нисходящей разработки
comprehensive	комплексный подход
educational	метод обучения
general	общий подход
graphic	графический метод
self-study	метод самообучения
step-by-step	метод поэтапного решения
training	метод обучения
trial-and-error	метод проб и ошибок; метод подбора
appropriate	подходящий; соответствующий; свойственный; присущий
architect	разработчик архитектуры
architecture	архитектура; структура
communications	архитектура средств связи
computer	архитектура компьютера
disk	структура диска
instruction set	структура системы команд
network	сетевая архитектура
security	архитектура системы защиты
software	структура программного обеспечения

an arithmetic and logic unit	арифметическое / логическое устройство
x86 architecture microprocessor	процессор совместимый с процессором 8086 (сделанный на базе архитектуры процессора 8086 компании «Интел»)
arrange	размешать; располагать; устанавливать; монтировать
icons	выстроить значки
arrangement	размещение; расположение; упорядочение; устройство
array	матрица; решетка; массив; упорядочивать, размещать в массиве
artificial intelligence	искусственный интеллект
assemble	собирать; объединять; монтировать; ассемблировать
assembler	ассемблер
assembly	сборка; монтаж; узел; блок; совокупность; система
associate	соединять; объединять; связывать
associated	(при)соединенный; объединенный; связанный; соответствующий
~ documentation	соответствующая документация
association	объединение; взаимосвязь; совокупность
assurance	гарантия; обеспечение
assure	гарантировать; обеспечивать
attach	подсоединять(ся); подключать(ся); прилагать(ся)
attachment	подсоединение; подключение; (тех.) приспособление
attain	достигать
attempt	попытка; пытаться
at the proper time	в надлежащее время
attitude	положение; ориентация; отношение

autonomous	независимый
auxiliary	вспомогательный; дополнительный
avail	польза; выгода; быть полезным; помогать
availability	готовность; доступность; наличие
available	доступный; имеющийся (в наличии); имеющий место
be ~	быть в наличии; доступный
have ~	иметь в наличии, иметь в распоряжении
when ~	при наличии
widely ~	общедоступный
average	средний
the average job time	среднее время счета задания
avoid	избегать; исключать; устранять; предотвращать
aware	осведомленный; информированный
awareness	осведомленность; информированность

B

background	фон; предпосылка, основа; подготовка; квалификация; навыки (работы)
bar	стержень; полоса; строка
base	база; основа; основание;
data	база данных
information	совокупность информации
knowledge ~	база знаний
user ~	круг пользователей
based	основанный
on the basis of	на основе
batch	пакет; пакетный файл
~ processing	пакетная обработка

benchmark	производительность системы, определяемая в целях сравнения
benefit	выгода; польза; преимущество; помогать; способствовать
bias	смещать; смещение
binary	двоичный
~ coded	в двоичном представлении
bit	бит; двоичный разряд
16-bit performance	работа на базе 16-битного кода
64-bit technology	64-битная технология
64-bit microproccessor market	рынок 64-битных микропроцессоров
blink	мерцание; мигать
board	панель; пульт; плата
chip ~	плата с микросхемами
circuit ~	монтажная плата
key ~	клавиатура
switch ~	панель переключения
bootstrapping	начальная загрузка
branch	ветвь; раздел; отделение; разветвляться; переходить
to breach	пробивать брешь, проламывать (стену, оборону и т.п.)
break	разрыв; прерывание; пауза; прерывать; нарушать (работу); отказывать (о программе)
~ into	внедряться, проникать (в систему)
breakdown	разрушение; поломка
brief	краткий; сжатый
in ~	кратко; вкратце

This brighter emerging beam	Этот более мягкий появляющийся луч
bring	(пре)доставлять; давать
~ into	вводить; заносить в память
~ into action	приводить в действие
~ out	показывать; демонстрировать
browse	просматривать
browser	программа «бродилка»
browsing	просмотр
buffer	буфер; заносить в буфер
bug	ошибка; дефект; недоработка
data ~	ошибка в данных
loop ~	ошибка в цикле
security ~	недоработка системы защиты
bug-free	не содержащий ошибок
bug-test	проверять на наличие ошибок
builder	разработчик; изготовитель; создатель
building	разработка; построение; формирование; создание
bulk	масса; большое количество; основная
burden	издержки; затраты; обязанности;
bus	шина; канал; линия (передачи данных); соединять шиной
control ~	шина управления
data ~	шина данных
input ~	входная шина
input-output ~	шина ввода-вывода
memory ~	шина (доступа) к памяти
button	кнопка; кнопочный

browse ~	кнопка просмотра
cancel ~	кнопка отмены
emergency ~	аварийная кнопка
exit ~	кнопка выхода
reset ~	кнопка сброса
start ~	кнопка запуска
byte	байт; размером в байт

C

cache	кэш; файл для хранения (данных); хранить; сохранять
extra cache	дополнительная кэш; сверхоперативная память
L1 cache	кэш первого уровня (первичная кэш-память, расположенная на одном кристалле с процессором)
L2 cache	кэш второго уровня
secondary cache	вторичная кэш-память; кэш второго уровня (кэш-память, расположенная не внутри микропроцессора, а на системной или какой-либо другой плате)
calculate	вычислять; рассчитывать
calculating device	вычислительное устройство
while calculating	при вычислении
calibrate	градуировать; выверять; настраивать
call	вызов; обращение; вызывать; обращаться; называть
call for	требовать; предусматривать
cancel	отменять; аннулировать; отмена; аннулирование
capability	способность; возможность
capacitor	конденсатор
capacity	емкость; объем; производительность; пропускная способность
media ~	емкость носителя

capture	собирать (данные); переносить; записывать (в память)
to capture information	перехватить информацию
card	плата; карта; карточка
cardfile	картотека
carrier	носитель; держатель; сеть передачи данных
carry	нести; переносить
~ out	выполнять (команду)
cartridge	кассета; картридж
cathode-ray tube	электроннолучевая трубка
cause	заставлять; вынуждать; быть причиной; причина; основание
to cause eye strain	вызывать напряжение глаз
to cause intentional harm	умышленно причинить вред
Celeron	низкобюджетный процессор, разработанный фирмой «Интел»
cell	ячейка; элемент
a central processor	центральный процессор
chain	цепь; цепочка; последовательность
challenge	вызов; трудность; препятствие; представлять трудность
change	изменение; замена; изменять(ся); сменять(ся)
character	символ; знак; буква
~ table	таблица символов
chart	диаграмма; график; схема; таблица; строить график; изображать
bar ~	столбиковая диаграмма
dot ~	точечная диаграмма

line ~	график
pie ~	круговая / секторная диаграмма
check	контроль; проверка; проверять
checkout	проверка; наладка; отладка
chip	кристалл; микросхема
logic chip	логический чип
RAM chip	чип памяти
routing chips	чипы-рутеры
chipset	микропроцессорный набор; набор микросхем
choose	выбирать
cipher	шифр; шифровка
circuit	цепь; контур; электрическая схема
circuitry	(электронные) схемы
clear	чистый; стертый; удаленный; очищать; стирать; удалять
to clock	работать (с такой-то частотой)
clock cycle	тактовая частота (процессора, шины)
clock rate	тактовая частота; синхронизирующая частота; частота тактовых импульсов
clock speed	тактовая частота
close	утрачивать; избавиться; отделываться
code	код; кодировать; программировать; система команд
coding	программирование
to codename	давать кодовое название, наименование
COE	(главный) исполнительный директор
column	столбец; колонка; графа
communicate	сообщать(ся); связывать
communication	связь; сообщение; взаимодействие

comparative	сравнительный
compare	сравнение; сравнивать; соотноситься
comparer / comparator	компаратор; устройство сравнения
compatibility	совместимость
competitive	соперничающий; конкурентный; конкурентоспособный
compile	собирать; составлять; компилировать
compiler	компилятор
complement	дополнение; совершенность; совершенство; множество; комплект
complete	полный; целый; завершенный; завершать; заканчивать
completely	полностью; целиком
compose	составлять; набирать
compromise	компромисс; соглашение
computation	вычисление; расчет
compute	вычислять; рассчитывать
computer	компьютер; вычислительная машина
advanced ~	современный компьютер
all-purpose ~	универсальный компьютер
analog ~	аналоговый компьютер
digital ~	цифровой компьютер
first-generation ~	компьютер первого поколения
general-purpose ~	универсальный компьютер
handheld	карманный компьютер
IBM-compatible ~	ИБМ-совместимый компьютер
mobile ~	портативный / переносной компьютер
notebook ~	блокнотный компьютер

personal ~ [PC]	персональный компьютер
portable ~	портативный компьютер
~ mail	электронная почта
concept	понятие; принцип; концепция
concern	забота; беспокойство; интерес; участие; заинтересованное отношение
to conclude	завершить; заключать
in conclusion	в заключение
condition	условие; состояние; режим
confidence	доверие
confirm	подтверждать
confirmation	подтверждение
delivery ~	подтверждение приема
connect	соединять; подключать; связывать
connection	подключение; установление связи; соединение; схема
consequently	следовательно
consider	рассматривать; учитывать; полагать; считать
considerable	значительный; существенный
considerably	значительно
consortium	консорциум
constant	постоянная; константа
consume	потреблять; расходовать
consumer	потребитель; абонент
consumption	потребление; расход
power ~	расход энергии
content	содержание; смысл
contrast	контраст; противоположность

as ~ed with	в отличие
in ~	напротив; наоборот
contribute	содействовать; способствовать; вносить вклад
contribution	вклад; содействие
control	управление; регулирование; управлять; регулировать
access ~	управление доступом
device ~	управление устройством
distance ~	дистанционное управление
error ~	контроль за ошибками
~ generator	генератор управления
inventory ~	инвентаризация; переучет
~ panel	панель управления
~ programs	управляющие программы
~ signals	сигналы управления
~ unit	блок управления
controversial	спорный; сомнительный; поставленный под сомнение; дискуссионный
convenience	удобство; пригодность
convenient	удобный; пригодный
conversion	преобразование
convert	преобразовывать
converter	преобразователь; конвертор
convey	передавать; сообщать
conveying	передача (информации)
copy	копия; экземпляр; копировать
core	ядро; оперативная память; суть; основная часть
dual-core	двуядерный

processor core	ядро процессора
Core Image Library	загрузочная библиотека
correct	верный; правильный; нужный; требуемый; исправлять
correction	исправление; устранение (неисправности); коррекция
corrective	корректирующий
corrector	корректор; блок или программа корректирования
corrupt	разрушать; портить; искажать; искаженный
corrupted	искаженный; запорченный
corruption	разрушение; искажение; порча; повреждение
data ~	искажение данных
cost	стоимость; цена
cost-effective	экономичный; экономически оправданный
count	счет; подсчет; отсчет; считать; подсчитывать
counter	счетчик;
binary ~	двоичный счетчик
character ~	счетчик символов
data ~	счетчик (элементов) данных
instruction ~	счетчик команд
pulse ~	счетчик импульсов
sequence ~	счетчик команд
software ~	программный счетчик
storage ~	накапливающий счетчик
time-out ~	счетчик времени ожидания
countess	графиня
to couple	соединять; связывать; ассоциировать
CPU	центральный процессор

CPU design	модель центрального процессора
crease	складка; морщинка; мяться
create	создавать; формировать
creation	создание; формирование
crime	преступление
current-address register	регистр текущего адреса
current injection logic circuits	схемы с токовой инжекторной логикой
curriculum	учебная программа
cursor	стрелка; указатель
cycle	цикл; период; такт; этап

D

damage	повреждение; разрушение
data	данные; информация
application ~	данные прикладной программы
approximate ~	приближенные данные
available ~	имеющиеся данные
bad ~	неверные (искаженные) данные
calculation ~	расчетные данные
check ~	контрольные данные
help ~	справочные данные
missing ~	недостающие (отсутствующие) данные
~ processing	обработка данных
source ~	исходные данные
database	база данных; заносить в базу данных
deal (with)	иметь дело (с); работать
dealer	посредник; поставщик

debug	отлаживать (программу)
debugger	отладчик
debugging	отладка; наладка
decide	решать; принимать решение
decision	решение
decode	декодировать
decoder	дешифратор
decrease	уменьшение; снижение; уменьшать; снижать
(by) default	по умолчанию; подразумеваемый; умолчание; стандартный параметр
defector	перебежчик за границу
deficiency	недостаток; нехватка; отсутствие
define	определять; задавать
definition	определение; задание
degree	степень; мера;
~ of compatibility	степень совместимости
~ of protection	степень защиты
~ of security	степень безопасности
delay	задержка; запаздывание; задерживать; откладывать
delete	удалять; стирать; очищать
deleter	программа удаления
deletion	удаление; стирание
delivery	подача; доставка; поставка
demagnetize	размагничивать
demand	требование; запрос; требовать; запрашивать
density	плотность; удельный вес
data ~	плотность записи данных
drive ~	плотность дисковода

packing ~	плотность упаковки
storage ~	плотность заполнения памяти
to deny	отрицать; отвергать
departure (for, from)	отступление; отклонение; отход
depend on	зависеть от (чего-либо)
dependence	зависимость
dependent	зависимый; зависящий
depending	в зависимости от
deposit	помещать; размещать
depository	склад; хранилище
at depths as low as	на глубинах до
derivative	производный; выведенный; вторичный; деривативный
descriptive	описательный
design	проектирование; конструирование; разработка; построение
to designate	обозначать; назначать
designation	обозначение; называние; указание; знак
desktop computer	настольный (стационарный) компьютер
destine	предназначать
detail	деталь; подробность
in ~	подробно; детально
detect	обнаруживать; выявлять
detection	обнаружение; выявление
error ~	выявление ошибок
failure ~	обнаружение неисправностей; выявление ошибок
detector	детектор; средство обнаружения; датчик

to deteriorate	ухудшаться
to determine	определять; устанавливать (с помощью расчетов, рассуждений, проведения расследования и т.п.)
device	устройство; прибор; аппарат; приспособление
accounting ~	счетное устройство
alarm ~	сигнальное устройство
clock ~	датчик времени; таймер
computing ~	вычислительное устройство; способ вычислений
control ~	устройство управления
drawing ~	чертежное устройство
encoding ~	кодирующее устройство
incompatible ~	несовместимое устройство
measuring ~	измерительное устройство
pen ~	чертежное устройство; световое перо
plotting ~	чертежное устройство
printing ~	печатающее устройство
recording ~	записывающее устройство
sensing ~	датчик; детектор
switching ~	переключатель
devise	разрабатывать; изобретать
die	матрица
digit	цифра; разряд (числа); знак
binary ~	двоичная цифра
binary-coded ~	цифра в двоичной кодировке
check ~	контрольный разряд
information ~	информационный разряд
input ~	вводимая цифра
significant ~	значащая цифра

digital	цифровой
digitally	цифровом представлении
digit-by(to)-digit	поразрядный
digitize	преобразовывать к цифровому ряду
digitizer	аналого-цифровой преобразователь; графический планшет; сканер
dimension	размер; измерение
direct	направлять; управлять; руководить; указывать
direction	ение; руководство; указание
backward ~	обратное направление
clockwise ~	направление по часовой стрелке
counterclockwise ~	направление против часовой стрелки
data ~	направление передачи данных
forward ~	прямое направление
inverse / reverse ~	обратное направление
printing ~	направление печати
transmission ~	направление передачи данных
directory	каталог; справочник; перечень (данных); руководство
disadvantage	недостаток; неудобство
disagreement	несоответствие; расхождение; противоречие
disappear	исчезать; пропадать
discharge	разгрузка; разгружать, освобождать (систему)
disclose	раскрывать; обнаруживать
disconnect	разъединять; отключать;
discount	не учитывать; не принимать в расчет; скидка
discover	обнаруживать; выявлять
discovery	обнаружение; выявление

discrete	дискретный; отдельный
disintegrate	разделять (ся); распадаться на составные части
disk	диск
blank ~	пустой диск
flexible ~	гибкий диск
floppy ~	гибкий, флоппи-диск
hard ~	жесткий диск
~ capacity	емкость диска
dispatch	отправлять, сообщение
displace	перемещать; смещать
display	дисплей; устройство (визуального) отображения
to display an image	показывать изображение
distinction	отличие; различие
to distinguish	различать; отличать
distortion	искажение
distribute	распределять; распространять
distributed	распределенный; рассредоточенный; распространенный
distribution	распределение; распространение
distributor	распространитель; распределитель
diversity	разнообразие; различие
Dolby Digital	цифровая схема шумоподавления «Долби»
dot	точка; ставить точку
download	загружать; считывать; считывание (файлов) с сервера
dramatically	эффектно; ярко; заметно; впечатляюще; разительно; поразительно; значительно; сильно
drastic	решительный

to draw	рисовать; чертить
drive	привод; дисковод; запоминающее устройство
disk ~	дисковод
magnetic-tape ~	запоминающее устройство на магнитной ленте
driver	драйвер; двигатель
print ~	драйвер печати
software ~	программный драйвер
to drop	падать; резко опускаться; снижаться
DTS	система передачи данных
dual layer	двуслойный
due to	благодаря; из-за; вследствие
dump	разгрузка; дамп; вывод; разгружать сбрасывать; выводить
duplication	дублирование; копирование
duplicator	копировальное устройство
DVD	универсальный цифровой видеодиск
DVD-ROM drive	DVD привод
E	
edit	редактировать;
editor	редактор; программа редактирования
EDO RAM (Extended Data Out RAM)	память с расширенными возможностями вывода (с ускоренным доступом и/или с увеличенным временем доступности данных)
effect	действовать; оказывать воздействие; влияние; эффект
effective	действенный; результативный
efficiency	эффективность; коэффициент полезного действия
effort	усилия; работа
e.g. = for example	например

(for instance)	
eject	выбрасывать; выталкивать; выдавать (данные); выброс; выдача
elaborate	разрабатывать; развивать
elaboration	развитие; разработка
eliminable	устранимый
eliminate	устранять; удалять; отменять; ликвидировать
elimination	устранение; отмена
e-mail	электронная почта
e-mailing	отправка (сообщений) по электронной почте
to embed	вводить; внедрять; насаждать
to embrace	охватывать; содержать
emergency	авария; чрезвычайная ситуация; аварийный
to emit	испускать; излучать; выдавать; генерировать (данные)
to emphasize	выделять; подчеркивать
to employ	применять
empty	пустой; свободный
enable	разрешать; позволять; делать возможным; допускать
encapsulate	герметизировать; изолировать; помещать (в пакет)
to encode	кодировать; шифровать
encoder	шифратор; кодирующее устройство; шифровальщик
to encompass	заключать; охватывать
to encounter	(неожиданно) встретить(ся); столкнуться (с кем-л./чем-л.); наталкивать (на трудности и т.п.); столкнуться (с трудностями)
to encrypt	кодировать
engine	механизм; устройство
enrichment	обогащение

ensure	обеспечивать; гарантировать
enter	входить; вводить; заносить
enterprise-level	промышленный
entire	целый; полный; весь
entirely	целиком; полностью
entry	ввод; занесение; вход
enumerate	перечислять
enumeration	перечисление; перечень
environment	среда; окружение; условия (эксплуатации); средства
application ~	прикладная среда
communications ~	коммуникационная среда
computing ~	вычислительная среда
~ Division	раздел оборудования
execution ~	среда выполнения программы
external ~	внешняя среда
~-friendly	экологически чистый
hardware ~	аппаратная среда
management ~	среда / средства управления
network ~	сетевая среда
processing ~	условия обработки
security ~	условия защиты; режим безопасности
software ~	программная среда
user ~	операционная среда
equal	равный; одинаковый
equality	равенство
equation	уравнение;
equip	оборудовать; оснащать
equipment	оборудование; приборы; аппаратура; (аппаратные)

	средства
erase	стирать; удалять
erasing	стирание; удаление; очистка
error	ошибка; погрешность
access	ошибка доступа
coding	программная ошибка
common	типичная ошибка
connection	неправильное соединение
operating	ошибка из-за нарушения правил эксплуатации
outstanding	неустраненная ошибка
permissible	допустимая ошибка
processing	ошибка при обработке данных; погрешность вычисления
startup	ошибка при начальной загрузке
time-out	ошибка из-за неготовности устройства к работе
unrecoverable	неисправимая ошибка
handling	обработка ошибок
trapping	ловушка для ошибок
error-free	не содержащий ошибок
errог-prone	подверженный ошибкам
espionage	шпионаж
essence	сущность; суть
essential	существенный; значительный; неотъемлемый; необходимый
event	событие; случай; исход
examination	исследование; рассмотрение; просмотр; проверка
examine	исследовать; проверять
except for	за исключением

exchange	обмен; замена
execute	выполнять; исполнять
execution	выполнение; исполнение
executive	диспетчер; управляющая программа; операционная система
existence	существование; наличие
exit	выход; выходить
expand	расширять(ся); увеличивать; наращивать (возможности)
expansion	расширение; увеличение;
experience	опыт; квалификация; испытывать (трудности)
to exploit	использовать
exponentiation	возводить в степень
extend	расширять; удлинять
extension	расширение; дополнение; удлинение; продление
extent	мера; степень; рамки; пределы; размер; величина
external	внешний
extract	выделять; извлекать
extraction	извлечение; выборка; выделение
extremely	чрезвычайно; крайне; очень

F

fabricate	изготовлять
fabrication	изготовление
fabrication process	процесс производства
facility	устройство; средство; удобство
facilities	оборудование; приспособления; возможности; средства
communication	средства связи

database	средства (поиска) базы данных
display ~	средства (визуального) отображения / вывода на экран
management ~	средства управления
to fade	постепенно исчезать; расплываться; растворяться; ослабевать; постепенно затихать; замирать (о звуках); постепенно уменьшать силу звука или четкость изображения
fail	сбой; отказ; повреждение; выходить из строя; отказывать; не удаваться
failure	отказ; повреждение; дефект; сбой; ошибка; неудача
famously	здорово; лихо; отлично; превосходно
fault	неисправность; дефект; отказ; сбой; давать сбой; отказывать
assembly ~	дефект сборки
data ~	ошибка в данных
design ~	проектная недоработка
device ~	неисправность устройства
latent ~	скрытый дефект
random ~	случайный сбой /ошибка
feasibility	возможность; осуществимость; выполнимость
feasible	возможный; выполнимый; осуществимый
feature	свойство; признак; особенность; характерная черта
fee	плата
feed	подавать; питать; заправлять (бумагу); вводить (данные)
feedback	обратная связь
field	поле; область; зона; сфера (деятельности)
figurative	переносный; метафорический
figure	цифра; число; вычислять;

figure out	вычислять; определять
file	файл; заносить в файл
batch ~	пакетный файл
common ~	общий файл
data ~	файл / картотека данных
help ~	файл подсказок
input ~	входной файл
output ~	выходной файл
user ~	файл пользователя
~ recovery	восстановление файла
firmware	встроенное программное обеспечение
flagship	фланманский корабль; флагман
flash	вспышка; проблеск; мгновение
flexibility	гибкость; адаптируемость; настраиваемость; изменяемость
flexible	гибкий; адаптируемый; настраиваемый; изменяемый
floppy	гибкий диск; дискета
flow	ход выполнения (программы); последовательность; проходить
flowcharting	построение блок-схемы
font	шрифт; набор символов
alpha-numeric ~	текстовый шрифт
default ~	шрифт, выбираемый по умолчанию; стандартный шрифт
plotter ~	чертежный шрифт
print / type ~	печатный шрифт
foolprof	защищенный от неправильного использования
force	сила; усилие; вынуждать; заставлять; вводить, вставлять (с силой)

foresee	предвидеть
fraction	дробь; доля; часть
frame	блок (данных); структура; система; корпус
framework	структура; система; схема; основа; основания; принципы
fraud	мошенничество; обман
frequency	частота
frustration	крушение; разочарование
fulfill	выполнять; осуществлять; завершать
fulfillment	выполнение; осуществление; завершение
fundamental	основной; существенный; фундаментальный;
furnish	поставлять; снабжать

G

gadget	приспособление; вспомогательное устройство
gadget	приспособление; вспомогательное устройство
gain	достигать; извлекать пользу; выигрывать; выгода; усиление
garment	одежда
gather	собирать(ся)
geared counter wheels	зубчатые счетные колесики
general	общий; универсальный;
generate	генерировать; создавать; производить
generation	создание; формирование; образование; поколение
to get tired	уставать
give back	возвращаться
give out	выдавать; предоставлять
give up	отказывать (об устройстве); не справляться; отказываться

glide	скользить
glance	взгляд; бросить взгляд
to glue	приклеиваться; прилипать; склеиваться
grade	степень; ранг; класс; сорт; упорядочивать; размещать по рангу
grading	классификация; упорядочивание; выравнивание
to graduate from	заканчивать ВУЗ
grapher	самописец
graphic(al)	графический
~ plotting tables	графические планшеты
graphics	графика
~ bus	графическая шина
gross sales	оптовые продажи
groundwork	основа; основание
guard	защита; защищать; предохранять
guidance	управление; наведение (на цель); руководство
guide	руководство; инструкция; справочник
installation ~	инструкция по установке (системы)
on-line ~	электронный справочник
programming ~	руководство по программированию
reference ~	справочное руководство
software ~	руководство по программному обеспечению
troubleshooting ~	основные принципы поиска неисправностей
user's ~	руководство для пользователя

H

habit	навык; привычка; свойство
computing ~s	навыки работы с компьютером
to handle	управлять

handling	обработка; управление; регулирование
data ~	работа с данными
fault / error ~	обработка ошибок
hand-operated	управляемый вручную
hand over	передавать
hand-printed	машинописный
hang (up)	«зависать»; блокировать
hardware	аппаратура; оборудование; аппаратное обеспечение /средства
by ~	аппаратными средствами
computer ~	аппаратное обеспечение компьютера
device ~	аппаратная часть устройства
display ~	аппаратные средства вывода на экран
expansion ~	дополнительное аппаратное обеспечение
support ~	аппаратное обеспечение
harm	вред; ущерб; повреждение
harmful	вредный
harmless	безвредный (о вирусе)
heading	заголовок
healthy	исправный; работоспособный (о системе); незапорченный
“heart-lung” apparatus	аппарат «сердце-легкие»
help	подсказка; справка; помощь
hereafter	далее; в дальнейшем
hereby	таким образом; тем самым
heuristic techniques	эвристические приемы (методы)
hierarchy	иерархия

high-capacity	большой емкости
high-density	с высокой плотностью
high-end	высокобюджетный; мощный; профессиональный; высококачественный; высокго класса; с широкими функциональными возможностями
high-fidelity (Hi-fi)	с высокой точностью воспроизведения
high-frequency	высокочастотный
high-level	высокоуровневый
high-quality	высококачественный
high-reliable	высоконадежный
higher-performance	более высокая производительность
hold	хранить; содержать (данные)
hole	отверстие; гнездо; окно
access ~	окно доступа
connector ~	гнездо разъема
holographic	голографический
home	начало; исходная позиция
hook	рычаг
hook-up	подключать; подсоединять (устройство)
housekeeping operations	вспомогательные операции
human-oriented	ориентированный на пользователя
hurt	повреждение; вред; ущерб; повреждать; вредить
hypertext	гипертекст
Hyper-threading	технология Hyper-threading

I

icon	условный символ; пиктограмма; изображать условно

identical	тот же самый (об одном предмете); такой же; одинаковый; идентичный (to, with)
Identification Division	раздел идентифиации
identifier	идентификатор; имя; обозначение
identify	идентифицировать; распознавать; выявлять (ошибку)
ignorance	незнание
ignorant	несведущий; не знающий
imbed	встраивать; внедрять; включать
immeasurably	неизмеримо; безмерно
immunity	невосприимчивость; нечувствительность
impact	влияние
implement	выполнять; осуществлять
implementation	реализация; осуществление; разработка; внедрение
implementor	конструктор; разработчик
imply	подразумевать; означать
impose	возлагать; налагать
improper	непригодный; недопустимый; неправильный; неподходящий
improve	улучшать; уточнять (данные)
improvement	улучшение; усовершенствование; уточнение (данных)
inaccurate	неточный; ошибочный
inadequate	несоответствующий; непригодный; неприемлемый
in a split second	в долю секунды
incapable	неспособный
include	включать; содержать
incompatible	несовместимый
inconsiderable	незначительный

incorporate	включать; содержать; встраивать; внедрять
increase	увеличивать; возрастать; увеличение; повышение
incredible	невероятный; неслыханный; потрясающий
independent	независимый
to indicate	показывать
an indium-antimony compound with a refractive index	соединение индия с сурьмой с показателем преломления
to infect	заразить
inferior	низший; худший (по качеству)
influence	влияние; воздействие; влиять; воздействовать
initial	первоначальный; исходный
initially	первоначально; в исходном состоянии
inject	вносить; вводить
injection	внесение; введение
injury	повреждение; порча
ink-jet	струйный (о принтере)
innovate	вводить новшества; усовершенствовать
innovation	нововведение; новшество; усовершенствование
innovative	новаторский; инновационный
in order to	для того, чобы
input	ввод; входное устройство; вводить; подавать на вход
character ~	посимвольный ввод
command ~	ввод команды
data ~	ввод данных; устройство ввода данных
disk ~	ввод (данных) с диска
keyboard ~	ввод с клавиатуры
system ~	ввод по запросу системы

input/output	устройство ввода/вывода
inquiry	запрос; опрос
in respect to	в ответ на
to insert	вставлять
install	устанавливать; монтировать
installation	установка; размещение; монтаж; вставка; настройка
instead of	вместо
integrated circuit	интегральная схема
“intelligent”	умный
intensification	усиление; увеличение
intensity	сила; глубина; интенсивность
intentional	умышленный
to intercept	перехватить
interdependent	взаимозависимый
interface	интерфейс; сопряжение; место стыковки; сопрягаться)
common ~	стандартный интерфейс
data ~	информационный интерфейс
database ~	интерфейс (программы) с базой данных
external ~	внешнее сопряжение
flexible ~	гибкий / настраиваемый интерфейс
floppy-disk ~	интерфейс гибкого диска
general-purpose ~	универсальный интерфейс
software/hardware ~	интерфейс ввода-вывода
in terms of	на языке; с точки зрения
internal	внутренний
interprete	интерпретировать; истолковывать

interpreter	интерпретатор; переводчик
interrupt	прерывание; прерываться
intersectoral exchange fund	промежуточный обменный фонд
intricate	сложный; запутанный
introductory	вводный; вступительный; начальный; предварительный
to introduce	вводить
an instruction decoder	дешифратор команд
an instruction register	регистр команд
while an instruction is being executed	во время выполнения команды
intrusion	вторжение
invade	вторгаться; проникать
invalid	неверный; недопустимый; недействительный; необоснованный
invalidate	аннулировать; отменять
invalidity	неверность; недопустимость; необоснованность
invasion	вторжение; проникновение
investigate	исследовать; расследовать
investigation	исследование
invisible	невидимый; неразличимый
involve	включать; вовлекать; вызывать
irregular	неправильный; непостоянный; нестандартный
irrelative	несвязанный; несущественный; не относящийся к делу
irreplaceable	не подлежащий замене; несменный
issue	вывод; выдача; выводить; выдавать (сообщение);

	посылать
item	элемент; составная часть
J	
jack	гнездо
jam	заедание; заклинивание
job	работа; задание; работать
Job Control	управление потоком заданий
join	соединение; соединять
Josephson-junction emory	запоминающее устройство с переходом Джозеф
joystick	джойстик (рычажковое устройство)
junction	соединение; стык
Just as …, so …	точно также как …, так и …
justification	выравнивание (данных); обоснование; доказательство
justify	выравнивать; обосновывать; доказывать; оправдывать
K	
KB	килобайт (1024 байта)
to keep track of numbers	удерживать след чисел
kernel	сердцевина; ядро
key	клавиша; кнопка; переключатель
break ~	клавиша прерывания
control <Ctrl> ~	управляющая клавиша
delete ~	клавиша удаления
end ~	клавиша перехода в конец
enter ~	клавиша ввода
erase ~	клавиша удаления

escape ~	клавиша выхода
home ~	клавиша перехода в начало
insert ~	клавиша вставки
page-down ~	клавиша листания вперед
page up ~	клавиша листания назад
pause ~	клавиша остановы (паузы)
reset ~	кнопка сброса
shift ~	клавиша переключения регистров
keyboard	клавиатура; клавишный
kind	вид; разновидность
knock out	выбивать
know-how	технология; методика; знания; приемы; жарг. ноу-хау
knowledge	знания; осведомленность
~ based system	экспертные системы
be common ~	быть общеизвестным
programming ~	знания в области программирования
knowledgeable	осведомленный; компетентный
L	
lack	отсутствие; недостаток
lagging	отставание; запаздывание
language	
all-purpose / general-purpose ~	универсальный язык
artificial ~	искусственный язык
assembler ~	язык ассемблера
business-oriented ~	язык для (программирования) экономических задач
compiler ~	язык компилятора

data ~	информационный язык
database ~	язык для работы с базой данных
high-level ~	язык высокого уровня
low-level ~	язык низкого уровня
modelling / simulation ~	язык моделирования
programming / development ~	язык программирования
latency	скрытое состояние; задержка между стимулом и реакцией
launch	запускать (программу); вводить в действие
layout	размещение; распределение
lead [led]	свинец
learn-on-line	обучаться с помощью компьютера
letter	буква; символ
level	уровень; выравнивать
access ~	уровень доступа
data ~	информационный уровень
device ~	уровень устройств
error ~	уровень ошибки
hardware ~	аппаратный уровень
input ~	уровень входного сигнала
output ~	выходной уровень
performance ~	степень быстродействия
presentation ~	уровень представления
protection / security ~	уровень / степень защиты
software ~	программный уровень
transmission ~	уровень передаваемого сигнала

Librarian	программа «Библиотекарь»
lifetime	срок службы
life support	жизненный средства к существованию
the light incidence	угол падения света
the light emerging	появление света
line	строка; линия; шина; канал
linear	линейный
link	связь; соединение; связывать; соединять
linkage Editor	программа «Редактор связей»
list	список; перечень; таблица
listing	распечатка; перечень; представление в виде списка
literacy	грамотность
literally	буквально
literate	грамотный
load	загружать; заправлять (ленту); груз
loading	загрузка; заправка;
locate	размещать; располагать
location	местоположение; позиция
logic	логика; логическая последовательность; логический блок
processing ~	логическая последовательность обработки
program ~	логическая последовательность выполнения программы
to look forward	ожидать с нетерпением
loop	цикл; петля; виток; контур
looping logic	логическая схема выполнения (операций) в цикле
loss	потеря; затраты
~ of performance	снижение быстродействия / пропускной

	способности
~ of productivity	снижение производительности труда
data ~	потеря данных
low-end	низкобюджетный; дешевый; любительский
lower	понижать; уменьшать
~ manufacturing	снижение производительности

M

macro definitions	макроопределения
magnetize	намагничивать
mail	(электронная) почта
main	главный; основной
maintain	поддерживать; сохранять; эксплуатировать
malfunction	сбой; отказ; неисправность; отказывать; давать сбой
manage	управлять; организовывать
management	управление; регулирование; организация
data ~	работа с данными
database ~	управление базой данных
error ~	управление обработкой ошибок
software ~	разработка и сопровождение программного обеспечения
task ~	управление ходом выполнения задач
manipulate	управлять; манипулировать; обрабатывать
manipulation	управление; работа; обработка; преобразование
manipulator	блок обработки
manual	руководство; справочник; инструкция; описание
help ~	справочное руководство
operation ~	руководство по эксплуатации
manufacture	изготовлять; производить; разрабатывать

manufacturer	изготовитель; производитель; разработчик
many-fold increase	многократное увеличение
mark	признак; метка; знак; помечать; обозначать; выделять
to master	овладеть
match	сопоставлять; сравнивать; согласовывать; соответствовать
matchmaker	антрепренер; человек, улаживающий спор
mean	значить; подразумевать; средство
meaning	значение; смысл
means	средства; способ
measure	измерять; мера; критерий
measurement	измерение; размер
medium *(pl* media)	среда; носитель; средство; способ; средний
data ~	носитель данных
input ~	носитель для входных данных; способ ввода (данных)
output ~	носитель для выходных данных; способ вывода
portable / removable ~	съемный носитель
meet	удовлетворять (условию); отвечать; соответствовать
~ the demands /requirements	удовлетворять нужды, потребности
memory	память; запоминающее устройство
additional ~	добавочная память
core ~	оперативная память
extended ~	дополнительная память
external ~	внешняя память

high-capacity ~	память большой емкости
internal ~	внутренняя память
main ~	основная память
random-access ~ (RAM)	оперативное запоминающее устройство (ОЗУ)
read-only ~ (ROM)	постоянное запоминающее устройство (ПЗУ)
secondary ~	вторичная память
merge	слияние; объединение; сливать(ся); объединять(ся)
message	сообщение; запрос; посылать сообщение
metaphoric figure of speech	метафорический образ речи
meter	измерительный прибор; датчик; счетчик
metering	измерение
MHz	мегагерц
micro = microcomputer	микрокомпьютер
military	военный
minor	незначительный, несущественный, второстепенный; легкий, несерьезный
minority	меньшинство; меньшее число
missile	снаряд; метательный предмет
mode	способ; метод; режим
free-running ~	режим свободного доступа
operating ~	рабочий режим
programming ~	режим программирования
read-only ~	режим доступа к данным без возможности их изменения
moderate	умерять; смягчать
modification	модификация; изменение; вариант; версия

modify	модифицировать; изменять; преобразовывать
monitor	монитор; дисплей; наблюдать: контролировать; следить
monitoring	мониторинг; наблюдение: контроль
mostly	главным образом; большей частью; преимущественно
motherboard	материнская плата; объединительная плата; системная плата
mouse	мышь
movable	перемешаемый; подвижный; съемный
move	двигать; перемещать; передвигать; переходить
movement	движение; перемещение
MPEG-2	стандарт сжатия движущегося изображения и звука
The MultiMedia Compact Disc (MMCD)	Мультимедийный компакт — дис
multimedia software	мультимедийное программное обеспечение
multiple	множественный; многокомпонентный; составной
multiplication	умножение; усиление
multiply	умножать; усиливать; увеличивать
multi-processing	многопрцессорная обработка данных
mutual	взаимный; общий; совместный

N

need	потребность; необходимость; требовать(ся); быть необходимым
network	сеть; схема; контур
~ drive	сетевой накопитель
noncomparable	несравнимый
noncompatible	несовместимый

noncompatible	невычисляемый
noncontrollable	неуправляемый
north-south	Север — юг
notation	запись; представление; обозначение
binary ~	двоичная система
notepad	блокнот
for nudging	для выталкивания
NTSC	телевизионный стандарт
number	число; количество; цифра
numeric	числовой; цифровой
numerous	многочисленный

O

obey	подчиняться; выполнять команду
objective	цель; целевая функция; требование
observation	наблюдение; отслеживание
observe	наблюдать; следить; соблюдать (правила)
obtain	получать; достигать
occur	происходить; случаться
offset	офсет; возмещать
on-board	расположенный на плате; встроенный; бортовой
ongoing	продолжающийся; постоянный; непрерывный
on-line	неавтономный; подключенный к компьютеру
onset	начало; ввод в действие
open	открывать; начинать; размыкать
operand	операнд
address ~	адресный операнд
operate	работать; действовать; функционировать
operation	работа; действие

basic ~	основной режим работы
cancel ~	операция отмены
computer ~	работа компьютера
debugging ~	работа в режиме отладки
error-free ~	безотказная работа
exchange ~	операция обмена
input / output ~s	операции ввода — вывода
opportunity	возможность
option	выбор; вариант; средство; возможность
optionally	необязательно; по усмотрению; при желании
order	команда; порядок; последовательность
~ of execution	последовательность выполнения
~ of use	очередность использования
put in ~	приводить в порядок
outline	контур; очертание; схема; план; краткое изложение
out-of-order	неисправный
output	вывод; выход; устройство вывода; выводить
hard-copy ~	распечатка; данные, выведенные на печать
soft-copy ~	данные, выведенные на экран
outset	начало; начинание
to overlay	лежать; класть сверху
the overwhelming majority	подавляющее большинство
P	
package	пакет; блок; модуль
application ~	прикладной пакет
data ~	пакет данных
packaged	готовое программное обеспечение

software	
PAL	телевизионный стандарт PAL
particularly	очень; чрезвычайно
password	пароль
pattern	шаблон; образец; форма
~ recognition	распознавание образов
PCM	кодово-импульсная модуляция, импульсно — кодовая (способ координирования аналогового сигнала для передачи его в форме цифрового потока с полосой 61 Kbps)
pebbles	голыш; галька; булыжник
pen	перо
graphic / light ~	световое перо
penetrate	проникать
penetration	проникновение
percive	воспринимать
perform	выполнять; осуществлять; работать; действовать
performance	(рабочая) характеристика; производительность; быстродействие; режим работы; исполнение; выполнение
application ~	скорость работы прикладной программы
computer ~	быстродействие компьютера
device ~	скорость работы устройства
error ~	скорость исправления ошибок
execution ~	скорость выполнения (программы)
memory ~	скорость доступа к памяти; скорость выборки
network ~	пропускная способность
processor ~	быстродействие процессора
permission	разрешение
permit	разрешать; допускать

permitted	допустимый
persist	упорствовать; сохранять
pervade	распространять; охватывать
photocell	фотоэлемент
pick	выбирать; извлекать
playback	воспроизведение; проигрывангие
plotter	графопостроитель
plug	штепсель; вилка; штекер; подключать; подсоединять
point	точка; место; узел; суть; указывать; отмечать
in ~ of	в отношении (чего-л.)
~ out	указывать; отмечать
pointer	указатель; стрелка
polynomial	полиномиальный
possess	владеть; захватывать
potent	могущественный; мощный; убедительный
power	мощность; энергия; питание
~ supply	источник питания
powered by tiny semiconductor chips	приводимые в действие крошечными полупроводниковыми кристаллами (чипами)
precautions	меры предосторожности
precisely	точно; определенно
predefined symbols	заранее заданные символы
predict	предсказывать; прогнозировать
predominant	преобладающий
predominate	преобладать; доминировать
prefer	предпочитать
prepare	подготавливать; составлять

pressure	давление
presumably	предположительно; возможно; вероятно
prevent from	предотвращать; предохранять; препятствовать
prevention	предотвращение; предупреждение
primarily	главным образом; преимущественно; в основном
print	печатать; выводить на экран
~ engine	механизм печати
~ head	головка печати
printer	принтер; печатающее устройство
character ~	символьный принтер
dot-matrix ~	точечно — матричный принтер
graphical / image ~	графический принтер
impact ~	контактный принтер
ink-jet ~	струйный принтер
laser ~	лазерный принтер
letter-quality ~	принтер с типографским качеством печати
line (at-a-time) ~	принтер с построчной печатью
page (at-a-time) ~	~ принтер с постраничной печатью
print out	распечатка; вывод на печать или экран
procedure	процедура; процесс; метод; алгоритм
accounting ~	процедура учета
computational ~	алгоритм вычислений
control ~	метод управления
error-correcting ~	процедура / алгоритм исправления ошибок
formatting ~	процедура / процесс форматирования
installation ~	процедура / процесс установки (системы)
solution ~	алгоритм решения

process	процесс, обработка; обрабатывать
processing	обработка (данных)
processor	процессор; программа обработки
control ~	управляющий процессор
data ~	программа обработки данных
error ~	блок обработки ошибок
general-purpose ~	универсальный процессор
image ~	графический процессор
mail ~	программа обработки сообщений электронной почты
message ~	программа обработки сообщений
numeric ~	числовой процессор
special-purpose ~	специализированный процессор
text / word ~	текстовый процессор
product development	выпуск продукции
program	программа; план; программировать
access ~	программа для доступа
application ~	прикладная программа
archived ~	заархивированная программа
binary ~	программа в двоичном коде
common ~	часто используемая, распространенная программа
compatible ~	совместимая программа
debugging ~	программа отладки
educational ~	обучающая программа
free ~	бесплатная программа
general-purpose ~	универсальная программа
high-performance	программа, выполняемая с большой скоростью

~	
incompatible ~	несовместимая программа
machine language ~	программа в машинном коде
off-line	несетевая программа
on-line	сетевая программа
processing	программа обработки
protected-mode	программа, выполняемая в защищенном режиме
remote	дистанционная программа
running	выполняемая программа
self-loading	самозагружающаяся программа
simulation	программа моделирования
support	вспомогательная программа
utility	сервисная программа
watch-dog	сторожевая программа
programmable	программируемый
programmer	программист
programming	программирование
environment	среда программирования
language	язык программирования
prompt	подсказка; запрос
proof-read	считывать с целью проверки (правильности записи)
proof-reader	корректор
properly	правильно; как следует
property	свойство; качество; собственность pl. параметры; характеристики
propose	предлагать; предполагать
protect	защищать

protection	защита; система / средства защиты
protector	защитное устройство; предохранитель
provide	доставлять; обеспечивать; снабжать; предусматривать
provided	при условии, что; в том случае, если; только если
provider	поставщик; провайдер
provision	обеспечение; снабжение; pl. средства
pulse	импульс
punch	пробивать (отверстия)
punched card	перфокарта
purchase	покупать
purpose	цель; (пред) назначение
push	нажимать; толкать
push-button	кнопка

Q

quality	качество; свойство; характеристика
image	качество изображения
running	рабочая характеристика
quantity	количество; число; величина; значение
absolute	абсолютная величина
alternating	переменная величина
continuous	непрерывная величина
digital	числовое значение
discrete	дискретная величина
input	входная / вводимая величина
unknown	неизвестная величина
variable	переменная величина
quit	выход (из программы); выходить (из программы)

quitting	выход (из программы)
R	
raise	поднимать; повышать; увеличивать; подъем; повышение
RAM	память (запоминающее устройство)
random	случайный; произвольный
random-access	с произвольным доступом
memory (RAM)	память с произвольным доступом
range	диапазон; область; интервал; выстраивать в ряд; располагать в порядке
rapid	быстрый; скорый
rate	степень; скорость; быстрота; оценивать; определять; устанавливать
of change	скорость изменения
of exchange	скорость обмена
of response	быстрота реакции
ratio	отношение; коэффициент; соотношение
reader	устройство считывания
bar-code	устройство считывания штрих-кода
character	устройство считывания / распознавания знаков
reading	чтение; считывание
read-only	работающий только в режиме чтения
read-out	считывающий
reason	причина; основание; довод; обосновывать; заключать
reasonable	разумный; допустимый
to recall	отзывать
receive	принимать; получать
receiver	приемное устройство

record	запись; регистрация; записывать; регистрировать
recorder	устройство / программа регистрации; самописец
data	устройство регистрации данных
tape	запись на (магнит.) ленту
to recycle	повторно использовать
red blood cells	красные кровяные шарики
redirect	перенапрвить
reduce	уменьшать; сокращать; понижать; сжимать
~ precision	уменьшить точность
reduction	уменьшение; сокращение; понижение; сжатие (данных)
reel	катушка; бобина
reference	ссылка; сноска; справочник; руководство
computer	руководство по работе с компьютером
hardware	документация по аппаратному обеспечению
for	для справки
in to	по отношению к
make	ссылаться; упоминать
user	руководство для пользователя
without to	независимо от
referenced	вызываемый; указываемый
reflective	отражающий; отражательный
to regain	обретать снова; возвращать себе; восстанавливать
regardless	несмотря на; независимо от
register	регистр; устройство регистрации; счетчик; датчик; запоминать; выражать
address	адресный регистр
base	базовый регистр

cash	кассовый аппарат
clock	счетчик времени; таймер
command / instruction	регистр команд
counter	регистр счетчика
general-purpose	регистр общего назначения
memory / storage	регистр памяти
operand	регистр операнда
special-purpose	регистр специального назначения
relate	связывать; иметь отношение
relation	отношение; соотношение; зависимость; связь
relative	относительный
relatively	относительно
release	освобождать; выпускать
reliability	надежность
reliable	надежный
reload	перезагружать; повторная загрузка
Relocated library	перемещаемая библиотека
rely	основывать(ся); полагать(ся)
to remain	оставаться; находиться
remote	дистанционный
remote-controlled	дистанционно управляемый
control program	программа дистанционного управления
management	дистанционное управление
remove	удалять; устранять; убирать
rename	переименовывать
rendering program	программа рендеринга/стереопоказа

reoxane	реоксан (полимер)
repertoire	репертуар
replace	заменять; замещать
replacement	замена; замещение; смена; подстановка
represent	представлять
representation	представление
pictorial / picture	графическое представление
request	просьба; заявка
require	требовать
requirement	требование; необходимое условие; потребность
research	исследование; изучение; исследовать
to resemble	походить; иметь сходство
reset	сброс; восстановление; возврат в исходное состояние; сбрасывать; восстанавливать
button	кнопка сброса
computer	перезагружать компьютер
to resolve	решать(ся); принимать решение
resource	ресурс; средство; возможность
data	информационный ресурс
printer	средство вывода на печать
security	средство защиты
software	программный ресурс
storage	ресурс памяти
resolution	разрешающая способность экрана
respect	отношение; учитывать; принимать во внимание; соблюдать
respectively	в указанном порядке; соответственно; соотвтсвующим образом
respond	отвечать; реагировать

response	отклик; реакция; ответ
time	время реакции
responsibility	ответственность
responsible	ответственный
restore	восстанавливать; возвращать (в прежнее состояние)
to restrict	Ограничивать (в пределах чего-либо)
restriction	ограничение
resume	возобновлять, продолжать
retail	розничный; продающий в розницу
retain	сохранять; удерживать
retire	выходить на заслуженный отдых
retrieve	отыскивать; извлекать, выбирать (данные); восстанавливать (файл)
retry	выполнять повторно; повторять
reusable	многократно используемый
reverse	возвращать; двигать в обратном направлении; перематывать назад; обратный ход
reversibility	обратимость; возможность изменить направление на противоположное
reversible	обратимый; реверсивный
reversion	возвращение; возврат
ribbon	лента
a rigid off-repeated programme	жесткая неоднократно повторяющаяся программа
rival	соперник; конкурент; соперничающий; конкурирующий
roller	ролик; валик
rotate	вращать(ся); чередовать(ся)
rotation	вращение; чередование; смена

routine	(стандартная) программа / операция; (установленный) порядок
ruggedness	прочность
rule	правило; управлять; руководить
ruler	(масштабная) линейка
run	выполнять, запускать (программу); работать; запуск; прогон; выполнение
running	запуск; выполнение; работа
run-time version	исполняемая версия

S

safe	безопасный; надежный
safety	безопасность; надежность
save	сохранять; сберегать
scale	шкала; масштаб; определять масштаб; сводить к определенному масштабу; устанавливать пропорции, соотношения
scaling	масштабирование
scan	просмотр; сканирование; развертка; просматривать
scanner	сканер; устройство оптического считывания
bar-code ~	устройство считывания штрих-кода
color ~	цветной сканер
hand / manual ~	ручной сканер
laser ~	лазерный сканер
optical / visual ~	оптический сканер
scanning	просмотр; поиск; развертка; считывание; сканирование
scent	аромат; запах; чутье
schedule	план; расписание; график; составлять; назначать; планировать
scheduling	составление расписания или графика; планирование

science	наука; теория
scientific	научный
scientist	ученый
computer ~	специалист по вычислительной технике и информатике
second-year student	второкурсник
screen	экран; отображать на экране
~ saver	хранитель экрана
screening	вывод на экран
SDRAM	синхронное динамическое ЗУПВ (работающее одновременно с двумя областями адресов)
search	поиск; искать; просматривать
security	безопасность; сохранность
seed	зерно; сеять
seek	искать; поиск
select	выбирать; выделять (на экране)
selection	выбор; выделение
color ~	выбор цвета
directory ~	выбор каталога
drive ~	выбор дисковода / привода
function ~	выбор функции
keyboard ~	выбор клавиатуры
security ~	выбор способа защиты
selective	отбирающий; выбирающий
selectivity	избирательность
semiconductor	полупроводник
bipolar ~	биполярный полупроводник
metal-oxide ~	структура металл — оксид полупроводник

sensibility	чувствительность
sensitive	чувствительный
sensor	датчик
sensory capability	сенсорная способность (способность воспринимать)
separate	отделять(ся); отдельный; изолированный
separation	разделение; отделение
sequence	последовательность
alphabetic ~	алфавитный порядок
arithmetic ~	последовательность арифметических операций
binary ~	двоичная последовательность
character / string ~	порядок следования символов
code ~	последовательность кодов
command / instruction ~	порядок выполнения команд
data ~	порядок размещения данных
digital ~	цифровая последовательность
historical ~	хронологическая последовательность
increasing ~	возрастающая последовательность
in ~	последовательно; по порядку
out of ~	не по порядку
serve	обслуживать; служить
server	сервер; обслуживающая / сервисная программа
service	обслуживание; услуги; сервис
data ~	информационная услуга
debugging ~	средство отладки
installation ~	(сервисная) программа начальной установки
memory ~	программа обеспечения доступа у памяти

running ~	выполняемая сервисная программа
security ~	служба безопасности; средство защиты
servo tracking technology	технология вспомогательного трекинга
set	набор; совокупность; серия
~ of actions	совокупность действий
~ of guidelines	набор рекомендаций
~ of keys	группа клавиш
~ of rules	набор правил
~ of utilities	набор сервисных программ
~ off	отключать
~ on	включать
severe	строгий, суровый; требовательный
shape	форма; придавать форму
share	совместно использовать; делиться (информацией); часть; доля
sharing	совместное использование; коллективный доступ; разделение
shell	раковина, оболочка, кожура
shift	сдвигать; перемещать; сдвиг; смещение; смена регистра
to ship	выйти в свет; появиться
shortcoming	недостаток; изъян; дефект
sibling	брат или сестра; потомство одних родителей
to side	примкнуть; поддерживать (кого — либо)
sign	знак; символ
significance	значимость; важность; значительность; значение; смысл
silicon	кремний
similar	подобный; аналогичный

similarity	сходство; подобие
similarly	подобным образом; так же
simple-to-use	простой в использовании
simplicity	простота
simplify	упрощать(ся)
simplifying	упрощающий
simulate	моделировать; имитировать
simulation	моделирование; имитация
simulator	имитатор; тренажер; программа моделирования / имитации
single layer	однослойный
skill	навык; мастерство
skip	пропускать; переходить
slab	кусок; плита
slide	скользить; сдвигать; смещать
~ rule	логарифмическая линейка
slim	слабый, скудный, небольшой
slot	гнездо; разъем; щель; ниша; слот; область памяти, занимаемая страницей
~-based	слотовая основа
bus ~	гнездо для подключения к шине
expansion ~	разъем для модуля расширения
small-dimensioned	малогабаритный
socket	гнездо
soft	программный; программируемый; электронный (о копии); мягкий
software	программное обеспечение; программные средства
~ compatibility	программная совместимость

~ engineering	технология проектирования программного обеспечения
~ package	программный пакет
~ program	прикладная программа
application ~	прикладное программное обеспечение
database ~	программное обеспечение для работы с базой данных
educational ~	программные средства обеспечения
management ~	управляющие программы
simulation ~	программные средства моделирования
solid body	твердое тело; кристалл; полупроводник
solution	решение
solve	решать (проблему)
sophisticated	сложный
sound	звук; звуковой сигнал
~ board	звуковая плата
~ card	звуковая плата
source	источник; исходное устройство; исходная программа
~ code	исходный код
light ~	источник освещения
~ Statement library	текстовая библиотека исходных программ
space	пространство; область
~ exploration	исследование космоса
~ ship	космический корабль
~ vehicle	космический летательный аппарат
special counter wheel	специальное счетное колесико
specialty	специальность

specific	особый; особенный; определенный; конкретный
specifications	(технические) характеристики, требования
specifics	специальные черты; характерные особенности
specify	задавать; определять; указывать; специфицировать
speed	скорость; спешить; ускорять
~ of operation	быстродействие
~ of response	скорость реакции
spin	вращение; верчение
spray	распылять; разбрызгивать
spread	разброс (значений); протяженность; продолжительность
~ out	расширять(ся); распространять(ся)
network ~	протяженность сети
stable	стойкий; устойчивый; крепкий; прочный
stand for	обозначать
stand-alone	автономный
stare at	уставиться на
start	запуск; начало; запускать
state	состояние; режим; сообщать; утверждать; констатировать; заявлять; формулировать
active ~	рабочее состояние
control ~	режим управления
default ~	стандартный режим (выбираемый по умолчанию)
emergency ~	аварийное состояние
read-only ~	режим чтения без (возможности) записи
statement	заявление, отчет, баланс
step	шаг; этап; стадия; ступень
one ~ at a time	поэтапно; постепенно

~ down	понижать, уменьшать
~ out	выходить (из окна, цикла)
~ up	повышать; увеличивать
conversion ~	этап преобразования данных
program ~	шаг программы
programming ~	этап программирования
step by step	пошаговый; поэтапный
~ instructions	поэтапные команды
sticky	липкий, ткгой
stock	запас; снабжать
~ broker	биржевой брокер
~ market forecasting	биржевые прогнозы
storage	запоминающее устройство; память; хранение; запоминание
archival ~	архивная память
available ~	доступная память
buffer ~	буферная память
computer ~	запоминающее устройство / память компьютера
data ~	хранение данных
input ~	хранение входных данных
intermediate ~	промежуточное запоминающее устройство
internal ~	внутренняя память
magnetic-disk ~	запоминающее устройство на магнитных дисках
magnetic-tape ~	запоминающее устройство на магнитных лентах
main ~	основная память; оперативное запоминающее устройство (ОЗУ)
off-line ~	автономное запоминающее устройство; автономное хранение

on-line ~	оперативно доступная память; неавтономное хранение
sequential-access ~	запоминающее устройство с последовательным доступом
~ unit	память
variable ~	память для хранения переменных
store	хранить; запоминать; заносить / размещать в памяти
string	строка; последовательность
~ of characters	последовательность символов
subsequent	последующий; дальнейший
subsequently	в дальнейшем; затем; впоследствии
substantial	действительный, материальный, реальный, реально существующий; основной, главный; важный, значимый, значительный, немаловажный, существенный, большой
substantially	по существу; в основном; большей частью; главным образом; существенно, в значительной степени
substitute	заменять; замещать
substitution	замена; подстановка
subtitle	субтитр; надпись под изображением
subtract	вычитать
subtraction	вычитание
success	успех
successful	успешный
succession	последовательность
successor	следующий член (последовательности); очередная версия; преемник
suit	походить; соответствовать
suitable	подходящий; соответствующий
suite	набор; комплект; группа; серия

protocol ~	набор протоколов
software ~	комплект программных средств
superior	лучший, превосходный, лучшего качества; превосходящий, больший
to supersede	заменять; замещать; смещать; вытесныть; занимать (чье-л.) место
supplement	дополнение; приложение
supplier	поставщик
supply	подача; питание; ввод; подавать; вводить; снабжать
data ~	ввод данных
paper ~	подача бумаги
power ~	источник питания
support	поддержка; обеспечение; поддерживать; обеспечивать
surface	поверхность
a surgeon	хирург
surround	окружать
~ sound	многоканальный звук
surrounding	окружающий; соседний
switch	переключать; переставлять; переключатель; коммутатор
~ between programs	переходить к выполнению другой программы
~ between windows	переходить из одного окна в другое
~ gears	переключать мощьности
~ in / on	включать; запускать
~ off	выключать; отключать
~ over	переключать
binary ~	двоичный переключатель

button ~	кнопочный переключатель
reset ~	кнопка сброса
system	система; установка; устройство; способ; принцип; методика
artificial-intelligence ~	система искусственного интеллекта
assistance / help ~	справочная система
basic input / output ~	базовая система ввода — вывода
closed ~	замкнутая система
common ~	распространенная система
disk operating ~	дисковая операционная система
executive / operating ~	операционная система
general-purpose ~	универсальная система
healthy ~	исправная система
~ Resident unit	системное резидентное устройство
~ Service program	системная сервисная программа
T	
table	таблица
tabulate	табулировать; заносить в таблицу
tabulation	занесение в таблицу
take	брать; выбирать (команду); принимать (вид, значение)
~ advantage of	воспользоваться
~ care	принимать меры; проследить
~ into account / consideration	учитывать; принимать во внимание
~ notes	записывать; регистрировать

tape	магнитная лента
~ backup unit	устройство получения резервных копий на магнитной ленте
~ decks	комплекты (наборы) перфолент
~ drive	накопитель на магнитной ленте
technique	метод; способ; техника; технические приемы; методика
advanced ~	усовершенствованная методика; современная технология
computing ~	вычислительная техника
display / video ~	техника отображения; способ вывода на экран
formatting ~	способ форматирования
hardware ~	метод аппаратного решения
measuring ~	измерительная техника
numerical ~	метод числовых вычислений
programming ~	методика программирования
software ~	метод программного решения
technology	технология; техника; методика; методы; способы
template	шаблон; маска; образец; форма
temporarily	временно
terminal	терминал; зажим; вывод; конец
alphanumeric ~	текстовый терминал
character ~	текстовый терминал
point-of-sale ~	кассовый терминал
remote ~	удаленный терминал
security ~	защищенный терминал
~ adapter	терминальный адаптер
~ mode	терминальный режим
textural	текстурный

thin-film magnetic medium	тонкопленочный магнитный носитель
thorough	тщательный; подробный
thoroughly	тщательно; как следует
thread	*зд.* нить, трэд (в мультизадачных средах: подпроцесс, запускаемый другим процессом в адресном пространстве этого (запускающего) процесса)
threat	угроза
at a time	за одно время (одновременно)
timing	хронометрирование; согласование во времени; расчет времени
tin and cardboard	жесть и картон
tiny	сверхмалый; крошечный
title	заголовок; название
toggle	тумблер; переключатель
tool	средство; инструмент
total	общий; суммарный; совокупный; итоговый; весь; целый
touch pad	сенсорная панель
tracing	слежение; поиск; выявление; определение; трассировка
fault ~	поиск неисправностей
track	след; траектория; путь; следить; прокладывать путь
trackball	трекбол
transaction	транзакция; группа операций; сделка
transfer	передача; пересылка; переход; передавать; пересылать; переносить
~ rate	скорость пересылки
transform	преобразовывать; превращать; трансформировать
transformation	преобразование; трансформация

transformational, transformative	трансформационный; связанный с преобразованием
transformer	преобразователь; устройство преобразования; трансформатор
transition	переход; превращение; модификация
translate	транслировать; преобразовывать; переводить
translator	транслятор; преобразователь
transmission	передача; пересылка; распространение; пропускание
transmit	передавать; посылать; пропускать
transmitter	передатчик; датчик; преобразователь
transfer	переносить, перемещать
transfer rate	скорость передачи данных
transparent	прозрачный; незаметный; просвечивающий
transparently	с соблюдением прозрачности; незаметным образом
trapping	вылавливание; перехват
error ~	поиск ошибок
tremendous	громадный, огромный
trial	испытательный, пробный; контрольный
trigger	пусковая кнопка
the triggering light beam	запускающий световой луч
trouble	неисправность; pl.нарушения; неполадки; трудности; затруднения
troubleshoot	искать неисправности; диагностировать; отыскивать ошибки
troublesome	досадный, хлопотный
tuner	ручка настройки; программа настройки (параметров)
tuning	настройка; регулирование
Turion 64	Турион 64

turn	поворот; оборот; виток; вращать; поворачивать; превращать
in its ~	в свою очередь
~ off	выключать; отключать
~ on	включать; запускать
tutorial	обучающая программа; средство обучения; учебное пособие
type	тип; вид; разновидность; способ; шрифт; печатать; выводить на печать
~ in	вводить с клавиатуры
~ out	выводить на печать; распечатывать
heavy ~	жирный шрифт
italic ~	курсив
typewriter ~	машинописный шрифт
typewriter	печатающее устройство
U	
unable	неспособный
unacknowledged	неподтвержденный (о приеме сообщений)
unaided eye	невооруженный глаз
unattached	неподсоединенный
unauthorized user	неавторизованный пользователь
unbelievable	невероятный; неправдоподобный
unchanged	неизменный; неизмененный
uncontrollable	неуправляемый; нерегулируемый; неконтролируемый
underline	подчеркивать
underside	нижняя часть; дно, низ; оборотная сторона
undertake	предпринимать
undo	отменять; отмена

unit	устройство; модуль; механизм; узел; блок; элемент
~ of data	блок данных
~ of language	элемент языка
~ of measurement	единица измерения
~ of memory	блок памяти
arithmetic ~	арифметическое устройство
arithmetic and logical ~	арифметико-логическое устройство
central processing ~	центральный процессор
computing ~	вычислительное устройство
control ~	устройство управления
input ~	устройство ввода
input / output ~	блок ввода-вывода
operational ~	работающее устройство
output ~	устройство вывода
power (supply) ~	блок питания
processing ~	устройство обработки; процессор
programming ~	устройство программирования; программатор
reader ~	считывающее устройство
recording ~	записывающее устройство
storage ~	запоминающее устройство
unlawful	незаконный
unload	выгружать; удалять из памяти
unplug	вынимать (разъем из гнезда); отсоединять; отключать
unplugging	отсоединение; отключение
unsanctioned	несанкционированный
unsanctioned	несанкционированный доступ

acces	
unsuitable	неподходящий; непригодный
unused core storage	неиспользованная часть ОЗУ
usage	использование; применение; эксплуатация
use	польза; использовать; применять
in ~	используемый; задействованный
of ~	полезный
of general ~	общеупотребительный
of no ~	бесполезный
make ~ of	применять; использовать
used	используемый; применяемый
useful	полезный; пригодный
useless	бесполезный
user	пользователь; абонент
advanced / expert ~	квалифицированный пользователь
utility	полезность; пригодность; (сервисная) программа; вспомогательное средство
up-to-date	мая последняя версия программы
utilize	использовать
V	
valid	правильный; допустимый
validity	правильность; адекватность; допустимость; пригодность
valuable	ценный; полезный
value	значение; величина; значимость
acceptable ~	допустимое значение
additional ~	дополнительное значение

binary ~	двоичное значение
byte ~	значение в виде байта
character ~	значение кода символа
check ~	контрольное значение
correct ~	правильное значение
data ~	информационное значение
invalid ~	неверное, недопустимое значение
numeric ~	числовое значение
output ~	выводимое / выходное значение
valid ~	верное / допустимое значение
variable	переменная (величина)
variety	разнообразие; разновидность; ряд, множество
vary	менять(ся)
vastly	очень, крайне
velocity	скорость
venerable	многоуважаемый, почтенный
verification	проверка; контроль
verifier	устройство / программа проверки
verify	проверять; контролировать
versatile	разносторонний; многофункциональный; универсальный
versatility	разносторонность; многофункциональность; универсальность
version	версия; вариант
common ~	распространенная версия
data ~	вариант данных
electronic ~	электронная версия
executable ~	исполняемая версия

original ~	первоначальный вариант
VHS	бытовой (кассетный) магнитофон
vice-versa	и наоборот
video resolution	видеоразрешение (разрешение видеоэкрана)
view	вид; представление; просмотр
viewpoint	точка зрения
viewport	окно просмотра / вывода
violation of contract	нарушение контракта
violators	нарушители
virtual	виртуальный; нереальный; несуществующий
visible	видимый
vocal cords	голосовые связки
voltage	(электрическое) напряжение
volume	объем; величина; количество
sound ~	громкость звука
vulnerability	уязвимость; чувствительность; подверженность
vulnerable	чувствительный; уязвимый; подверженный

W

wafer	пластина; подложка
wait	ожидание; ждать, ожидать
want	недостаток; нехватка; потребность; недоставать; требоваться
wanted	нужный; необходимый
warning	предупреждение
watchdog	сторожевая программа
waveguide	волновод
wavelength	длина волны

way	путь; способ; средство; возможность
in a ~	в некотором отношении; до известной степени
in any ~	любым способом; как угодно
in different ~s	разными способами; по-разному
in no ~	ни в коей мере; никак
in the same ~	так же; таким же образом
weather forecasting	прогноз погоды
web	(информационная) сеть
information ~	информационная сеть (сайтов на серверах сети Internet)
World-Wide ~	всемирная информационная сеть
wide area network	глобальная сеть
width	ширина; разрядность (шины, памяти)
withdraw	удалять; убирать; вынимать
withdrawal	удаление; выемка; изъятие
word	слово; текстовый
~ processing	редактирование текстов
~ processing program	текстовый редактор
~ wrap	перенос слов
worksheet	электронная таблица
world wide	глобальный; всемирный
worm	(компьютерный) червь
writer	записывающее устройство; программа записи; автор; разработчик

X

xerocopy	ксерокопия
xerox	ксерокопировать

X-ray	рентгеновский (об излучении монитора)
Y	
yet	тем не менее; все же; еще
yield	выход (результатов); выдача; выдавать; получать (значение)
Z	
zero	нуль; нулевой; обнулять
of ~	равный нулю
to ~ out	обнулять
time ~	начало отсчета времени
zone	зона; область; полоса
buffer ~	буферная область
storage ~	область памяти

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МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ ОБРАЗОВАТЕЛЬНОЕУЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«СЕВЕРО-КАВКАЗСКИЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ»

МЕТОДИЧЕСКИЕ УКАЗАНИЯ

по организации самостоятельной работы магистрантов
по дисциплине «Иностранный язык в сфере профессиональной коммуникации»
для студентов направления подготовки
10.04.01 «Информационная безопасность»
Направленность (профиль)
«Информационная безопасность киберфизических систем»

Ставрополь,
2026

Учебное пособие для самостоятельной работы составлено в соответствии с Федеральным государственным образовательным стандартом высшего профессионального образования, рабочим учебным планом и программой и включает специализированные тексты, лексико-грамматические упражнения и глоссарий, содержащий терминологические единицы.

Учебное пособие предназначено для студентов специальностей факультет математики и компьютерных наук имени профессора Н.И. Червякова очной и заочной форм обучения, изучающих дисциплины «Иностранный язык (английский язык)».

Технологическая карта самостоятельной работы обучающихся дисциплине «Иностранный язык в сфере профессиональной коммуникации»

Коды реализуемых компетенций, индикатора(ов)	Вид деятельности студентов	Средства и технологии оценки	Объем часов, в том числе		
			СРС	Контактная работа с преподавателем	Всего
1 семестр					
ИД-1$_{УК-4}$ ИД-2$_{УК-4}$	Аннотирование, реферирование литературы, подбор и систематизация источников материала, составление библиографических списков, интернет-источников по теме (разделу)	Зачетное задание	16.00	2	18.00
ИД-1$_{УК-4}$ ИД-2$_{УК-4}$	Перевод статьи из иностранного источника по заданной тематике	Текст перевода	16.00	2	18.00
ИД-1$_{УК-4}$ ИД-2$_{УК-4}$	Подготовка интернет-обзора по заданной тематике	Зачетное задание	16.00	2	18.00
ИД-1$_{УК-4}$ ИД-2$_{УК-4}$	Самостоятельное изучение литературы	Собеседование	16.00	2	18.00
Итого за 1 семестр			64.00	8.00	72.00
Итого			64.00	8.00	72.00

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федерального университета, 2020

LESSON 1

What is Engineering?

Task 1. Read and translate the text:
Задание 1. Прочитайте и переведите текст:

Engineering is a term applied to the profession in which knowledge of the mathematical and natural sciences, gained by study, experience, and practice, is applied to the efficient 4 use of the materials and forces of nature. The term engineer properly denotes a person who has received professional training in pure and applied science, but is often loosely used to describe the operator of an engine, as in the terms locomotive engineer, marine engineer, or stationary engineer. In modern terminology these latter occupations are known as crafts or trades. Between the professional engineer and the craftsperson or tradesperson, however, are those individuals known as subprofessionals or paraprofessionals, who apply scientific and engineering skills to technical problems; typical of these are engineering aides, technicians, inspectors, draftsmen, and the like. Before the middle of the 18th century, large-scale construction work was usually placed in the hands of military engineers. Military engineering involved such work as the preparation of topographical maps, the location, design, and construction of roads and bridges; and the building efforts and docks; see Military Engineering below. In the 18th century, however, the term civil engineering came into use to describe engineering work that was performed by civilians for nonmilitary purposes. With the increasing use of machinery in the 19th century, mechanical engineering was recognized as a separate branch of engineering, and later mining engineering was similarly recognized. The technical advances of the 19th century greatly broadened the field of engineering and introduced a large number of engineering specialties, and the rapidly changing demands of the socioeconomic environment in the 20th century have widened the scope even further.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is engineering?
2. Can you draw a difference between mathematical and natural sciences?
3. Look up the following words in a dictionary and explain their meanings and usage peculiarities: trade, craft, profession, job, occupation, work and career.
4. Read the text “What is engineering?” and take part in the discussion on the topic "Engineering".

Task 3. Discuss the following problems in group:
Задание 3. Обсудите следующие проблемы в группе:

a) What are the main branches of engineering?
b) What does the field of your specialty deal with?
c) Prove that a modern engineer has to require a basic knowledge of lots of engineering fields.

Task 4. Put the tenses in this dialogue in the correct form: Past simple or Present perfect.

Задание 4. Поставьте времена в правильную форму.

- What (do) today?
- I (work) on my project. I (search) the Web for sites on digital cameras.
- I (find) any good ones?
- I (find) several company sites - Sony, Canon,... but I (want)
- one which (compare) all the models.
- Which search engine (use)?
- Dogpile mostly, (ever use) it?
- Yes, I (try) it but I (have) more luck with Ask Jeeves. Why don’t you try it?
- I (have) enough for one night. I (spend) hours on that project.
- I (not start) on mine yet.
- Yeh? I bet you (do) it all.

Task 5. How do you think these professions might use computers? Compare answers with others in your group.

Задание 5. Как Вы думаете, могут ли данные профессии использовать компьютеры?

1. architects interior
2. designers farmers
3. landscape gardeners
4. musicians rally drivers
5. sales people

LESSON 2

Modern Engineering Trends

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Scientific methods of engineering are applied in several fields not connected directly to manufacture and construction. Modern engineering is characterized by the broad application of what is known as systems engineering principles. The systems approach is a methodology of decision-making in design, operation, or construction that **adopts** the formal process included in what is known as the scientific method; an interdisciplinary, or team, **approach**, using specialists from not only the various engineering disciplines, but from **legal**, social, aesthetic, and **behavioral** fields as well; a formal **sequence** of procedure employing the principles of operations research. Engineers in industry work not only with machines but also with people, **to determine**, for example, how machines can be operated most efficiently by the workers. A small change in the location of the controls of a machine or of its position with relation to other machines or equipment, or a change in the muscular movements of the operator, often results in greatly increased production. This type of engineering work is called time-study engineering.

Among various recent trends in the engineering profession, licensing and computerization are the most **widespread**. Today, many engineers, like doctors and lawyers, are licensed, by the state.

The **trend** in modern engineering offices is overwhelmingly toward computerization. Computers are increasingly used for solving complex problems as well as for handling, storing, and generating the **enormous** volume of data modern engineers must work with. The National Academy of Engineering, founded in 1964 as a private organization, sponsors engineering programs aimed at meeting national needs, **encourages** new research, and is concerned with the relationship of engineering to society.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What recent trends of engineering professions are considered to be the most widespread?
2. What is the influence of computerization process on the contemporary level of high-tech development?
3. Characterize modern engineering trends of our century.

Task 3. Read the text "Modern Engineering Trends". Discuss the following problems in group:

Задание 3. Прочтите текст. Обсудите следующие проблемы в группе:

a) What are the principles modern engineering is characterized by?

b) What do you know about The National Academy of Engineering?

Task 4. Find the answers to these questions in the following text.

Задание 4. Найдите ответы на данные вопросы.

1. Name some types of devices that use 'computers on a chip'.
2. What uses of handheld computers are mentioned in the text?
3. What smart devices are mentioned in the text?
4. What are smart cards used for?
5. What are the advantages of multimedia? What can medical expert systems do?
6. How can computers help the disabled?
7. What types of computing systems are made available to people in remote locations using electronic classrooms or boardrooms?
8. What aspects of computing can people power determine?

Computers Make the World Smaller and Smarter

The ability of tiny computing devices to control complex operations has transformed the way many tasks are performed, ranging from scientific research to producing consumer products. Tiny 'computers on a chip' are used in medical equipment, home appliances, cars and toys. Workers use handheld computing devices to collect data at a customer site, to generate forms, to control inventory, and to serve as desktop organisers.

Not only is computing equipment getting smaller, it is getting more sophisticated. Computers are part of many machines and devices that once required continual human supervision and control. Today, computers in security systems result in safer environments, computers in cars improve energy efficiency, and computers in phones provide features such as call forwarding, call monitoring, and call answering.

These smart machines are designed to take over some of the basic tasks previously performed by people; by so doing, they make life a little easier and a little more pleasant. Smart cards store vital information such as health records, drivers' licenses, bank balances, and so on. Smart phones, cars, and appliances with built in computers can be programmed to better meet individual needs. A smart house has a built-in monitoring system that can turn lights on and off, open and close windows, operate the oven, and more.

With small computing devices available for performing smart tasks like cooking dinner, programming the VCR, and controlling the flow of information in an organization, people are able to spend more time doing what they often do best - being creative. Computers can help people work more creatively.

Multimedia systems are known for their educational and entertainment value, which we call 'edutainment'. Multimedia combines text with sound, video, animation, and 45 graphics, which greatly enhances the interaction between user and machine and can make information more interesting and appealing to people. Expert systems software enables computers to 'think' like experts, so Medical

diagnosis expert systems, for example, can help doctors pinpoint a patient's illness, suggest further tests, and prescribe appropriate drugs.

Connectivity enables computers and software 55 that might otherwise be incompatible to communicate and to share resources. Now that computers are proliferating in many areas and networks are available for people to access data and communicate with others, № personal computers are becoming interpersonal PCs. They have the potential to significantly improve the way we relate to each other. Many people today telecommute - that is, use their computers to stay in touch 65 with the office while they are working at home. With the proper tools, hospital staff can get a diagnosis from a medical expert hundreds or thousands of miles away.

Similarly, the disabled can communicate more го effectively with others using computers.

Distance learning and videoconferencing are concepts made possible with the use of an electronic classroom or boardroom accessible to people in remote locations. Vast databases 75 of information are currently available to users of the Internet, all of whom can send mail messages to each other. The information superhighway is designed to significantly expand this interactive connectivity so that so people all over the world will have free access to all these resources.

People power is critical to ensuring that hardware, software, and connectivity are effectively integrated in a socially responsible 85 way. People - computer users and computer professionals - are the ones who will decide which hardware, software, and networks endure and how great an impact they will have on our lives. Ultimately people power so must be exercised to ensure that computers are used not only efficiently but in a socially responsible way.

Task 5. Mark the following statements as True or False:

Задание 5. Отметьте следующие утверждения Истина или Ложь.

1. Desktop organisers are programs that require desktop computers.

2. Computers are sometimes used to monitor systems that previously needed human supervision.

3. Networking is a way of allowing otherwise incompatible systems to communicate and share resources.

4. The use of computers prevents people from being creative.

5. Computer users do not have much influence over the way that computing develops.

LESSON 3

Fields of Engineering

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The main branches of engineering are Aeronautical and Aerospace Engineering, Chemical Engineering, Civil Engineering, Electrical and Electronics Engineering, Electric Power and Machinery,

Electronics, Communications and Control, Computers, Geological and Mining Engineering, Industrial or Management Engineering, Mechanical Engineering, Military Engineering, Naval or Marine Engineering, Nuclear Engineering, Safety Engineering, Sanitary Engineering, Modern Engineering Trends, the engineer who works in any of these fields usually requires a basic knowledge of the other engineering fields, because most engineering problems are complex and **interrelated**. Thus a chemical engineer designing a plant for the electrolytic **refining** of metal **ores** must deal with the design of structures, machinery, and electrical devices, as well as with **purely** chemical problems. Besides the principal branches discussed below, engineering includes many more specialties than can be described here, such as acoustical engineering, architectural engineering automotive engineering, ceramic engineering, transportation engineering, and textile engineering.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. You are going to read a set of texts about the main branches of engineering. What branches of engineering do you know?

2. Divide into groups and take part in a round-table discussion of principal branches of engineering.

3. Do you as an up-to-date engineer have a basic knowledge of other engineering fields?

Task 3. Describe how you use computers in your study and in your free time.
Задание 3. Опишите, как Вы используете компьютер в обучении и в своё свободное время.

Task 4. What do these abbreviations mean? Use the Glossary if necessary.
Задание 4. Что означает данная аббревиатура? Используйте Глоссарий по необходимости.

- CD-ROM
- RDRAM
- MB
- GHZ
- AGP
- SDRAM
- SVGA

LESSON 4

Automation

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Automation is the system of manufacture performing certain tasks, previously done by people, by machines only. The sequences of operations are controlled automatically. The most familiar example of a highly automated system is an assembly plant for automobiles or other complex products. The term automation is also used to describe nonmanufacturing systems in which automatic devices can operate independently of human control. Such devices as automatic pilots, automatic telephone equipment and automated control systems are used to perform various operations much faster and better than could be done by people. Automated manufacturing had several steps in its development. Mechanization was the first step necessary in the development of automation. The simplification of work made it possible to design and build machines that resembled the motions of the worker. These specialized machines were motorized and they had better production efficiency. Industrial robots, originally designed only to perform simple tasks in environments dangerous to human workers, are now widely used to transfer, manipulate, and position both light and heavy work pieces performing all the functions of a transfer machine. In the 1920s the automobile industry for the first time used an integrated system of production. This method of production was adopted by most car manufacturers and became known as Detroit automation. The feedback principle is used in all automatic-control mechanisms when machines have ability to correct themselves. The feedback principle has been used for centuries. An outstanding early example is the flyball governor, invented in 1788 by James Watt to control the speed of the steam engine. The common household thermostat is another example of a feedback device. Using feedback devices, machines can start, stop, speed up, slow down, count, inspect, test, compare, and

measure. These operations are commonly applied to a wide variety of production operations. Computers have greatly facilitated the use of feedback in manufacturing processes. Computers gave rise to the development of numerically controlled machines. The motions of these machines are controlled by punched paper or magnetic tapes. In numerically controlled machining centres machine tools can perform several different machining operations. More recently, the introduction of microprocessors and computers have made possible the development of computer-aided design and computer-aided manufacture (CAD and CAM) technologies. When using these systems a designer draws a part and indicates its dimensions with the help of a mouse, light pen, or other input device. After the drawing has been completed the computer automatically gives the instructions that direct a machining centre to machine the part. Another development using automation are the flexible manufacturing systems (FMS). A computer in FMS can be used to monitor and control the operation of the whole factory. Automation has also had an influence on the areas of the economy other than manufacturing. Small computers are used in systems called word processors, which are rapidly becoming a standard part of the modern office. They are used to edit texts, to type letters and so on.

Automation in Industry

Many industries are highly automated or use automation technology in some part of their operation. In communications and especially in the telephone industry dialing and transmission are all done automatically. Railways are also controlled by automatic signaling devices, which have sensors that detect carriages passing a particular point. In this way the movement and location of trains can be monitored. Not all industries require the same degree of automation. Sales, agriculture, and some service industries are difficult to automate, though agriculture industry may become more mechanized, especially in the processing and packaging of foods. The automation technology in manufacturing and assembly is widely used in car and other consumer product industries. Nevertheless, each industry has its own concept of automation that answers its particular production needs.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What were the first robots originally designed for?
2. What industries use automation technologies?
3. What do the abbreviations CAM and CAD stand for?

Task 3. Read the text "Automation" and discuss the following questions in group:

Задание 3. Прочтите текст и обсудите следующие вопросы в группе:

a) How is the term automation defined in the text?
b) What is the most «familiar example» of automation given in the text?
c) What was the first step in the development of automaton?
d) What was the first industry to adopt the new integrated system of production?
e) What is feedback principle?
f) What is FMS?

Task 4. Match each item in Column A with its function in Column B. Then describe its function in two ways.

Задание 4. Соедините каждое подходящее утверждение из колонки А с колонкой В. Затем опишите их функцию.

A Item	B Function
RAM	controls the cursor
processor	inputs data through keys like a typewriter
mouse	displays the output from a computer on a screen

clock	controls the timing of signals in the computer
floppy drive	reads DVD-ROMs
monitor	reads and writes to removable magnetic disks
keyboard DVD-ROM drive	holds instructions which are needed to start up the computer
cache	holds data read or written to it by the processor
ROM	provides extremely fast access for sections of a program and its data
RAM	controls all the operations in a computer

Task 5. With the help of the Glossary if necessary, describe the functions of these items.

Задание 5. С помощью Глоссария опишите функции данных слов.

Scanner

Printer

ATM

PDA

Hard disk drive

Supercomputer

Mainframe computer

Barcodes

Swipe cards

Memory

LESSON 5

Types of Automation

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Manufacturing is one of the most important application areas for automation technology. There are several types of automation in manufacturing. The examples of automated systems used in manufacturing are described below.

1. Fixed automation, sometimes called «hard automation» refers to automated machines in which the equipment configuration allows fixed sequence of processing operations. These machines are programmed by their design to make only certain processing operations. They are not easily changed over from one product style to another. This form of automation needs high initial investments and high production rates. That is why it is suitable for products that are made in large volumes. Examples of fixed automation are machining transfer lines found in the automobile industry, automatic assembly machines and certain chemical processes.

2. Programmable automation is a form of automation for producing products in large quantities, ranging from several dozen to several thousand units at a time. For each new product the production equipment must be re-programmed and changed over. This reprogramming and changeover take a period of non-productive time. Production rates in programmable automation are generally lower than in fixed automation, because the equipment is designed to Facilitate product changeover rather than for product specialization. A numerical-control machine-tool is a good example of programmable automation. The program is coded in computer memory for each different product style and the machine-tool is controlled by the computer program.

3. Flexible automation is a kind of programmable automation. Programmable automation requires time to re-program and change over the production equipment for each series of new product. This is lost production time, which is

expensive. In flexible automation the number of products is limited so that the changeover of the equipment can be done very quickly and automatically. The reprogramming of the equipment in flexible automation is done at a computer terminal without using the production equipment itself. Flexible automation allows a mixture of different products to be produced one right after another.

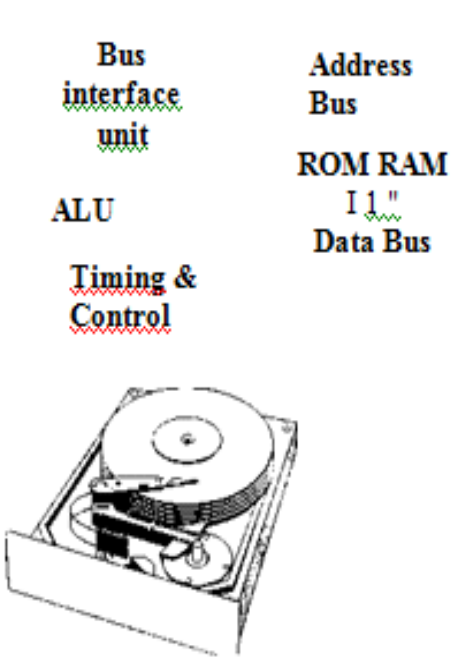
Task 2. Answer the following questions:
Задание 2. Ответьте на следующие вопросы:

1. What is the most important application of automation?
2. What are the types of automation used in manufacturing?

Task 3. Read the text "Types of Automation" and discuss the following questions in group:
Задание 3. Прочитайте текст и обсудите следующие проблемы в группе:

a) What is fixed automation?
b) What are the limitations of hard automation?
c) What is the best example of programmable automation?
d) What are the limitations of programmable automation?
e) What are the advantages of flexible automation?

Task 4. Study these examples of prepositions of place.
Задание 4. Изучите эти примеры предлогов места.



1 Data moves *between* the CPU and RAM.
2 Data flows *from* ROM to the CPU.
3 A program is read *from* disk *into* memory.
4 Data is transferred *along* the data bus.
5 The address number is put onto the address bus.
6 The hard disk drive is *inside* a sealed case.
7 Heads move *across* the disk.
8 Tracks are divided *into* sectors.

Task 5. Complete each sentence using the correct preposition.

Задание 5. Заполните каждое предложение, используя правильный предлог.

- The CPU is a large chip …… the computer.
- Data always flows the CPU …… the address bus.
- The CPU can be divided …… three parts.
- …… data flows the CPU and memory.
- Peripherals are devices…… the computer but linked it.
- The signal moves ……the VDU screen one …… side the other.
- …… the CPU puts the address the address bus.
- …… the CPU can fetch data memory the data…… bus.

LESSON 6

Robots in Manufacturing

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Today most robots are used in manufacturing operations. The applications of robots can be divided into three categories:

1. material handling
2. processing operations
3. assembly and inspection.

Material-handling is the **transfer** of material and loading and unloading of machines. Material-transfer applications require the robot to move materials or work parts from one to another. Many of these tasks are relatively simple: robots **pick up3** parts from one conveyor and place them on another. Other transfer operations are more complex, such as placing parts in an **arrangement4** that can be calculated by the robot. Machine loading and unloading operations **utilize a** robot to load and unload parts. This requires the robot to be equipped with a **gripper** that can **grasp** parts. Usually the gripper be designed specifically for the particular part geometry. In robotic processing operations, the robot manipulates a tool to perform a process on the work part. Examples of such applications include **spot welding**, **continuous arc welding** and **spray painting**. Spot welding of automobile bodies is one of the most common applications of industrial robots. The robot positions a spot welder against the automobile panels and **frames** to join them. Arc welding is a continuous process in which robot moves the welding rod along the welding seam. Spray painting is the manipulation of a **spraypainting gun** over the surface of the object to be coated. Other operations in this category include **grinding** and **polishing** in which a rotating **spindle** serves as the robot's tool. The third application area of industrial robots is assembly and inspection. The use of robots in assembly is expected to increase because of the high cost of **manual labor**. But the design of the product is an important aspect of

robotic assembly. Assembly methods that are satisfactory for humans are not always suitable for robots. Screws and nuts are widely used for fastening in manual assembly, but the same operations are extremely difficult for a one-armed robot.

Inspection is another area of factory operations in which the utilization of robots is growing. In a typical inspection job, the robot positions a sensor with respect to the work part and determines whether the part answers the quality specifications. In nearly all industrial robotic applications, the robot provides a substitute for human labor. There are certain characteristics of industrial jobs performed by humans that can be done by robots:

1. the operation is repetitive, involving the same basic work motions every cycle,
2. the operation is **hazardous** or uncomfortable for the human worker (for example: spray painting, spot welding, arc welding, and certain machine loading and unloading tasks),
3. the work piece or tool are too heavy and difficult to handle,
4. the operation allows the robot to be used on two or three **shifts**.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is the most common application of robots in automobile manufacturing?
2. What operations could be done by robots in car manufacturing industry?

Task 3. Read the text "Robots in Manufacturing" and discuss the following questions in group:

Задание 3. Прочитайте текст и обсудите следующие вопросы в группе.

a) How are robots used in manufacturing?

b) What is «material handling»?

c) What does a robot need to be equipped with to do loading and unloading operations?

d) What does robot manipulate in robotic processing operation?

e) What are the main reasons to use robots in production?

f) How can robots inspect the quality of production?

g) What operations could be done by robots in hazardous or uncomfortable for the human workers conditions**?**

Task 4. Study these 'System upgrades and options' for the computer. Which upgrades and/or options would improve these aspects of this computer?

- capacity
- speed
- protection from damage due to power failure
- network connections

Upgrades and options

3Com 10/100 Ethernet controller
CD-RW Drive
Extra memory module
APC 1400 Smart-UPS
3 Year Next-Business-Day On-site Service

Task 5. Put these instructions for opening a computer in the correct sequence.

Задание 5. Поставьте данные инструкции в правильной последовательности.

- Release the two catches underneath and lift up to remove panel.
- Shut down your computer by choosing Shut Down from the apple menu or the Special menu.
- If there are security screws on the vertical plate on the back of the computer, remove them with Philips screwdriver.
- Unplug all the cables except the power cord from your computer.
- Pulling gently, slide the tray out.

LESSON 7

Human-Computer Interaction

Task 1. Read and translate the text:
Задание 1. Прочитайте и переведите текст:

50 years ago, people hadn't even heard of computers, and today we cannot imagine life without them. Computer technology is the fastest-growing industry in the world. The first computer was the size of a minibus and weighed a ton. Today, its job can be done by a chip the size of a pin head. And the revolution is still going on. Very soon we'll have computers that we'll wear on wrists or even in our glasses and earnings. Such wearable computers are being developed now. Japan's biggest mobiles-phone company has just released its cleverest product - a mobile phone that allows you to stuff the Internet as well as make calls. People are already using the phone to check the news headlines, follow the stock market and download the latest jokes. Soon they will be able to buy cinema tickets and manage their bank accounts. The next generation of computers will be able to talk and even think for themselves. They will contain electronic 'neural networks'. Of course, they'll be still a lot simpler that human brains, but it will be a great step forward. Such computers will help it diagnose illnesses, find materials, understand and control the world's money markets, identify criminals and control space travel. Computer revolution is changing our life and our language, too. We are constantly making up new words or giving new meanings to old ones. Most of computer terms are born in Silicon Valley, the world's top computer-science center.

Task 2. Answer the following questions:
Задание 2. Ответьте на следующие вопросы:

1. What do you know about computer science and technology on the contemporary level?
2. Who has a computer in your group? Ask them what do they use it for?

3. What are the most important applications of computer? (Are computer games just a «waste of time» or it is a nice hobby and a lot of fun?)

4. Read the text “Computers”, do the task below and organize a round - table discussion on the problem.

Task 3. Read the text.

Задание 3. Прочитайте текст.

How a Disk Cache Works

Disk caching works in essentially the same way whether you have a cache on your disk controller or you are using a software-based solution. The CPU requests specific data from the cache. In some cases, the information will already be there and the request can be met without accessing the hard disk.

If the requested information isn’t in the cache, the data is read from the disk along with a large chunk of adjacent information. The cache then makes room for the new data by replacing old. Depending on the algorithm that is being applied, this may be the information that has been in the cache the longest, or the information that is the least recently used. The CPU’s request can then be met, and the cache already has the adjacent data loaded in anticipation of that information being requested next.

Task 4. Mark the following as True or False:

Задание 4. Отметьте следующее Истина или Ложь:

- Cache memory is faster than RAM.
- The processor looks for data in the main memory first.
- Write-through cache is faster than write-back cache.
- Write-back cache requires a more intelligent cache controller.
- Most programs use instructions that are stored in sequence in memory.
- Most cache controllers transfer one item of data at a time.
- Hardware and software disk caches work in much the same way.

Task 5. Study these sentences.

Задание 5. Изучите эти предложения.

- The radar sends out a beam of radio waves.
- The information is stored on a smart card.

In 1 the verb is active and in 2 it is passive, the Present passive. Why is this so? What difference does it make? In 1 the agent responsible for the action is included - the radar. In 2 the agent is not included although j we know what it is - the microprocessor. The passive is often used to describe the steps in a process where the action is more important than the agent and where the agent is already known to the reader. If we need to add the agent, we can do so like this: 3 The information is stored on a smart card *by the microprocessor.*

Task 6. Describe the operation of the new speed trap by converting each of these statements to the Present passive. Add information on the agent where you think it is necessary.

- The first unit records the time each vehicle passes.
- It identifies each vehicle by its number plates using OCR software.
- It relays the information to the second unit.
- The second unit also records the time each vehicle passes.
- The microprocessor calculates the time taken to travel between the units.
- It relays the registration numbers of speeding vehicles to police headquarters.
- A computer matches each vehicle with the DVLC database.
- It prints off a letter to the vehicle owners using mailmerge.

LESSON 8

What is a Computer?

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The term computer is used to describe a **device** made up of a combination of electronic and electromechanical (part electronic and part mechanical) components. Computer has no **intelligence** by itself and is **referred to as hardware**. A computer system is a combination of five elements:

• Hardware

• Software

• People

• Procedures

• Data/information

When one computer system is set up to communicate with another computer system, connectivity becomes the sixth system element. In other words, the **manner** in which the **various** individual systems are **connected** — for example, by phone lines, **microwave transmission**, or satellite — is an element of the total computer system. Software is the term used to describe the instructions that tell the hardware how to perform a task. Without software **instructions**, the hardware doesn't know what to do. People, however, are the most important component of the computer system: they **create** the computer software instructions and **respond** to the procedures that those instructions present. The basic job of the computer is the processing of information.

Computers accept information in the form of instruction called a program and **characters** called **data** to perform mathematical and logical operations, and then give the results. The data is **raw** material while information is organized, processed, **refined and** useful for **decision** making. Computer is used to **convert**

data into information. Computer is also used to store information in the digital form.

Task 2. Answer the following questions:
Задание 2. Ответьте на следующие вопросы:
1. Is computer intelligent?
2. Why so many people are still «computer illiterate»?

Task 3. Read the text "What is a Computer?" and discuss the following questions in group:

Задание 3. Прочитайте текст и обсудите следующие вопросы в группе.
a) What does the term «computer» describe?
b) What are five components of computer system?
c) What is connectivity?
d) What is software? What's the difference between hardware and software?
e) Why people are the most important component of a computer system?
f) In what way terms «data» and «information» differ?
g) How does computer convert data into information?

Computers

Virtually unknown just a few decades ago, computer engineering is now among the most rapidly growing fields. The electronics of computers involve engineers in design and manufacture of memory systems, of central processing units, and of peripheral devices. Foremost1 among the avenues now being pursued2 is the design of Very Large Scale Integration (VLSI) and new computer architectures. The field of computer science is closely related to computer engineering; however, the task of making computers more "intelligent", through creation of sophisticated programs or development of higher level machine languages or other means, is generally regarded3 as being in the realm4 of computer science. One current trend in computer engineering is

microminiaturization. Using VLSI, engineers continue to work to squeeze greater and greater numbers of circuit elements onto smaller and smaller chips. Another trend is toward increasing the speed of computer operations through use of parallel processors, superconducting materials, and the like.

Task 4. Answer the following questions:
Задание 4. Ответьте на следующие вопросы:

1. What are the advantages in this sphere of engineering development?
2. What does the abbreviation VLSI mean?
3. Can you describe current trends in computer engineering?

Task 5. Find the answers to these questions in the following text.

- What tool is often used in data mining?
- What Al method is used for the following processes?
- What term is used for the patterns found by neural networks?
- When are clusters used in data mining?
- What types of data storage can be used in data mining?
- What can an analyst do to improve the data mining results?
- Name some of the ways in which data mining is currently used.

Data mining is simply filtering through large amounts of raw data for useful information that gives businesses a competitive edge. This information is made up of meaningful patterns and trends that are already in the data but were previously unseen.

The most popular tool used when mining is artificial intelligence (AI). AI technologies try to work the way the human brain works, by making intelligent guesses, learning by example, and using deductive reasoning. Some of the more popular Al methods used in data mining include neural networks, clustering, and decision trees.

Neural networks look at the rules of using data, which are based on the connections found or on a sample set of data. As a result, the software continually analyses value and compares it to the other factors, and it compares these factors repeatedly until it finds patterns emerging. These ro patterns are known as rules. The software then looks for other patterns based on these rules or sends out an alarm when a trigger value is hit.

Clustering divides data into groups based on similar features or limited data ranges. Clusters are used when data isn't labelled in a way that is favourable to mining. For instance, an insurance company that wants to find instances of fraud wouldn't have its records labelled as fraudulent or not fraudulent. But after analysing patterns within clusters, the mining software can start to figure out the rules that point to which claims are likely to be false.

Decision trees, like clusters, separate the data into subsets and then analyse the subsets to divide them into further subsets, and so on (for a few more levels). The final subsets are then small enough that the mining process can find interesting patterns and relationships within the data.

Once the data to be mined is identified, it should be cleansed. Cleansing data frees it from duplicate information and erroneous data. Next, the data should be stored in a uniform format within relevant categories or fields. Mining tools can work with all types of data storage, from large data warehouses to smaller desktop databases to flat files.

Task 6. Study this description and answer these questions.

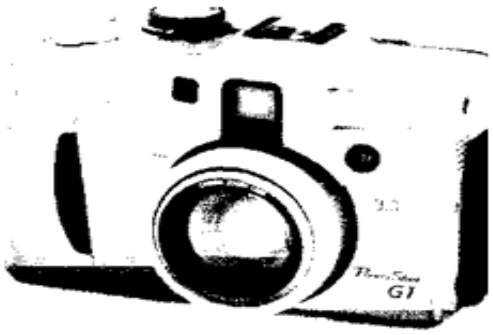
- How do digital cameras differ from conventional cameras?
- How do they work?
- What are their advantages and disadvantages compared to conventional cameras?

Digital cameras store images on memory cards so pictures can be transferred easily to a computer.

A lens focuses the image on to a CCD unit or Charge-Coupled Device where the film would normally be.

So you can aim the camera accurately, there is an optical viewfinder.

So you can play back the images and decide which to keep and which to re-shoot, the image is passed to a small LCD screen on the back of the camera.



LESSON 9

Hardware

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

What is hardware? Webster's dictionary gives us the following definition of the hardware — the mechanical, magnetic, electronic, and electrical devices composing a computer system.

Computer hardware can be divided into four categories:

1) input hardware

2) processing hardware

3) storage hardware

4) output hardware

Input 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 hand held device **connected** to the computer by small cable. As the mouse is **role** 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.

Processing hardware

The purpose of processing hardware is **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 Central Processing Unit (**CPU**31) 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 in your computer, you can perform highly **sophisticated** tasks in a very short time. Memory is the system of component of the computer in which information is stored. There are two types of computer memory: RAM and ROM. **RAM** (random access memory) is the **volatile** computer memory, used for creating loading, and running programs and for manipulating and **temporarily** storing data; **ROM`** (read only memory) is nonvolatile, nonmodifiable computer memory, used to hold programmed instructions to the system. The more memory you have in your computer, the more operations you can perform.

Storage hardware

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 (diskette) — thin, usually flexible plastic disk coated with magnetic material, for storing computer data and programs. There are two formats for floppy disks: 5.25" and 3.5". 5.25" is not used in modern computer systems because of it relatively large size, flexibility and small **capacity25**. 3.5" disks are formatted 1.4 megabytes and are widely used.

CD-ROM (compact disc read only memory) is a compact disc on which a large amount of digitized read-only data can be stored. CDROMs are very popular

now because of the growing speed which CDROM drives can **provide** nowadays.

Output hardware

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, television programs, etc.

Printer is a computer output device that produces a paper copy of data or graphics. **Modem** is an example of communication hardware — an electronic device that makes possible the transmission of data to or from computer via telephone or other communication lines. Hardware comes in many configurations, depending on what the computer system is designed to do. Hardware can fill several floors of a large office building or can fit on your **lap**.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Without what parts computer is unable to work?
2. What is the most expensive part of the hardware?
3. What other hardware devices do you know? What are they for? Do you know how to use them?

Task 3. Read the text "Hardware" and discuss the following questions in group:

Задание 3. Прочитайте текст и обсудите следующие вопросы в группе.

a) What is the Webster's dictionary definition of hardware?

b) What groups of hardware could be defined?

c) What is input hardware? What are the examples of input hardware?

d) What is a mouse designed for? What is a light pen?

e) What is processing hardware? What are the basic types of memory used in a PC?

f) Can a PC-user change the ROM? Who records the information in ROM?

g) What is storage hardware? What is CD-ROM used for? Can a user record his or her data on a CD? What kind of storage hardware can contain more information: CDROM, RAM or ROM?

h) What is modem used for? Can PC-user communicate with other people without a modem?

Task 4. Study this data about storage devices. Then complete the blanks in the following sentences comparing and contrasting the different types.

Device	Read/Write	Speed	Media Capacity	Media Removable	Cost
Floppy disk	Read and write	Slow	Very low	Yes	Low
Fixed hard disk	Read and write	Fast	Very high	No	Medium
Removable hard disk	Read and write	Medium to fast	High	Yes	Medium
CD-ROM	Read only	Medium	High	Yes	Low
CD-R	Recordable	Slow	High	Yes	Medium
CD-RW	Read and write	Medium	High	Yes	Medium
CD-MO	Read and write	Medium	High	Yes	High
DVD-ROM	Read only	Medium	High	Yes	Medium
DVD-	Read and	Medium	Very	Yes	High

RAM	write		high		
Magnetic Tape	Read and write	Very slow	High	Yes	Medium

- You can write to hard disks optical……. disks.
- Floppy disks have a capacity……. other devices.
- CD-ROMs and floppy disks are…….. low priced.
- DVD-RAM has a capacity other optical disks.
- CD-ROMs cannot be re-recorded some other optical disks can be.
- ……..hard disks, you can ……..read from and write…….. to CD-MO drives.
- ……..CD-ROMs, CD-Rs are recordable.
- Magnetic tape is much other devices.
- ……..DVD-RAM and fixed ……..hard disks have very…….. high media capacity.
- Floppy disks are cheap ……..

Task 5. Study this description of a student's first term. What questions might the interviewer have asked to obtain the information in italics?

In her first term Pauline studied 6 subjects1. She had classes on 2 four days' each week. On Monday morning she had IT and Information Systems . Tuesday was a free day for home study. On Wednesday she had Systems Analysis in Room 324 . She studied Computer Architecture on Thursdays. Programming happened on Friday mornings. Communication took place once a week on Friday afternoons. She liked Mr Blunt's classes most. She had a 15-minute coffee break each day and a lunch break from 12.00 to 1.00 .

LESSON 10

Types of Software

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

A computer to complete a job requires more than just the actual equipment or hardware we see and touch. It requires Software — programs for directing the operation of a computer or electronic data. Software is the final computer system component. These computer programs instruct the hardware how to conduct processing. The computer is merely a general-purpose machine which requires specific software to perform a given task. Computers can input, calculate, compare, and output data as information. Software determines the order in which these operations are performed. Programs usually fall in one of two categories: system software and applications software. System software controls standard internal computer activities. An operating system, for example, is a collection of system programs that aid in the operation of a computer regardless of the application software being used. When a computer is first turned on, one of the systems programs is booted or loaded into the computer's memory. This software contains information about memory capacity, the model of the processor, the disk drives to be used and more. Once the system software is loaded, the applications software can be brought in. System programs are designed for the specific pieces of hardware. These programs are called drivers and coordinate peripheral hardware and computer activities. User needs to install a specific driver in order to activate a peripheral device. For example, if you intend to buy a printer or a scanner you need to worry in advance about the driver program which, though, commonly goes along with your device. By installing the driver you «teach» your mainboard to «understand» the newly attached part.

Applications software satisfies your specific need. The developers of application software rely mostly on marketing research strategies trying to

do their best to attract more users (buyers) to their software. As the productivity of the hardware has increased greatly in recent years, the programmers nowadays tend to include as much as possible in one program to make software interface look more attractive to the user. These class of programs is the most numerous and perspective from the marketing point of view. Data communication within and between computers systems is handled by system software. Communications software transfers data from one computer system to another. These programs usually provide users with data security and error checking along with physically transferring data between the two computer's memories. During the past five years the developing electronic network communication has stimulated more and more companies to produce various communication software, such as Web- Browsers for Internet.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What do you think is more expensive — hardware or software?
2. Has anyone in your group ever purchased software?
3. Why do you think piracy (audio, video, computer software) still exists?

Task 3. Read the text "Types of Software" and discuss the following questions in group:

Задание 3. Прочитайте текст и обсудите следующие вопросы в группе.

a) What is software?

b) In what two basic groups could software (programs) be divided?

c) What is system software for?

d) What is an operating system — a system software or application software?

e) What is a «driver»?

f) What is application software?

g) What is application software used for?

h) What is the tendency in application software market in recent years?

i) What is the application of communication software?

Task 4. Find the answers to these questions in the following text.

1) What is Currie Munce's main aim?
2) How quickly did the possible areal density of hard disks increase in the 1990s?
3) How long does Munce think magnetic recording technology will continue to make, rapid advances in capacity?
4) What problem does he predict for magnetic storage?
5) What is the predicted limit for discrete bit magnetic storage capacity?
6) What storage technologies might replace current magnetic systems?
7) What is the advantage of holographic storage being three-dimensional?
8) What improvements are predicted due to the fast access rates and transfer times of holographic storage?
9) What is predicted to be the most important high capacity removable storage media in the next 10 years?
10) What method of software distribution is likely to replace optical disks?

Ready for the Bazillion-Byte Drive?

Thinking about writing your memoirs - putting your life story down on paper for all eternity? Why not skip the repetitive strain injury and just capture your whole life on full-motion video, 5 putting it all in a device the size of a sugar cube?

It might not be as far off as you think.

Currie Munce, director of IBM's Advanced HDD Technology Storage Systems Division, has one avowed goal: Build bigger storage. Recently io Munce and his fellow Ph.Ds restored Big Blue's lead in the disk space race with a new world record for areal (bit) density: 35.3 gigabits per square inch - roughly three times as dense as any drive shipping at press time.

15 During the 1990s, areal density doubled every 18 months, keeping pace with the transistor density gains predicted by Moore's Law. But increasingly daunting technical challenges face those who would push the storage envelope further. 'I think 20 magnetic recording technology has another good 5 to 10 years,' says Munce. 'After that, we'll see substantial difficulties with further advances at the pace people are accustomed to.

From here on, a phenomenon called 25 superparamagnetism threatens to make densely- packed bits unstable. Provided that new developments continue to thwart superparamagnetic corruption, scientists speculate that the theoretical limit for discrete bit so recording is 10 terabits per square inch (1 terabit = 1,000 gigabits).

Approaching this limit will require new technologies. Two possible contenders are atomic force microscopy (AFM) and holographic storage. I 35 AFM would use a spinning plastic disk, perhaps side a wristwatch, and a tiny, 10-micron cantilever with a 40-angstrom tip (an angstrom represents the approximate radius of an atom) to write data. In theory, AFM will allow densities of 300 to 400 gigabits per square inch.

While AFM is still in the lab, holographic storage is closer to reality. According to Rusty Rosenberger, optical program manager for Imation, 'We are targeting a 5~ -inch disk with 45 125GB of storage and a 40MB-per-second transfer rate.' Future iterations of holographic systems should improve substantially.

The three-dimensional nature of holography makes it an appealing storage medium because so 'pages' of data can be superimposed on a single volume - imagine transferring a whole page of text at once as opposed to reading each letter in sequence. Hans Coufal, manager of IBM's New Directions in Science and Technology Research 55 division, predicts that the fast access rates and transfer times of holographic storage will lead to improved network searches, video on demand, high-end servers, enterprise computing, and supercomputing.

Meanwhile, also-ran technologies are thriving.

Tape, first used for data storage in 1951 with the Univac I, has been revitalized by the corporate hunger for affordable archiving solutions. In the consumer

arena, says Dataquest analyst Mary 65 Craig, recordable CD-ROMs and DVDs will remain the dominant high-capacity removable storage media for the next decade. Despite their failure to match the areal density gains of hard disks, optical disks are cheap to produce, making 70 them ideal for software distribution (until a mature digital rights management system facilitates online delivery). Finally, solid state options such as flash cards can't yet match the pricing of hard disks at high capacities.

75 Further out, scientists salivate over the prospect of data manipulation and storage on an atomic level. Because consumer demand for capacity is lagging behind what technology can deliver, bringing new storage options to the masses will so depend on seeing the need for more space.

Task 5. Mark the following statements as True or False:

- The development of AFM is more advanced than holographic storage.
- The predicted maximum storage density of AFM is 400 gigabits per square inch.
- Flolography works in 3D.
- Univac I was the first computer to use tape storage devices.
- Users want higher capacity storage devices than technology can provide.

LESSON 11

Operating Systems

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

When computers were first introduced in the 1940's and 50's, every program written had to provide instructions that told the computer how to use devices such as the printer, how to store information on a disk, as well as how to perform several other tasks not necessarily related to the program. The additional program instructions for working with hardware devices were very complex, and time-consuming. Programmers soon realized it would be smarter to develop one program that could control the computer's hardware, which others programs could have used when they needed it. With that, the first operating system was born. Today, operating systems control and manage the use of hardware devices such as the printer or mouse. They also provide disk management by letting you store information in files. The operating system also lets you run programs such as the basic word processor. Lastly, the operating system provides several of its own commands that help you to use the computer. DOS is the most commonly used PC operating system. DOS is an abbreviation for disk operating system. DOS was developed by a company named Microsoft. MS-DOS is an abbreviation for «Microsoft DOS». When IBM first released the IBM PC in 1981, IBM licensed DOS from Microsoft for use on the PC and called it PC-DOS. From the user's perspective, PC-DOS and MS-DOS are the same, each providing the same capabilities and commands. The version of DOS release in 1981 was 1.0. Over the past decade, DOS has undergone several changes. Each time the DOS developers release a new version6, they increase the version number. Windows NT (new technology) is an operating system developed by Microsoft. NT is an enhanced version of the popular Microsoft Windows 3.0, 3.1 programs. NT requires a 386 processor or greater and 8 Mb of RAM. For the best NT

performance, you have to use a 486 processor with about 16 Mb or higher. Unlike the Windows, which runs on top of DOS, Windows NT is an operating system itself. However, NT is DOS compatible. The advantage of using NT over Windows is that NT makes better use of the PC's memory management capabilities. OS/2 is a PC operating system created by IBM. Like NT, OS/2 is DOS compatible and provides a graphical user interface that lets you run programs with a click of a mouse. Also like NT, OS/2 performs best when you are using a powerful system. Many IBM based PCs are shipped with OS/2 preinstalled. UNIX is a multi-user operating system that allows multiple users to access the system. Traditionally, UNIX was run on larger mini computers to which users accessed the systems using terminals and not PC's. UNIX allowed each user to simultaneously run the programs they desired16. Unlike NT and OS/2, UNIX is not DOS compatible. Most users would not purchase UNIX for their own use. Windows 2000 & XP are the most popular user-oriented operating systems with a friendly interface and multitasking capabilities.

Task 2. Answer the following questions:
Задание 2. Ответьте на следующие вопросы:

1. Why do you think Bill Gates, President of Microsoft Company is one of the richest people on the Earth?
2. Judging from your experience tell if UNIX is used nowadays? What about OS/2?

Task 3. Ask the students in your group who have experience working with Windows (2000 or XP) about the advantages and disadvantages of these operational systems.

Task 4. Read the text "Operating Systems" and discuss the following questions in group:
Задание 4. Прочитайте текст и обсудите следующие вопросы в группе.

a) What problems faced programmers in the 1940's and 1950's?

b) Why were the first programs «complex» and «time-consuming»?

c) What are the basic functions of operating system?

d) What does the abbreviation DOS mean?

e) What company developed the first version of DOS operating system? For what purpose was it done? Was the new operational system successful?

f) What is the difference between the PC-DOS and MS-DOS?

g) What does the abbreviation NT stand for? Is NT DOS compatible?

What are the basic requirements for NT?

h) Who is the developer of OS/2? What makes UNIX so different from the other operational systems?

i) What are the special features of Windows 95, Windows 98, Windows 2000, and Windows XP?

Task *5.* *up-* and *-up* verbs Complete each gap in these sentences with the appropriate form of the correct verb from this list*:*

back up	keep up	update
build up	set up	upgrade
catch up	start up	upload
free up		

1..... to avoid losing data, you should …….your.....files regularly.

2. You can..... your PC by adding a new motherboard.
3. Delete some files to..... space on your hard disk.
4. Data is..... from regional PCs to the company's mainframe
5. each night.
6. The operating system boots when you your computer.
7. She's taking a course to..... her knowledge of computing.
8. The computer checks the memory when it

9..... ……..he a website to advertise his…….. travel company.

10. You can..... with developments by reading PC magazines.

11. If you miss a class, you can study the hand-outs to

12..... ……the image in a digital camera is…….from ....a red, green and

blue image.

Task 6. Rewrite each of these sentences like this:

1. *Example:* An important function of the operating system is to manage the computer's resources. - *Managing the computer's resources is an important function of the operating system.*
2. One task of the supervisor program is to load into memory nonresident programs as required.
3. The role of the operating system is to communicate directly with the hardware.
4. One of the key functions of the operating system is to establish a user interface.
5. An additional role is to provide services for applications software.
6. Part of the work of mainframe operating systems is to support multiple programs and users.
7. The task in most cases is to facilitate interaction between a single user and a PC.
8. One of the most important functions of a computer is to process large amounts of data quickly.
9. The main reason for installing more memory is to allow the computer to process data faster.

LESSON 12

What is the Internet?

Task 1. Read and translate the text:
Задание 1. Прочитайте и переведите текст:

What is this computer phenomenon called the Internet, or the Net? Do you personally have need of it? Before you decide to get "on" the Internet, you may want to know something about it.

Millions of people around the world use the Internet to search for and retrieve information on all sorts of topics in a wide variety of areas including the arts, business, government, humanities, news, politics and recreation. People communicate through electronic mail (e-mail), discussion groups, chat channels and other means of informational exchange. They share information and make commercial and business transactions. All this activity is possible because tens of thousands of networks are connected to the Internet and exchange information in the same basic ways.

Using the Internet, David, a teacher in the United States, acquired course materials. A Canadian father accessed it to stay in contact with his daughter in Russia. A housewife used it to examine scientific research on the early beginnings of the universe. A farmer turned to it to find information about new planting methods that make use of satellites. Corporations are drawn to it because of its power to advertise their products and services to millions of potential customers. People around the globe read the latest national and international news by means of its vast reporting and information services. The World Wide Web (WWW) is a part of the Internet. But it's not a collection of networks. Rather, it is information that is connected or linked together like a web. You access this information through one interface or tool called a Web browser. The number of resources and services that are part of the World Wide Web is growing extremely fast. In 1996 there were more than 20 million users of the WWW, and more than half the information that is transferred across the Internet is accessed through the

WWW. By using a computer terminal (hardware) connected to a network that is a part of the Internet, and by using a program (software) to browse or retrieve information that is a part of the World Wide Web, the people connected to the Internet and World Wide Web through the local providers have access to a variety of information. Each browser provides a graphical interface. You move from place to place, from site to site on the Web by using a mouse to click on a portion of text, icon or region of a map. These items are called hyperlinks or links.

Each link you select represents a document, an image, a video clip or an audio file somewhere on the Internet. The user doesn't need to know where it is, the browser follows the link. All sorts of things are available on the WWW. One can use Internet for recreational purposes. Many TV and radio stations broadcast live on the WWW. Essentially, if something can be put into digital format and stored in a computer, then it's available on the WWW. You can even visit museums, gardens, cities throughout the world, learn foreign languages and meet new friends. And, of course, you can play computer games through WWW, competing with partners from other countries and continents. Just a little bit of exploring the World Wide Web will show you what a lot of use and fun it is.

Task 2. Answer the following questions:
Задание 2. Ответьте на следующие вопросы:

1. Are you a part of computer revolution?

2. You are going to read a set of texts about the World Wide Web. Discuss in group why you really need the Internet.

What factors influence your decision?

Task 3. Read the text "What is the Internet?" and discuss the following questions:

a) Do you use Internet?

b) Why so many activities such as e-mail and business transactions are possible through the Internet?

c) What is World Wide Web?

d) What is Web browser?

e) What does a user need to have an access to the WWW?

f) What are hyperlinks?

g) What resources are available on the WWW?

h) What are the basic recreational applications of WWW?

Task 4. Now read this text to check your answer and to find the answers to these questions:

- What difference is there between applications software and operating systems?
- Why is the supervisor program the most important operating system program?
- What is the difference between resident and non-resident programs?
- What are the main functions of an operating system?

Operating Systems: Hidden Software

When a brand new computer comes off the factory assembly line, it can do nothing. The hardware needs software to make it work. Are we talking about applications software such as word processing or spreadsheet software? Partly. But an applications software package does not communicate directly with the hardware. Between the applications software and the hardware is a software interface - an operating system. An operating system is a set of programs that lies between applications software and the computer hardware.

The most important program in the operating system, the program that manages the operating system, is the supervisor program, most of which remains in memory and is thus referred to as resident. The supervisor controls the entire operating system and loads into memory other operating system programs (called nonresident) from disk storage only as needed.

An operating system has three main functions: (1) manage the computer's resources, such as the central processing unit, memory, disk drives, and printers, (2) establish a user interface, and (3) execute and provide services for applications software. Keep in mind, however, that much of the work of an operating system is hidden from the user. In particular, the first listed function, managing the computer's resources, is taken care of without the user being aware of the details. Furthermore, all input and output operations, although invoked by an applications program, are actually carried out by the operating system.

Task 5. Complete the gaps in this summary of the text on operating systems using these linking words and phrases:

although in addition
because such as
but therefore

The user is aware of the effects of different applications programs……operating systems are invisible to most users. They lie between applications programs, ……. word-processing, and …… the hardware. The supervisor program is the most important. It remains in memory, it is referred to as resident. Others are called non-resident they are loaded into memory only when needed. Operating systems manage the computer's resources,……the central processing unit …….. they establish a

user interface, and execute and provide services for applications software …… input and output operations are invoked by applications programs, they are carried out by the operating system.

LESSON 13

What Is It?

Task 1. Read and translate the text:
Задание 1. Прочитайте и переведите текст:

Imagine a room filled with many spiders, each spinning its own web. The webs are so interconnected that the spiders can travel freely within this maze. You now have a simplified view of the Internet — a global collection of many different types of computers and computer networks that are linked together. Just as a telephone enables you to talk to someone on the other side of the earth who also has a phone, the Internet enables a person to sit at his computer and exchange information with other computers and computer users any place in the world. Some refer to the Internet as the information superhighway. Just as a road allows travel through different areas of a country, so the Internet allows information to flow through many different interconnected computer networks. As messages travel, each network that is reached contains information that assists in connecting to the adjacent network. The final destination may be in a different city or country. Each network can "speak" with its neighbor network by means of a common set of rules created by the Internet designers. How many networks are connected worldwide? Some estimates say over 30,000. According to recent surveys, these networks connect over 10,000,000 computers and some 30,000,000 users throughout the world. It is estimated that the number of connected computers is doubling each year. What can people locate on the Internet? It offers a rapidly growing collection of information, with topics ranging from medicine to science and technology. It features exhaustive material on the arts as well as research material for students and coverage of recreation, entertainment, sports, shopping, and employment opportunities. The Internet provides access to almanacs, dictionaries, encyclopedias, and maps. There are, however, some disturbing aspects to consider. Can everything on the Internet be regarded as wholesome?

What services and resources does the Internet offer? What precautions are in order?

Task 2. Answer the following questions:
Задание 2. Ответьте на следующие вопросы:

1. Some people think that the Internet is very harmful, especially for young people, because it carries a lot of information about sex, drugs, violence and terrorism. Do you think that some kind of censorship is necessary on the WWW?

2. World famous authors and publishers say that the Internet violates their copyright because Web-programmers put all kinds of books, pictures, music, films and programs free on the Internet and this reduces their sales and profits.

Task 3. Has anyone in your group experience working on the Internet? Ask them

1) about the difficulties they had;

2) useful information retrieved;

3) fun they got?

4) Why so few people have experience working on the Internet?

Task 4. Read the text "What Is it?" and discuss the following questions in group:

Задание 4. Прочитайте текст и обсудите следующие вопросы в группе.

a) To what spheres of human's activities does the Internet provide access to?

b) What services and resources does the Internet offer?

Task 5. Complete these sentences with the correct form of the verb: infinitive or *-ing* form.

Don't switch off without (close down) your PC.

I want to (upgrade) my computer.

He can't get used to (log on) with a password.

You can find information on the Internet by (use) a search engine

He objected to (pay) expensive telephone calls for Internet access.

He tried to (hack into) the system without (know) the password.

You needn't learn how to (program) in HTML before (design) webpages.

I look forward to (input) data by voice instead of (use) a keyboard.

Task 6. Try to find the commands from the lists below which will have these actions.

VMS - help, directory, search, copy, rename, print, show users, showtime, create/directory grep phone .

Unix – write, cp, ipr, is, mkdir, date, rm, man, rwho

Action	VMS command	Unix command
List all the files in a directory		
Delete a file		
Rename a file		
Copy a file		
Send a file to a printer		
Obtain help		
Create a directory		
Show date and time		
Show users on system		
Talk to other users on system		
Search for a string in a file		

LESSON 14

Services and Resources of the Internet

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

A common resource provided by the Internet is a worldwide system for sending and receiving electronic mail, known as e-mail. In fact, e-mail represents a large portion of all Internet traffic and is for many the only Internet resource they use. How does it work? To answer that question, let's review the ordinary mail system first. Imagine that you live in Canada and wish to send a letter to your daughter living in Moscow. After properly addressing the envelope, you mail it, starting the letter's journey. At a postal facility, the letter is routed to the next location, perhaps a regional or national distribution center, and then to a local post office nears your daughter. A similar process occurs with e-mail. After your letter is composed on your computer, you must specify an e-mail address that identifies your daughter. Once you send this electronic letter, it travels from your computer, often through a device called a modem, which connects your computer to the Internet via the telephone network. Off it goes, bound for various computers that act like local and national postal routing facilities. They have enough information to get the letter to a destination computer, where your daughter can retrieve it. Unlike the regular mail, e-mail often reaches its destination, even on other continents, in minutes or less unless some part of the network is heavily congested or temporarily out of order. When your daughter inspects her electronic mailbox, she will discover your e-mail. The speed of e-mail and the ease with which it can be sent even to multiple recipients all over the world make it a popular form of communication.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Can you name common resource which is provided by Internet?

2. Do you have your own e-mail address?

3. Do you think that e-mail is better than ordinary post service procedure?

Task 3. **Read the text and find the answers to these questions:**

1. What did Linus Torvalds use to write the Linux kernel?
2. How was the Linux kernel first made available to the general public?
3. What is a programmer likely to do with source code?
4. Why will most software companies not sell you their source code?
5. What type of utilities and applications are provided in a Linux distribution?
6. What is X ?
7. What graphical user interfaces are mentioned in the text?

LINUX

Linux has its roots in a student project. In 1992, an undergraduate called Linus Torvalds was studying computer science in Helsinki, Finland. Like most computer science courses, a s big component of it was taught on (and about) Unix. Unix was the wonder operating system of the 1970s and 1980s: both a textbook example of the principles of operating system design, and sufficiently robust to be the standard OS in **io** engineering and scientific computing. But Unix was a commercial product, and cost more than a student could pay.

Annoyed by the shortcomings of Minix (a is compact Unix clone written as a teaching aid by Professor Andy Tannenbaum) Linus set out to write his own ‘kernel’ — the core of an operating system that handles memory allocation, talks to hardware devices, and makes 20 sure everything keeps running. He used the GNU programming tools developed by Richard Stallman’s Free Software Foundation, an organisation of volunteers dedicated to fulfilling Stallman’s ideal of making good software that 25 anyone could use without paying. When he’d

written a basic kernel, he released the source code to the Linux kernel on the Internet.

Source code is important. It's the original from which compiled programs are generated. If you 30 don't have the source code to a program, you can't modify it to fix bugs or add new features. Most software companies won't sell you their source code, or will only do so for an eye- watering price, because they believe that if they 35 make it available it will destroy their revenue stream.

What happened next was astounding, from the conventional, commercial software industry point of view - and utterly predictable to 40 anyone who knew about the Free Software Foundation. Programmers (mostly academics and students) began using Linux. They found that it didn't do things they wanted it to do - so they fixed it. And where they improved it, 45 they sent the improvements to Linus, who rolled them into the kernel.

And Linux began to grow.

There's a term for this model of software development; it's called Open Source, so Anyone can have the source code - it's free (in the sense of free speech, not free beer). Anyone can contribute to it. If you use it heavily you may want to extend or develop or fix bugs in it - and it is so easy to give your fixes back to 55 the community that most people do so. ;

An operating system kernel on its own isn't a lot of use; but Linux was purposefully designed as a near-clone of Unix, and there is a lot of software out there that is free and was designed № to compile on Linux. By about 1992, the first 'distributions' appeared.

A distribution is the Linux-user term for a complete operating system kit, complete with the utilities and applications you need to make 65 it do useful things - command interpreters, programming tools, text editors, typesetting tools, and graphical user interfaces based on the X windowing system. X is a standard in academic and scientific computing, but not 70 hitherto common on PCs; it's a complex distributed windowing system on which people implement graphical interfaces like KDE and Gnome.

As more and more people got to know about 75 Linux, some of them began to port the Linux kernel to run on non-standard computers. Because it's free, Linux is now the most widely- ported operating system there is.

Task 4. Match the terms in Table A with the statements in Table B.

Table A – Kernel, Free Software Foundation, Source code, Open source, A distribution, X

Table B:

A type of software development where any programmer can develop or fix bugs in the software.

The original systems program from which compiled programs are generated.

A complete operating system kit with the utilities and applications you need to make it do useful things.

A standard distributed windowing system on which people implement graphical interfaces.

An organisation of volunteers dedicated to making good software that anyone could use without paying.

The core of an operating system that handles memory allocation, talks to hardware devices, and makes sure everything keeps running.

Table A	**Table B**
Kernel	
Free Software Foundation	
Source code	

Open source	
A distribution	
X	

Task 6. Mark the following statements as True or False:

1. Linux was created in the 1980s.
2. Minix was created by a university student.
3. Linux is based on Unix.
4. Minix is based on Unix.

LESSON 15

Newsgroups

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Another popular service is called Usenet. Usenet offers access to newsgroups for group discussions on specific topics. Some newsgroups focus on buying or selling various consumer items. There are thousands of newsgroups, and once a user has gained access to Usenet, there is no cost to subscribe to them. Let's imagine that someone has joined a newsgroup involved in stamp collecting. As new messages about this hobby are sent by others subscribing to this group, the messages become available to this newcomer. This person reviews not only what someone has sent to the newsgroup but also what others have written in response. If, for example, someone requests information about a particular stamp series, shortly afterward there may be many responses from around the world, offering information that would be immediately available to all who subscribe to this newsgroup. A variation of this idea is the Bulletin Board System (BBS).

BBS is similar to Usenet, except that all files are located on a single computer, usually maintained by one person or group. The content of news-groups reflects the varied interests, viewpoints, and moral values of those who use them, so discretion is needed.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What kind of service is called Usenet?
2. What does Usenet offer?

Task 3. Find the answers to these questions in the following text

1) What developments are driving the development of completely new interfaces?
2) What has inspired a whole cottage industry to develop to improve today's graphical user interface?
3) In what way have XML-based formats changed the user interface?
4) What type of computers is certain to benefit from speech technology?
5) Name a process where a mouse is particularly useful and a process where it is not so useful.
6) What facilities are multimodal interfaces likely to offer in the future?
7) What type of input device will be used to give vision to the user interface?
8) What development has led to an interest in intelligent agents?

Task 4. Mark the following statements as True or False:

1) Fewer people are using computers because computer functions are becoming integrated into other electronic devices.
2) Keyboards and mice will soon not be required for using personal computers.
3) There have been no improvements in interface design since the development of the GUI.
4) Speech recognition is likely to completely replace other input devices.
5) Computer speech and vision will free the user from having to sit in front of a keyboard and screen.
6) Intelligent agents will make computers seem more like humans.

LESSON 16

File Sharing and Topic Searching

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

One of the original Internet goals was global information sharing. The teacher mentioned in the previous article located another educator on the Internet who was willing to share already developed course materials. Within minutes the files were transferred, despite a 2,000-mile distance.

Just as we locate a phone number by using a telephone directory, a user may find locations of interest on the Internet by first gaining access to what are known as search sites. The user supplies a word or a phrase; the site then replies with a list of Internet locations where information can be found. Generally, the search is free and takes only a few seconds! The farmer mentioned earlier had heard of a new technique called precision farming, which uses computers and satellite maps. By entering that phrase at a search site, he found the names of farmers who were using it as well as detailed information about the method.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is “one of the original Internet goals”?

2. What help is available when one does not know where a subject may be located within the Internet?

Task 3. Read this text to find the answers to these questions.

1. What does MP3 stand for?
2. What is the difference between MP3 and WAV files?
3. What kind of sound does MP3 strip out?
4. What kind of information is included in the tag?

Understanding MP3

The name comes from MPEG (pronounced EM-peg), which stands for the Motion Picture Experts Group. MPEG develops standards for audio and video compression. MP3 is actually MPEG Audio Layer 3.

MP3 competes with another audio file format called WAV. The key difference is that MP3 files are much smaller than WAV files. An MP3 file can store a minute of sound per megabyte, while a WAV file needs 11 or 12 megabytes to hold the same amount. How does MP3 achieve this compression? CDs and audio files don't reproduce every sound *of* a performance. Instead, they sample the performance and store a discrete code for each sampled note. A CD or WAV file may sample a song 44,000 times a second, creating a huge mass of information.

By stripping out sounds most people can't hear, MP3 significantly reduces the information stored. For instance, most people can't hear notes above a frequency of 16kHz, so it eliminates them from the mix. Similarly, it eliminates quiet sounds masked by noise at the same frequency. The result is a file that sounds very similar to a CD, but which is much smaller. An MP3 file can contain spoken word performances, such as radio shows or audio books, as well as music. It can provide information about itself in a coded block called a tag. The tag may include the performer's name, a graphic such as an album cover, the song's lyrics, the musical genre, and a URL for more details.

Task 4. Complete the gap in each sentence with the correct form of the verb in brackets.

1) The Help facility enables users .....(get)advice on most problems.
2) Adding more memory lets your computer .....(work) faster.
3) Windows allows you..... (display) two different folders at
4) the same time.
5) The Shift key allows you .....(type) in upper case.
6) The MouseKeys feature enables you .....(use) the numeric keypad to move the mouse pointer.
7) ALT + TAB allows you..... (switch) between programs.
8) The StickyKeys feature helps disabled people..... (operate) two keys simultaneously.
9) ALT + PRINT SCREEN lets you (copy)an image of an active window to the Clipboard.

LESSON 17

The World Wide Web

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

The part of the Internet called World Wide Web (or Web allows authors to use an old-fashioned idea - that of footnotes - in a new way. When an author of a magazine article or a book inserts a footnote symbol, we scan the bottom of the page and are possibly directed to another page or book. Authors of Internet computer documents can do essentially the same thing using a technique that will underline or highlight a word, a phrase, or an image in their document. The highlighted word or image is a clue to the reader that an associated Internet resource, often another document, exists. This Internet document can be fetched and displayed immediately for the reader. The document may even be on a different computer and located in another country. David Peal, the author *of "*Access *the Internet",* notes that this technique "links you to actual documents, not just references to them." The Web also supports the storage and retrieval, or playing, of photographs, graphics, animations, videos, and sounds. Everyone can obtain and play a short color movie of the current theories regarding the universe and hear the narration through computer's audio system.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Describe the advantages of the World Wide Web.
2. Read the text “The World Wide Web” and discuss the main idea of the text:

Task 3. Read the rest of this text to find the answers to these questions:

1) How do you play MP3 files?
2) What does the Windows Media Player file do with an MP3 file?
3) What is a standalone player?
4) What special features can players offer?
5) What information can you obtain by clicking on the track info button?
6) What does a skin enable you to do?
7) How do you play music from a CD-ROM on an MP3 player?
8) What hardware and software do you need to make your own in CDs?

Task 4. Describe the function of these features using ‘enabling’ verbs.

In a window, the vertical scroll bar.

The Find command.

The Undo command.

Cut and paste.

Print Screen.

Menus.

Recycle bin.

Tooltips.

LESSON 18

Surfing the Net

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

By using a Web browser, a person can easily and quickly view information and colorful graphics that may be stored on computers in many different countries. Using a Web browser can be similar in some ways to actual travel, only easier. One can visit the Web exhibits of the Dead Sea Scrolls or the Holocaust Memorial Museum. This ability to move nimbly back and forth from one Internet Web site to another is commonly called surfing the Net. Businesses and other organizations have become interested in the Web as a means to advertise their products or services as well as to offer other kinds of information. They create a Web page, a sort of electronic storefront window. Once an organization's Web page address is known, potential customers can use a browser to go "shopping," or information browsing. As in any marketplace, however, not all products, services, or information provided on the Internet are wholesome. Researchers are trying to make the Internet secure enough for confidential and safeguarded transactions. We will talk more about security later.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Have you got the Internet connection at home?
2. How often do you surf the net?

Task 3. Find the answers to these questions in the text below.

Задание 3. Найдите ответы на вопросы в тексте, приведённом ниже:

1) How do you pay for the applications provided by an ASP?

2) What two main services does an ASP provide?

3) How does an ASP ensure that they have enough storage space for the changing needs of customers?

4) What types of applications are available from ASPs?

5) Why is it useful for a small business to be able to rent specialist tools from an ASP?

6) What is one of the best established areas of ASP use?

Application

Service Provide is

If your hard disk is packed to bursting point, the IT department is far too busy to fix your email problems, and your business can't afford to buy the tools that you'd like to develop the company s website, then it's time to think about using an application service provider (ASP). Rather than installing software on each machine or server within your rganization, you rent applications from the ASP, which provides remote access to io the software and manages the hardware required to run the applications.

There are a lot of advantages to this approach. The havoc caused by viruses makes the idea of outsourcing your email and office suite services is an attractive option. It also gives you more flexibility – you pay for applications as and when you need them, rather than investing in a lot of costly software which you're then tied to for years. Not having to worry about upgrading 20 to the latest version of your office suite or about battling with the complexities of managing an email system, leaves businesses with more time. Time to focus on what they do best.

However, there are some potential pitfalls. To 25 use applications remotely requires a lot of bandwidth, which is only really available from a broadband connection or a leased line to the ASP itself. It is also important to ensure that the ASP will be able to provide a secure, reliable 3o service which will be available whenever you need if.

Providing applications and storage space for vast numbers of users requires some powerful technology on the part of the ASP. This includes 35 security controls and data storage as well as providing the physical links to customers. For the most part, ASPs don't own the data centres that store the information. Instead, they lease space from data storage specialists. In this way, 40 they can be confident of meeting customers' increasing storage requirements by buying more space as it's needed.

There's a wide variety of applications available for use via ASPs. Office suite applications and 45 email services are two of the most generic applications available through ASPs. Large, complex business applications such as enterprise resource planning tools like SAP are another popular candidate for delivery through so an ASP. Other business services, such as payroll and accounting systems are also available. This is particularly beneficial to small businesses which are likely to grow quickly and don't want to deal with the problems caused by 55 outgrowing their existing system and having to move to a high-end package. ASPs also offer a means of using specialist tools that would otherwise prove prohibitively expensive. Small businesses have the opportunity to use such BO tools for short periods of time as and when they need them, rather than having to buy the software as a permanent investment.

One of the major barriers for small businesses which want to make a start in e-commerce is 65 ensuring that they have sufficient resources to cope with sudden large increases in customers. This means not only having adequate storage for all your customers' details, but ensuring that you have the technology in place to handle 70 stock levels, efficient delivery and large volumes of traffic. It's very rare for an e-commerce business to handle all of these elements by itself, making this one of the best-established areas of ASP use. Being able to respond 75 rapidly to changes in the size of your customer base and the type of product that they want to order from your business, demands more flexibility than traditional software can provide.

Task 4. Using information from the text, mark the following as True or False:

- Software from an ASP must be installed locally on a user's computer.
- You need a high bandwidth connection to use an ASP service.
- ASPs usually use their own storage space for customers.
- Using an ASP gives you more flexibility.
- An e-commerce business usually provides all of the required technology itself.

LESSON 19

What Is "Chat"?

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Another common service of the Internet is the Internet Relay Chat, or Chat. Chat allows a group of people, using aliases, to send messages to one another immediately. While used by a variety of age groups, it is especially popular among young people. Once connected, the user is brought into contact with a large number of other users from all around the world. So-called chat rooms, or chat channels, are created that feature a particular theme, such as science fiction, movies, sports, or romance. All the messages typed within a chat room appear almost simultaneously on the computer screens of all participants for that chat room. A chat room is much like a party of people mingling and talking at the same general time, except that all are typing, short messages instead. Chat rooms are usually active 24 hours a day.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Do you have a “nickname”?
2. Do you think it is possible to find your second half through the Internet dating offices?
3. Do you visit chats? How much time do you spend there?
4. Describe the effects of these actions using an /У-sentence.

you don’t virus-check floppies.
there was a power cut while you were using

your. .computer
you install a faster processor.
you forgot your password.
you press the delete key.
you use a search engine.
you double-click on an icon.
you use power-saving options.

Task 3. Complete these definitions with the correct participle of the verb given in brackets.

Задание 3. Заполните данные определения правильной формой глагола в скобках.

- A *gateway* is an interface (enable) dissimilar networks to communicate.
- A *bridge* is a hardware and software combination (use) to connect the same type of networks.
- A *backbone* is a network transmission path (handle) major data traffic.
- A *router* is a special computer (direct) messages when several networks are linked.
- A *network* is a number of computers and peripherals (link) together.
- A *LAN* is a network (connect) computers over a small distance such as within a company.
- A *server* is a powerful computer (store) many programs (share) by all the clients in the network.
- A *client* is a network computer (use) for accessing a service on a server.
- A *thin client* is a simple computer (comprise) a processor and memory, display, keyboard, mouse and hard drives only.
- A *hub* is an electronic device (connect) all the data cabling in a network.

LESSON 20

Security — Is Your Privacy Protected?

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

Another key concern is confidentiality. For example, your email message should be seen only by your intended recipient. While the letter is in transit, however, a clever and possibly unscrupulous person or group could intercept or monitor your correspondence. To protect messages, some people use e-mail software products to scramble their letter's sensitive contents before mailing it. At the other end, the receiving party may need similar software for unscrambling the message. Recently, much discussion has focused on the exchange of credit-card and other sensitive information for commercial use on the Internet. Although substantial innovations are expected to strengthen security, the noted American computer security analyst Dorothy Denning states: "Completely secure systems are not possible, but the risk can be reduced considerably, probably to a level commensurate with the value of the information stored on the systems and the threat posed by both hackers and insiders. Absolute security is not realizable in any computer system, whether connected to the Internet or not.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1.) Is security protection important for keeping your privacy?

2.) Read the text “Security — Is Your Privacy Protected?” and discuss the following questions in group:

3) Do you think your information is protected when you use the Internet? Is it safe to share confident information through the Internet? Share your opinion with your groupmates.

4) Choose any topics you like on the given problem ”Internet” and discuss it in group.

Task 3. Write a composition giving your own opinion on the topic "The World Wide Web".

Task 4. Read the rest of this text to find the answers to these questions:

1. Into what two components is the data stream split?
2. What information does an Intra frame contain?
3. What is stored in the P-frames following an I- frame?
4. What is stored in a P-frame in the case of a bouncing ball?
5. What gives the massive reduction in the amount of information needed to reproduce a video sequence?
6. Why is a new l-frame used after a few P- frames?
7. What is stored in a B-frame?
8. Why do B-frames not propagate errors?

The most common system for the compression of video is MPEG. It works like this. The single data stream off the CD-ROM is split into video and audio components, which are then decompressed s using separate algorithms. The video is processed to produce individual frames as follows. Imagine a sequence of frames depicting a bouncing ball on a plain background. The very first is called an Intra Frame (I-frame). I-frames are compressed using only information in the picture itself just like conventional bitmap compression techniques like JPEG.

Following I-frames will be one or more predicted frames (P-frames). The difference between the P- is frame and the I-frame it is based on is the only data that is stored for this P-frame. For example, in the case of a bouncing ball, the P picture is stored simply as a description of how the position of the ball has changed from the previous I-frame. Го This takes up a fraction of the space that would be used if you stored the P-frame as a picture in its own right. Shape or colour changes are also stored in the P-frame. The next P-frame may also be based on this P-frame and so on. Storing differences between the frames gives the massive reduction in the amount of information needed to reproduce the sequence. Only

a few P-frames are allowed before a new I-frame is introduced into the sequence as a new reference point, since a *in* small margin of error creeps in with each P-frame.

Between I and P-frames are bi-directional frames (B-frames), based on the nearest I or P-frames both before and after them. In our bouncing ball example, in a B-frame the picture is stored as the difference between the previous I or P-frame and the B-frame and as the difference between the B- frame and the following I or P-frame. To recreate the B-frame when playing back the sequence, the MPEG algorithm uses a combination of two references. There may be a number of B-frames between I or P-frames. No other frame is ever based on a B-frame so they don't propagate errors like P-frames.

Typically, you will have two or three Bs between Is or Ps, and perhaps three to five P-frames between is.

Task 5. Mark the following statements as True or False:

Задание 5. Отметьте следующие утверждения как Истина или Ложь:

1. JPEG is the most common compression system used for video.
2. P-frames only store the changes in the image.
3. There is always at least one P-frame between two I-frames.
4. B-frames store the complete picture information.
5. There can only be one B-frame between each I and P-frame.
6. There are typically about four P-frames between each I-frame.

LESSON 21

Science and Technology

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст:

In recent years, scientific and technological developments have drastically changed life on our planet as well as our views both of us as individuals in society and of the Universe as a whole.

Today, science and technology are closely related. Many modem technologies such as nuclear power and space flights depend on science and the application of scientific knowledge and principles. Each advance in pure science creates new opportunities for the development of new ways of making things to be used in daily life. In turn, technology provides science with new and more accurate instruments for its investigation and research. Technology refers to the ways in which people use discoveries to satisfy needs and desires, to alter the environment, to improve their lives. Throughout human history, men and women have invented tools, machines, materials and techniques, to make their lives easier.

Of course, when we speak of technology today, we are looking at it in a much narrower sense. Generally, we mean industrial technology, or the technology that began about 200 years ago with the development of power-driven machines, growth of the factory system, and mass production of goods that has created the basis for our modern society. Today we often say that we live in an age of science and technology. According to one estimate, 90 % of all the scientists who ever lived, were alive and active in the 1970-s. This increased scientific activity has brought new ideas, processes, and inventions in ever-growing amount. The scientific revolution that started in the 16th century was the first time that science and technology began to work together. Thus, Galileo who made revolutionary discoveries in astronomy and physics also built an improved telescope and patented a system of lifting water. However, it was not until the 19th century that technology truly was based on science and inventors began to build on the work of scientists. For example, Thomas Edison built on the early experiments of Faraday and Henry in his invention of the first practical system of electrical lighting. Edison carried on his investigations until he found the carbon filament for the electric bulb in a research laboratory. This was the first true modern technological

research. In a sense, the history of science and technology is the history of all humankind.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What role has scientific and technological developments played in human's life?
2. What proves that science and technology are closely related today?

Task 3. Read the text "Science and Technology" and discuss the following questions in group:

a) What does the term «technology» refer to?

b) What does the term «industrial technology» mean?

c) How is scientific activity in the 1970s estimated?

d) What facts prove that the scientific revolution in the 16thcentury was the time that science and technology began to work together?

Task 4. Find the answers to these questions in the following text.

1. What purpose does the Internet address have apart from identifying a node?
2. What data-delivery systems are mentioned in the text?
3. What do IP modules need to know about each other to communicate?
4. How many Internet addresses does a gateway have?
5. What does UDP software do?
6. When does the TCP part of TCP/IP come into operation?
7. What processes are performed by TCP software to provide reliable stream service?
8. What standard protocols are mentioned which are used to deal with the data after TCP brings it into the computer?

How TCP/IP Links Dissimilar Machines

At the heart of the Internet Protocol (IP) portion of TCP/IP is a concept called the Internet address. This 32-bit coding system assigns a number to every node on the network.

There are various types of addresses designed for networks of different sizes, but you can write every address with a series of numbers that identify the major network and the sub-networks to which a node is attached. Besides identifying a node, the address provides a path that gateways can use to route information from one machine to another.

Although data-delivery systems like Ethernet or X.25 bring their packets to any machine electrically attached to the cable, the IP modules must know each other's Internet addresses if they are to communicate. A machine acting as a gateway connecting different TCP/IP networks will have a different Internet address on each network. Internal look-up tables and software based on another standard - called Resolution Protocol - are used to route the data through a gateway between networks.

Another piece of software works with the IP-layer programs to move information to the right application on the receiving system. This software follows a standard called the User Datagram Protocol (UDP). You can think of the UDP software as creating a data address in the TCP/IP message that states exactly what application the и data block is supposed to contact at the address the IP software has described. The UDP software provides the final routing for the data within the receiving system.

The Transmission Control Protocol (TCP) part of TCP/IP comes into operation once the packet is delivered to the correct Internet address and application port. Software packages that follow the TCP standard run on each machine, establish a connection to each other, and manage the communication exchanges. A data-delivery system like Ethernet doesn't promise to deliver a packet successfully. Neither IP nor UDP knows anything about recovering packets

that aren't successfully delivered, but TCP structures and buffers the data flow, looks for responses and takes action to replace missing data blocks. This concept of data management is called reliable stream service.

After TCP brings the data packet into a so computer, other high-level programs handle it. Some are enshrined in official US government standards, like the File Transfer Protocol (FTP) and the Simple Mail Transfer Protocol (SMTP). If you use these standard protocols on different kinds of computers, you will at least have ways of easily transferring files and other kinds of data.

Conceptually, software that supports the TCP protocol stands alone. It can work with data received through a serial port, over a packet- on switched network, or from a network system like Ethernet. TCP software doesn't need to use IP or UDP, it doesn't even have to know they exist. But in practice TCP is an integral part of the TCP/IP picture, and it is most frequently used with those two protocols.

Task 5. Mark the following statements as True or False:

1. Internet addresses are an integral part of the IP protocol.
2. Internet addresses can be written as a series of numbers.
3. UDP software provides the final routing for data within the receiving system.
4. UDP recovers packets that aren't successfully delivered.
5. TCP only works with packet-switched networks.
6. TCP only works when it is combined with IP.

LESSON 22

Miniature Radios and computers

Pocket Radios

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст

The transistor's compactness and low power requirements also brought a new day in a host of simpler devices. Radio receivers hardly larger than a package of cigarettes were on a reality. In 1956-58 the transistor found one of the most spectacular applications. It helped Russian and American specialists to launch the first satellites and to open the space age. Only a few of the biggest satellites have been able to carry vacuum-tube equipment. Most satellites have appended on transistors not only for reporting back to the earth but for operating the instruments with which the satellites explored the mysterious regions around the earth. But the most striking aspect of the transistor is not the host of devices it made possible. More important was its effect on a new branch of science and technology which may be called “solids-state electronics”.

Pocket-size TV Camera

The ultra-miniature TV camera was made possible by a new design approach, which combines transistors, specially developed transistor circuitry and a new half-inch Videocon camera tube.

The pocket-size TV camera (JTV-1) weighs less than, pound and measures only 1 7/8 the by 2 3/8 the by 4 1/2 inches. It can be operated in the palm of the hand, used with an attachable pistol-grip handle, bolted to wall or floor, or mounted on a tripod. It is the first TV camera of its type to incorporate a photoelectric control, which enables the camera to accommodate changes in the order of 100 to 1 in scene lighting. Made rugged for military airborne, mobile, and field requirements the pocket-size camera has high resistance to shock and vibration. Simple in design and operation, the camera can be operated by non-technical personnel.

Molecular Computer

A small computer with molecular blocks as its "brain" is being developed. The new device, called a Mol-E-Com, will weigh 14 pounds and occupy less than one-third of a cubic foot. A solid semiconductor crystal with its internal structure rearranged as a functional electronic block replaces the tubes, transistors, and resistors in conventional miniaturized circuitry.

Mol-E-Com is expected to have the same capabilities as a transistorized computer ten times its size and weight, making it useful for rockets

Miniature Computer is size of Bread Loaf

A compact electronic computer about the size of a loaf of bread, yet capable of working as fast as a room size computer, has been demonstrated successfully. The baby computer is called *Maddam,* a name derived from Macro-Module and Digital Differential Analyzer Machine. The scientists indicate that the *Maddam* is a special purpose computer to be used only for military requirements as they develop. The working model was built to show that existing electronic components can be used in shrinking a commercial computer from a room size to size of a desk, and that military electronic equipment can be compressed to a convenient size for aircraft, spacecraft, and missiles. The computer has 5,500 components housed in a space measuring three inches by six inches by 11 inches, and a component density of 69,000 components per cubic foot. It weighs 12 pound and can perform 33,000 mathematical calculations per second.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. You are going to read four texts about pocket radios and miniature computers. Divide into groups and discuss the main idea of the texts.
2. What other types of miniature computers and radios do you know?
3. Do you know what the word “wireless” means?

Task 3. Find the answers to these questions in the following text.

1. What languages were derived from SGML?
2. What type of language is used to structure and format elements of a document?
3. Name two metalanguages.
4. What elements of data is XML (but not HTML) concerned with?

5. What is meant by the term ‘extensible’?
6. What makes XML a more intelligent language than HTML?
7. What does the HTML markup tag <p> indicate?
8. Why are search engines able to do a better job with XML documents?
9. What type of website is particularly likely to benefit from XML?

Standard Generalized Markup Language (SGML) is f the language that spawned both HTML (HyperText I Markup Language) and XML (extensible Markup I Language). SGML is not a true language, it is a metalanguage, which is a language from which you can create other languages. In this case, it is the creation of a markup language (a system of encoded instructions for structuring and formatting electronic document elements).

HTML is an application-specific derivation of there for, say that HTML is a presentation language.

XML is a subset of SGML, but it is also, like SGML, a metalanguage. XML defines a specific method for ro creating text formats for data so that files are program independent, platform independent, and support internationalisation (able to read different languages, etc.) In fact, because XML is an extensible language, you don’t even have to have a 25 browser to interpret the page. Applications can parse the XML document and read the information without any human intervention.

XML, unlike HTML, is concerned with the identity, meaning and structure of data. XML is extensible because it lets website developers create their own set of customised tags for documents. This ability to define your own tags is the main feature of XML, and it is what gives developers more flexibility.

By defining your own markup tags, you can explicitly define the content in the document. This makes XML a more intelligent markup language than HTML. For example, in HTML, you could have a paragraph tag <p> preceding a paragraph about baseball. Your Web browser sees this tag and knows to present the following text as a paragraph. All your browser knows about the text,

however, is that it is text; it doesn't know that it is specifically about baseball. In an XML document, you could define a <BASEBALL> tag to refer specifically to the text in the paragraph in your document. This way, when your XML browser examines the document, the document knows what data it contains, and that makes the content more intelligent. Search engines that make use of XML so data can do a better job of finding the pages you are looking for because of the intelligent nature of XML content.

XML, by design, does not deal with how the data is displayed to the end user. Because HTML is a presentation language, XML documents use HTML tags to help handle the visual formatting of the document. Also, you can use XML in your HTML documents to provide metadata, which is data about data in the document.

XML will do to the Web and e-commerce what HTML originally did to the Internet. XML and its associated applications have the potential to blow the roof off the Internet and how we do business.

Task 4. Mark the following statements as True or False:

1. HTML is no longer useful for creating webpages.
2. SGML is more complex than XML.
3. XML files can only be used on Unix systems.
4. XML files can only be read by browser Programs.
5. HTML is a markup language.
6. Internet searches will be better with XML files.

LESSON 23

What is a Microprocessor?

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст

Part I

A microprocessor is a programmable logic device. That is, the function of logical operation that the device accomplishes may be altered by applying instructional "words" at its input. The above definition, although correct, is somewhat broad. Technically, the term microprocessor has come to mean the central processing unit (CPU) of a small computer system. By itself, the microprocessor cannot function; but when it is combined with a relatively small number of support circuits, it has most of the characteristics included in the classic definition of a computer. The microprocessor has traded the greater speed and word length of a computer for compact size and low cost.

A microcomputer is a fully operational system based upon a microprocessor chip which in itself contains a large percentage of the computer capability. The system possesses all of the minimum requirements of a computer:

— It can input and output data, usually in digital form. This data can be exchanged between the microcomputer and several common input/output devices such as teletype, CRT displays, paper tape reader, floppy disk memories, magnetic tapes, cassette tapes and laboratory instruments.

— It contains an ALU (arithmetic logic unit) which performs arithmetic and/or logical operations such as add, subtract, compare, rotate left or right, AND, OR, NEGATE, EXCLUSIVE, OR.

— It contains memory which is directly addressable and may contain both data and instructional words.

— It is programmable. That is, the data and programmed instructions may be arranged in any desired order, in contrast to a pocket calculator, which is usually fixed in its capabilities and requires a precise keyboard sequence that cannot be altered.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Read the first part of the text ‘What is a Microprocessor”?

2. Study the definition of terms given below the text.

Task 3. Discuss the following questions in group:

Задание 3. Прочитайте текст и обсудите следующие вопросы в группе.

a) What is a microprocessor? Try to give your own definition of this term.

b) What is a microcomputer based on?

Task 4. Complete the gaps in this dialogue with *will* or *would* or the reduced forms *'II* and У where appropriate. A – first student, B – second student

A) What…..you do when you finish your diploma?

B) ……like to take a course in multimedia.

A) How long…..that take?

B) If I choose the certificate, it….. take 6 months but if i……

A) What…..be the advantage of the master's?

B) I guess…..have better job prospects.

A) When…..you decide?

B) It depends on my finals. If I do well, i…..go for the master's.

Task 5. Link each word in column A with a word which it often occurs with from column B. In some cases, more than one link is possible.

A – bulletin, domain, file, graphical, mobile, search, site, synchronous, text, web.

B – board, button, engine, link, map, message, name, page, phone, transmission.

LESSON 24

What is a Microprocessor?

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст

Part II

A microprocessor is the central arithmetic and logic unit of a computer, together with its associated circuitry, scaled down so that it fits on a single silicon chip (sometimes several chips) holding tens of thousands of transistors, resistors and similar circuit elements. It is a member of the family of large-scale integrated circuits that reflect the present state of evolution of a miniaturization process that began with the development of the transistor in the late 1940's. A typical microprocessor chip measures half a centimeter on a side. By adding anywhere from 10 to 80 chips to provide timing, program memory, random-access memory, interfaces for input and output signals and other ancillary functions, one can assemble a complete computer system on a board whose area does not exceed the size of this page. Such an assembly is a microcomputer, in which the microprocessor serves as the master component. The number of applications for microprocessors is proliferating daily in industry, in banking, in power generation and distribution, in telecommunications and in scores of consumer products,

ranging from automobiles to electronic games. As in the central processing unit, or CPU, of a larger computer, the task of the microprocessor is to receive data in the form of strings of binary digits (O's and 1's), to store the data for later processing, to perform arithmetic and logic operations on the data in accordance with previously stored instructions and to deliver the results to the user through an output mechanism such as an electric typewriter, a cathode-ray-tube display or a two-dimensional plotter. A typical microprocessor would consist of the following units: a decode and control unit (to interpret instructions from the stored program),

the arithmetic and logic unit, or ALL) (to perform arithmetic and logic operations), registers (to serve as an easily accessible memory for data frequently manipulated), an accumulator (a special register closely associated with the ALL)), address buffers (to supply the control memory with the address from which to fetch the next instruction) and input-output buffers (to read instructions or data into the microprocessor or to send them out). Present microprocessors vary in their detailed architecture depending on their manufacture and in some cases on the particular semiconductor technology adopted. One of the major distinctions is whether all the elements of the microprocessor are divided among several identical modular chips that can be linked in parallel, the total number of chips depending on the length of the "word" the user wants to process: four bits (binary digits), eight bits, 16 bits or more. Such a multichip arrangement is known as a bit-sliced organization. A feature of bit-sliced chips made by the bipolar technology is that they are

"microprogrammable": they allow the user to create specific sets of instructions, a definite advantage for many applications.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Read the second part of the text ‘What is a Microprocessor’?
2. Study the definition of terms given below the text.

Task 3. Discuss the following questions in group:

a) Find in the text the definition of a microprocessor. What kind of new information has been added to its content?

b) What is the history of the invention of this logic device?

c) What is the function of the microprocessor?

d) What does a typical microprocessor consist of?

e) What is the feature of bit-sliced chips made by the bipolar technology?

f) How are modern microprocessors differentiated?

Task 4. Find the answers to these questions in the following text.

1. Name three different email protocols mentioned in the text.
2. Which email protocol is used to transfer messages between server computers?
3. Why is SMTP unsuitable for delivering messages to desktop PCs?
4. Name two host-based mail systems mentioned in the text.
5. Where are email messages stored in an SMTP system?
6. What happens when you use your Web mail account to access a POP3 mailbox?
7. Give an advantage and a disadvantage of having an option to leave POP3 messages on the server.
8. What are the advantages of using the IMAP4 protocol?

Email Protocols!

Although the format of a mail message, as transmitted from one machine to another, is rigidly defined, different mail protocols transfer I and store messages in slightly different ways. The mail system you're probably used to employs a

combination of SMTP and POP3 to send and receive mail respectively. Others may use IMAP4 to retrieve mail, especially where bandwidth is limited or expensive.

Simple Mail Transfer **Protocol.**

SMTP is used to transfer messages between one mail server and another. It's also used by email programs on PCs to send mail to the server. SMTP is very straightforward, providing only facilities to is deliver messages to one or more recipients in batch mode. Once a message has been delivered, it can't be recalled or cancelled. It's also deleted from the sending server once it's been delivered. SMTP uses 'push' operation, meaning that the connection is initiated by the sending server rather than the receiver. This makes it unsuitable for delivering messages to desktop PCs, which aren't guaranteed to be switched on at all times. In host-based mail systems, such as Unix and Web. SMTP is the only protocol the server uses. Received messages are stored locally and retrieved from the local file system by the mail program. In the case of Web mail, the message is then translated into HTML and transmitted to your so browser. SMTP is the only protocol for transferring messages between servers. How they're then stored varies from system to system.

Post Office Protocol.

POP is a message-retrieval protocol used by many PC mail clients to get messages from a server, typically your ISP's mail server. It only allows you to download all messages in your mailbox at once. It works in 'puli' mode, the receiving PC initiating the connection. PC-based POP3 mail clients can do this automatically at a preset interval. When you use your Web mail account to access a POP3 mailbox, the mail server opens a connection to the POP3 server just as a PC-based application **would.** The messages are then copied into your Web mailbox and read via a browser.

Since POP3 downloads all the messages in your mailbox, there's an option to leave messages on the server, so that they can be picked up from different machines without losing any. This does so mean that you'll get every message downloaded every time you connect to the server. If you don't clean out your

mailbox regularly, this could mean long downloads. When using a Web mail account to retrieve POP3 mail, be careful about leaving messages on the server if too many build up, each download will take a long time and fill up your inbox. Many Web mail systems won't recognise messages you've already downloaded, so you'll get duplicates of ones you haven't deleted.

Internet Mail Access Protocol.

IMAP is similar in operation to POP, but allows you more choice over what messages you download. Initially, only message headers are retrieved, giving information about the sender and subject. You can then download just those messages you want to read. You can also delete individual messages from the server, and some IMAP4 servers let you organise your mail into folders. This makes download times shorter and there's no danger of losing messages.

Task 5. Mark the following statements as True or False:

1. Different mail systems transfer emails in different ways.
2. IMAP4 requires more bandwidth than the other email protocols.
3. SMTP is used for sending emails from a PC to a server.
4. SMTP delivers messages one at a time.
5. SMTP does not allow a delivered message to be cancelled.
6. SMTP is only one of many protocols used to send mail between servers.
7. POP protocol allows the user to download one message at a time.

LESSON 25

Classification of Microprocessors

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст

The flood of microprocessors and microcomputers reaching the market, combined with the rapid rate of innovation, guarantees that any attempt to catalogue them will be instantly obsolete. A more fruitful introduction to the "micro" marketplace is to classify systems hierarchically according to their capability and function. Along these two dimensions there is a well-defined upward progression in both **hardware** and software. In hardware the levels are chips, **modules**, "breadboard" systems, small computer systems, full-development systems and multiprocessor systems. This hierarchy is not absolute because the evolving technology creates ever more powerful chips, some of which can bridge two or three hierarchic levels. Chips are used to construct a module, modules to construct *a* small computer system (SCS) and small computers to construct a full-development system (FDS). Multiprocessor systems can incorporate modules, SCS's or FDS's, depending on the application and complexity. At the first level of the hierarchy are the microprocessor chips, representing the large-scale integration of tens of thousands of individual electronic devices: transistors, diodes, resistors and capacitors. At this level there are also more specialized chips: random-access memories (RAM's), **read-only memories (ROM's)**, programmable read-only memories (PROM's), input-output (I/O) interfaces and others. The cutting edge of the technology works most directly at the chip level, providing, for example, RAM's of ever-higher storage **capacity**. Generally the various kinds of chips are grouped into families that are compatible with particular microprocessors. The families will include a series of RAM, ROM and PROM chips to create a memory system, a series of interface chips capable of handling both parallel and serial input-output functions and miscellaneous chips to enhance system capabilities, such as high-speed arithmetic operations. Master control chips are needed to establish **priorities**5 and to keep signals flowing smoothly through the complex maze of interconnections. The compatibility of chips and chip families made by different manufacturers varies widely.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Read the text “Classification of Microprocessors”.
2. Study the definition of terms given below the text.

Task 3. Discuss the following questions in group:

a) How are modern microprocessors classified?

b) What are the levels in hardware classification?

c) What are the characteristic features of the second level of the microprocessors' classification?

d) What are the advantages of the small computer system level?

e) What is the FDS intended for?

Task 4. What do these abbreviations mean? Use the Glossary to help if necessary.

GPRS, HTM, SMS, Wap, WM, XM

Task 5. Rank these predictions according to how certain the speakers are. Put the most certain at the top of your list and the least certain at the bottom. Some predictions can have equal ranking.

1. Wap phones will revolutionise the way we communicate.
2. Wap phones may revolutionise the way we communicate.
3. It’s likely Wap phones will revolutionise the way we communicate.
4. It’s unlikely Wap phones will revolutionise the way we communicate.
5. It’s expected Wap phones will revolutionise the way we communicate.
6. It’s probable Wap phones will revolutionise the way we communicate.
7. It’s possible Wap phones will revolutionise the way we communicate.
8. Wap phones will certainly revolutionise the way we communicate.

LESSON 26

Uses and Applications of Microprocessors

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст

The uses and applications of microcomputers appear, at present, to fall somewhere between discreet logic, on the one hand, and minicomputers, on the other. The microprocessor fills the large gap between discrete circuits and the relatively sophisticated minicomputer. The microprocessor also fills the cost gap between discrete circuits. Because of its relatively low cost and flexibility, the

Microsystem has an abundance of applications at home and small business environment. It fills the needs of small manufacturers who cannot afford, or do not need, large computer systems.

Some of the present applications which have already found their way into the market place are:

— Video TV games;

— Intelligent computer terminals;

— Process controllers;

— Telephone switching controls;

— Programmable household appliances;

— Computerized automotive electronic systems.

Computers are being used as part of the educational process, and guidance. Controlled computers have made possible space exploration and automated factories.

Microprocessors can also be expanded to serve specialized control functions in the area of industrial tools and machinery. Because they are programmable logic systems, they can be adapted to serve a variety of job functions each of which previously required individually designed circuits. The low cost of production makes them extremely attractive. It is perhaps this **hardware/software** trade that makes the impact of the microprocessor so great. Entirely different circuit

functions can now be accomplished with the same hardware by means of a different set of program instructions. The microprocessor is recognized as the device which finally unites two previously separate areas: that of the hardware designer and the programmer.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Read the text "Uses and Applications of Microprocessors" and discuss the main idea of it in group.
2. Draw a diagram of microprocessors applications.
3. Make a list of the microprocessor's applications you have read about or you have seen by yourself.
4. Find additional information of Microsystems application.

Task 3. Find the answers to these questions in the following text.

1. How many channels does an ISDN system commonly use?
2. What types of wireless systems are named in the text?
3. What do PCs connected to a satellite system use to send data?
4. What types of cables are used in cable network systems?
5. What may need to be upgraded when using a shielded DSL system?
   Which type of broadband service is the cheapest?

Integrated Services Digital Network (ISDN)

ISDN services can be carried over existing telephone network infrastructure to terminal adapters (TAs) in the client machine. A common ISDN interface standard has a digital communications line consisting of three independent channels: two Bearer (B) channels, each at 64Kbit/s, and one Data (D) channel at 16Kbit/s. The D channel is used to carry io signalling and supervisory information

to the network, while the B channels carry the data and can be linked to provide a 128Kbit/s data channel.

Wireless connections is The wireless alternatives come in two forms: satellite and cellular. Satellite systems require the use of a modem to maintain the upload. Downstream bandwidth is provided via a dedicated ro satellite dish, connector hardware and proprietary software.

Cellular systems use assigned radio frequencies and are based around a network of transmitters that are arranged in a cellular network, much like cellular mobile phone systems.

The cable alternative.

Cable companies can also offer affordable broadband services over copper coaxial or fibre infrastructure networks. Theconnection is shared by several customers on a branch, so actual connection rates are variable, unlike ISDN and DSL.

Digital Subscriber Line (DSL).

DSL technology capitalises on the existing network of copper infrastructure, but allows digital signals to be carried rather than analogue. It allows the full bandwidth of the copper twisted-pair telephone cabling to be utilised.

With splitter-based services, the DSL signal is pulled out from the phone line as it enters your premises and is wired separately to a DSL modem. This involves additional hardware and installation by the service provider at the customer site. The shielded option involves no installation, but the telephone company's equipment and some of your so equipment might need upgrading.

With Asymmetric Digital Subscriber Line (ADSL), most of the duplex bandwidth is devoted to the downstream direction, with only a small proportion of bandwidth being available for upstream. Much Internet traffic through the client's connection, such as Web browsing, downloads and video streaming, needs high downstream bandwidth, but user BO requests and responses are less significant and therefore require less on the upstream. In addition, a small proportion of the downstream bandwidth can be devoted to voice rather than data,

allowing you to hold phone conversations without requiring a separate line.

DSL-based services are a very low-cost option when compared to other solutions offering similar bandwidth, so they can го be made available to the customer at extremely competitive prices.

Task 4. Mark the following statements as True or False:

1. ISDN can only operate over a special digital telephone lin.
2. Two ISDN channels can be combined to give the user double the bandwidth.
3. Computers connected to a satellite system do not need a modem.
4. Cellular networks work in a similar way to mobile phone systems.
5. DSL systems require a special digital telephone line.
6. DSL systems use analogue signals.
7. You need a separate line to hold normal phone conversations on an ADSL system.

LESSON 27

The Types of Memory

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст

In all types of computer systems, from a small dedicated microprocessor system to the largest full size computer, memory plays a very essential part. The memory section of the microcomputer system serves the purpose of holding either information, that the computer will need, or information, that the computer has already generated, which will be utilized in the future. In other words, the memory of a microcomputer is used for storing the program and the data. There are two basic types of memory, namely read/write memory whose contents can

be altered by writing new information into it and read-only memory (ROM) whose contents are fixed. Read/write memory is usually exclusively referred to as random-access memory (RAM) for historical reasons, although strictly speaking most modern read-only memories can also be accessed in a random order and therefore qualify for such a description. Random means that any one of the different memory locations can be written into or read from with equal ease and that it takes the same amount of time to address any one of the different memory locations within the same device. The semiconductor RAM memory is of the volatile type. That is, when power is removed, all information previously written in memory is lost. A problem develops because memory needs to have both non-volatility and read/write capability. At the time of this writing, there is not one RAM chip that has both of these desirable functions. The memory chips are either of the RAM family and have the read/write capability but are volatile or of the ROM family and have only the read capability but are non-volatile. So the read/write feature of the RAM makes it a very versatile memory device. However, its volatility presents a special problem. Recently, technology has advanced to the stage where nonvolatile RAM's can be made. These do not lose their information when the power in them is interrupted. The next generation of semiconductor RAM memories has advanced to higher density (more memory cells/chip) and higher operating frequencies. The essential difference as far as the user is concerned is hat ROM retains the information in it even without power, even if a program error or other fault causes the system to try and overwrite the contents of the ROM. It is therefore used mainly for storing fixed programs and constants. As the term ROM implies, this type of memory can only be read from and not written into by the user. Since the ROM has the feature of nonvolatility, it lends itself to applications such as dedicated subroutines including mathematical packages, **monitor1** programs, **debug** programs and any program that has a fixed structure where there is no need to make changes to the program that resides in the ROM.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. Describe the recent level of technology development.
2. What types of memory do you know?
3. Read the text “The Types of Memory” and make a list of different types of a microcomputer memory.

Task 3. Make statements about these predictions for the next five years. Use the certainty expressions above.

For example: All school children in my country will have mobile phones. - I think it’s unlikely that all school children will have mobile phones but it’s probable that many of the older pupils will have them.

1. ATM machines will use iris recognition rather than PIN numbers. You will get access to your account by looking at the machine.
2. People will vote in elections online.
3. Taxis will be robot-controlled.
4. TV journalists will be able to transmit what they see by using sensors in their optic nerves.
5. There will be more robots than people in developed countries.
6. Most computers will be voice-controlled.
7. Mobile phones will replace computers as the commonest way to access the Internet.
8. English will no longer be the commonest language for websites.
9. Email will be replaced by a voice-based system.
10. Computers will become more powerful.

Task 4. The Global Positioning System Link each set of sentences to make one sentence. You may omit, change or add words as required. Then form your sentences into two paragraphs to make a description of how the GPS works and its uses.

1. The GPS was developed by the US military. It was designed to pinpoint locations. The locations could be anywhere in the world.

2. It consists of 24 earth-orbiting satellites. The satellites are 17,000 kms. above the earth.

3. Each satellite broadcasts a coded radio signal. The signal indicates the time and the satellite's exact position.

4. The satellites have atomic clocks. The clocks are accurate to one second every 70,000 years.

5. A GPS receiver contains a microprocessor. The microprocessor compares signals. The signals are from at least three satellites. The microprocessor calculates the latitude, longitude and altitude of the receiver.

LESSON 28

The Storage Medium

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст

The term "memory" is usually reserved for describing the internal storage of a computer. In its strictest sense it refers to the storage locations that can be immediately addressed by the program counter. They are often referred to as the primary storage while **magnetic tape**, **magnetic disk** or diskette, **magnetic drum** are referred to as the secondary storage. One of the standard mediums for the secondary storage is the floppy disk: a flexible disk of plastic, coated on one side or both sides with a magnetic material. Information is stored in concentric tracks of minute magnetized regions; changes in the direction of magnetization represent binary O's and 1's. The information is written onto the disk and retrieved from it by a recording head that is moved radically across the spinning disk to a particular track. The track in turn is divided into a number of sectors, and as a rule

information is written or read one sector at a time. A 'more expensive alternative to the floppy disk is the **Winchester disk4**, in which the magnetic coating is applied to a **rigid aluminum platter**. For example, a personal computer Winchester disk unit can have such a capacity that it can transfer data faster than a floppy disk. On the other hand, the Winchester disk is permanently sealed in the drive unit, where as a floppy disk can be removed from the drive and replaced by a fresh disk. A simpler, less expensive secondary memory medium is the audio magnetic-tape cassette. One cassette can store about as much information as a relatively low-capacity floppy disk. The access time to a particular address, or storage location, much longer for tape than it is for a disk because the speed of the tape is much lower than that of a disk and because the information is arrayed in a single linear sequence. An important feature, of all the magnetic secondary-storage mediums is that information is maintained even when the computer turned off.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is the capacity of floppy disks and Winchester disks?
2. What are the advantages of floppy disks and Winchester disks?

Task 3. Read the text "The Storage Medium" and discuss the following questions in group:

a) What are the common secondary-storage mediums?
b) Which storage medium does she/he use for program storage?
c) Which storage medium would she/he use if she/he had a personal computer and why?
d) Compare the capacity of the storage medium you are using with the capacity of the described mediums.

Task 4. Find the answers to these questions in the text and table below.

1. Give two reasons why server computers often have connected hard drives.
2. Why is RAID particularly suited to imaging and scientific work?
3. What is the advantage of using drive mirroring?
4. Where is the backup data stored in a RAID 5 system?
5. Which levels of RAID can reconstruct data lost in failed drives from the backup data spread across the remaining drives in the array?
6. Which level of RAID is the fastest?

RAIDING HARD DRIVES

Server manufacturers connect hard drives to ensure that data is adequately protected and can be quickly accessed. Computer engineers call such an arrangement a redundant array of inexpensive disks (RAID). By arranging drives in sets, users hope to take advantage of the higher seek times of smaller drives. A special hard disk controller, called a RAID controller, ensures o that the RAID array's individual drives are seen by the computer as one large disk drive.

	Raid 0	Raid 1	Raid 2-4	Raid 5
Fault tolerance?	No	Yes	Yes	Yes
What does it do?	Called disk striping, RAID 0 breaks data into blocks that are spread across all drives rather than filling one before	Called disk mirroring, RAID 1 uses two identical drives: data written to the first is duplicated on the second.	RAID 2-4 are rarely used and simply enhance the striping provided by other RAID levels.	Called striping with parity, the popular RAID 5 writes error-correcting, or parity, data across available

	writing to the next.			drives.
What are the advantages?	Improved disk I/O throughput - the fastest of all RAID configurations as it distributes read/write operations across multiple drives. Good for imaging and scientific work where speed is important.	If either drive fails, the other continues to provide uninterrupted access to data.	2 enhances 0 by using additional drives to store parity data. 3 enhances 2 by requiring only one error-checking drive. 4 builds on 3 by using larger block sizes, boosting performance.	If one drive fails, its contents are recovered by analysing the data on the remaining disks and comparing it with the parity data.
What are the disadvantages?	The failure of any single drive means the entire array is lost.	Inefficient use of disk space.	Uses dedicated disks to store the parity data used to reconstruct drive contents. Up to 30% more hard disk space	Not as fast as RAID 0

			needed than 1.	

RAID schemes are numbered, with higher numbers indicating more elaborate methods for ensuring data integrity and fault tolerance (or a computer's ability to

Task 5. Mark the following statements as True or False:

1. Small disks tend to have lower seek times than large disks.
2. RAID controllers make one large hard disk act like a set of small disks.
3. In RAID systems, one disk is filled with data before the next disk is used.
4. A higher numbered RAID array uses a more elaborate system to protect the integrity of data.
5. RAID 0 provides good data recovery.
6. Small file servers do not usually use RAID level 3.

LESSON 29

Disk Buffers

Microcomputer systems that process large and complicated files often spend considerable time reading from, and writing, massstorage devices. This operation creates long processing pauses that annoy end users. By simply enlarging the PC-DOS/MS-DOS diskbuffer setting from its normal default value of 2, you can dramatically reduce disk I/O delays. A disk buffer is a block of main memory in which the DOS holds data that is being read from or written to a disk. Each time DOS is requested to read or write a record, it first looks to see whether the sector containing that record is already in a buffer. By increasing the size of the disk buffer, the more likely it is that sought-after data will be in main memory. If it is, then DOS simply transfers the record to the application without the need to read the data from the disk which, of course, saves time. The logical solution would seem to be to move all the data used, by an application into the disk-buffer area.

Unfortunately, microcomputer systems are not blessed with huge blocks of main memory and a compromise must be made between the amount of memory used for disk buffering and the main memory required for other system operations. Many factors interact to cause disk delays (including facets of the specific hardware configuration and operating system), they cannot be derived theoretically. Instead, they must be measured empirically using the actual system configuration, operating system and "typical" disk transactions made in actual applications. Measuring something as complicated as the timing of Disk I/O in a microcomputer system requires a system model.

Task 2. Read the text "Disk Buffers" and discuss the following problems in group:

a) In what way can a change in disk buffer size affect disk I/O times?

b) What factors can interact to cause disk delays?

Task 3. Study these steps to take before you phone for technical support.

Rewrite each one using the clue given.

1. Reboot your PC to see if the problem recurs, (should).
2. Use your PC's on-board diagnostic and repair tools, (recommend).
3. Record the details of the problem so you can describe it accurately, (good idea).
4. Note your system's model name and serial number, (advise).
5. Keep a record of hardware and software you've installed along with any changes you've made to settings, (strongly recommend).
6. If you think hardware may be at fault, figure out how to open the case, (should).
7. Visit the vendor's website and check the FAQs. (best thing).
8. Avoid phoning in peak times, (never).
9. Have your system up and running and be near it when you call, (good idea).

10. When you reach a technician, tell him or her if you may have caused the problem, (advise).

Task 4. Diagnose these faults and provide advice on each problem.

1. My laser printer produces very faint copies.
2. When I print, three or four sheets come through the printer at the same time.
3. My spreadsheet does not seem to add up correctly.
4. Everything I type appears in capitals.
5. My PC is switched on but the monitor screen is blank.
6. I tried to print a document but nothing came out of the printer.
7. My monitor picture is too narrow.
8. My monitor screen flickers.
9. My mouse responds erratically.
10. The time display on my computer is one hour slow.
11. When I print out a page, the first two lines are missing.
12. My computer sometimes stops and reboots itself. The lights dim at the same time.

LESSON 30

Static Memory Devices: Organization and Characteristics

Task 1. Read and translate the text:

Задание 1. Прочитайте и переведите текст

One can divide memories into two major types: static memories and dynamic memories. Static memories are those that retain the information, without the need to refresh that information at frequent time intervals. Static memories are

simpler than dynamic memories in their operating characteristics. As long as DC power is applied to the device, a static memory will retain all of the information stored in it. No other input signals are required. However, when the power is turned off, this information is lost. These memories are called **volatile** memories. Other memories that retain their information after the power is turned off are called non-volatile. Static memories in spite of their higher cost per bit of storage are favored for small memory systems because they call for a minimum of external support circuitry. At a further premium in cost the power consumption of static memories can be reduced to such a negligible value that small batteries will power them for days or weeks. Such memories exploit the "complementary" MOS (CMOS) technology: they are found in some pocket calculators that hold their data or their program even when the power switch is in the "off position.

Task 2. Answer the following questions:

Задание 2. Ответьте на следующие вопросы:

1. What is the term memory is usually reserved for?
2. What types of a microcomputer memory can you name?

Task 3. Read the text and draw a classification scheme of different memory types.

Task 4. State the most important characteristics for memories.

Electronics

Electronic engineering deals with the research, design, integration, and application of circuits1 and devices used in the transmission and processing of information. Information is now generated, transmitted, received, and stored electronically on a scale2 unprecedented in history, and there is every indication that the explosive3 rate of growth in this field will continue unabated4. Electronic engineers design circuits to perform specific tasks, such as amplifying electronic

signals, adding binary numbers, and demodulating radio signals to recover the information they carry. Circuits are also used to generate waveforms useful for synchronization and timing, as in television, and for correcting errors in digital information, as in telecommunications. Prior to5 the 1960s, circuits consisted of separate electronic devices—resistors, capacitors6, inductors, and vacuum tubes—assembled7 on a chassis8 and connected by wires to form a bulky package9. Since then, there has been a revolutionary trend toward integrating electronic devices on a single tiny chip of silicon or some other semiconductive material. The complex task of manufacturing these chips uses the most advanced technology; including computers, electron-beam lithography, micro-manipulators, ion-beam implantation, and ultra clean environments. Much of the research in electronics is directed toward creating even smaller chips, faster switching of components, and three-dimensional integrated circuits.

Task 5. Answer the following questions:

Задание 5. Ответьте на следующие вопросы:

1. What does electronics engineering deal with?
2. What are the modern trends in electronics research?

Communications and Control

Engineers in this field are concerned with all aspects of electrical communications, from fundamental questions such as "What is information?" to the highly practical, such as design of telephone systems. In designing communication systems, engineers rely heavily on various branches of advanced mathematics, such as Fourier analysis, linear systems theory, linear algebra, complex variables, differential equations1, and probability2 theory. Control systems are used extensively in aircraft and ships, in military fire-control systems, in power transmission and distribution3, in automated manufacturing, and in robotics. Engineers have been working to bring about two revolutionary changes in

the field of communications and control. Digital systems are replacing analog ones at the same time that fiber optics is superseding4 copper cables5. Digital systems offer far greater immunity6 to electrical noise. Fiber optics is likewise7 immune to interference8; they also have tremendous carrying capacity, and are extremely light and inexpensive to manufacture.

Task 6. Answer the following questions:

Задание 6. Ответьте на следующие вопросы:

1. What do you know about control systems?
2. In what spheres are control systems used?
3. Can you characterize digital systems advantages in the sphere of modern technologies application?

Task 7. Find the answers to these questions in the following text.

1) What happens to data that is not accessed for a longtime?
2) How does the system record that a file is in near-line storage?
3) What happens when a user tries to access a file in near-line storage?
4) What does the reference to a file in offline storage contain?
5) To whom does the user send a request for the retrieval of a file from offline storage?
6) Name three types of magnetic tape mentioned in the text.
7) What two factors determine the choice of storage media used?
8) What items must you remember to maintain while data is stored?

Near-line and offline storage (often called Hierarchical Storage Management) is the modern way of dealing with current storage needs. Hard disks are becoming cheaper, but data storage requirements are higher, so it's better to plan for HSM than assume disks can continually be added to systems.

HSM is essentially the automatic movement of data between media, the media type used depending on when it was last accessed. Many software and hardware vendors have HSM solutions, and all are based on the same basic techniques.

The most common HSM setup is where there's is online storage (the hard disk), near-line storage (some sort of fast media from where a file can be quickly retrieved), and offline storage (slower media that might take some time for files to be recovered, but it is cheaper for a long-term storage). This arrangement is the major thrust of today's systems. Most of the time these systems will comprise optical media for near-line and tape media for offline storage.

Data is automatically moved from the online disk to the near-line optical media if it hasn't been accessed for a definable period of time.

This is typically three months (depending on your business). This near-line system is likely to be erasable optical disks in some form of jukebox.

The system has to operate on the basis that a user won't know that a file has been moved into near-line storage. Therefore some marker is left in the directory structure on the disk so that the user can still see the file. If the user then tries to open it, the file will automatically be copied from near-line to online storage, and opened for the user. All the user notices is a slight time delay while the file is opened.

Moving data from near-line to offline storage can be done using a similar mechanism, but more often the marker left in the directory for the user to see will just contain a reference. This gives the user the facility to request the file back from the systems administrator, and could have information like 'This file has been archived to offline media' and a reference to the tape number that the file is on. This is then sent to the systems administrator and the file can be recovered from tape in the usual way.

Some modern systems have the ability to keep multiple tapes in a tape changer or jukebox system, so retrieval from offline to online storage can be automatic. However, it is more likely that when a file goes into offline

storage it will never be recovered, as it has probably been untouched for several months (again depending on the business). Therefore the requirement to recover from offline to online is reasonably infrequent.

The choice of storage media type is a crucial aspect of HSM. The cheapest is undoubtedly tape (be it digital, analogue or digital linear), so this tends to be used for offline storage. However, tape has no guarantee of data integrity beyond one or two years, whereas optical systems, such as CDs, WORMs and MO disks, have much better data integrity over a longer period of time. Depending on the precise application, archiving systems are usually based on the media type и that has the best integrity. The major suppliers within the HSM market are totally open about the media that can be used with their software.

Current HSM systems support most hardware devices, so you can mix and match media to suit requirements. Given the fact that media choice depends on the length of time you want your data to remain intact, and also the speed at which you want to recover it, the choice for many system managers is as follows.

Tape is used for backup systems where large amounts of data need to be backed up on a regular basis. Tape is cheap, integrity is good over the short to medium term, and retrieval from a backup can be made acceptable with good tape storage practices.

Near-line storage should be based on erasable optical disks. This is because access is random, so the access speed to find and retrieve a particular file needs to be fast, and data integrity is also good.

Archiving systems should probably be CD- or WORM-based, as again access speeds are good, media costs are reasonably cheap and, importantly, the integrity of the media over the medium to long term.

Task 8. Mark each of the following statements with True or False:

1. Hard disks are still very expensive.
2. Near-line storage needs to have a quick access speed.
3. Near-line storage is usually some form of jukebox.

4. Offline storage needs to have a fast access speed.
5. Users are aware that their files have been moved to near-line storage.
6. The movement of files between near-line and online storage is automatic.
7. The user sometimes has to request files from the systems administrator.
8. Files are frequently recovered from offline storage.
9. Tape has much better data integrity than optical media.
10. It is usually possible to use whatever media you want in an HSM system.

GLOSSARY

A

abacus счеты

ability способность, возможность

abort прекращение (выполнения программы

accept принимать (информацию)

acceptable приемлемый

arithmetic and logic unit арифметическое/логическое устройство

allocation назначение, распределение (средств, ресурсов), размещение,

all-purpose computer многоцелевой компьютер, универсальный компьютер

advantage преимущество

at capacity при мощности, при нагрузке, емкость

auxiliary вспомогательный, добавочный; запасной,

application применение, использование, приложение

apparent очевидный; явный; истинный; наблюдаемый (напр. об отсчёте);

automatic data processing автоматическая обработка данных

authentication аутентификация, проверка, подтверждение подлинности, процесс идентификации пользователя или компьютера

at a ratio of three to one в отношении трех к одному

acceptable Приемлемый

access доступ, обращение; обращаться, иметь доступ

time ~ время доступа

database ~ доступ к базе данных

sequential ~ последовательный доступ

accessible Доступный

accessories Реквизиты

accessory equipment вспомогательные устройства

accomplish завершать, заканчивать

accomplishment завершение; выполнение

according Соответствующий

to ~ в соответствии с

accordingly		соответственно, соответствующим образом
account		расчет, подсчет, счет (банковский); учитывать, подсчитывать
	take into ~	принимать во внимание, учитывать
accumulate		накапливать (ся), суммировать, собирать
accumulator		сумматор; накапливающий регистр; устройство суммирования
accuracy		точность; правильность; четкость
accurate		точный, правильный
achieve		достигать, завершать
achievement		достижение, завершение
acquire		приобретать, получать
acquirement		приобретение, получение
act		действовать, работать
action		действие, работа, операция
	put into ~	приводить в действие
activity		Деятельность
adapt		адаптировать(ся); настраивать(ся); приспосабливать(ся)
adapter		Адаптер
add		сложение, суммирование
added		добавочный, дополнительный
adder		сумматор, устройство (блок) суммирования
addition		сложение, суммирование
	in to ~	в дополнение к; помимо
address		адрес; адресовать; касаться; затрагивать
adequate		адекватный; соответствующий; достаточный; приемлемый
adjacent		смежный; соседний; примыкающий
adjust		регулировать; настраивать

adjuster		Регулятор
adjustment		регулировка; настройка; корректировка; подгонка; поправка
advance		продвигаться(ся);
	in ~	Заранее
advanced		улучшенный; усовершенствованный; (более) эффективный
advancement		продвижение; улучшение; усовершенствование
advantage		преимущество; выгода
advice		совет; рекомендация
advise		советовать; рекомендовать; консультировать
adviser		консультант; справочник
affect		влиять; воздействовать
agree		соответствовать; согласовывать (ся)
agreement		Соглашение
aid		помошь; содействие
aids		средства; приспособления
aim		цель; нацеливать, направлять
algorithm		Алгоритм
align		выравнивать, выстраивать в линию
allocate		распределять; размещать; предоставлять (доступ)
allocation		распределение; назначение; предоставление
allow		допускать; позволять
	for ~	учитывать; принимать во внимание
allowable		Допустимый
alter		(из)менять(ся)
alteration		изменение; перемена
amend		исправлять; улучшать
amendment		поправка; исправление

amount	количество; величина; размер; объем; составлять; насчитывать
of damage ~	степень повреждения
of memory ~	объем памяти
of time ~	интервал времени
proper ~	необходимое количество
amplification	Усиление
amplifier	Усилитель
amplify	усиливать (ся)
analog	аналог; аналоговый
analog-digital	аналого-цифровой
analyst	аналитик; (системный) разработчик
appear	появляться; возникать; оказываться
appearance	появление; вид
appliance	устройство; прибор
application	приложение; применение; употребление; использование; (прикладная) программа
applied	Прикладной
apply	применять (ся); использовать;
approach	приближение; подход; метод; приближаться, подходить
top-down ~	принцип нисходящей разработки
comprehensive ~	комплексный подход
educational ~	метод обучения
general ~	общий подход
graphic ~	графический метод
self-study ~	метод самообучения
step-by-step ~	метод поэтапного решения
training ~	метод обучения
trial-and-error ~	метод проб и ошибок; метод подбора

appropriate	подходящий; соответствующий; свойственный; присущий
architect	разработчик архитектуры
architecture	архитектура; структура
communications ~	архитектура средств связи
computer ~	архитектура компьютера
disk ~	структура диска
instruction set ~	структура системы команд
network ~	сетевая архитектура
security ~	архитектура системы защиты
software ~	структура программного обеспечения
arrange	размешать; располагать; устанавливать; монтировать
icons ~	выстроить значки
arrangement	размещение; расположение; упорядочение; устройство
array	матрица; решетка; массив; упорядочивать, размещать в массиве
assemble	собирать; объединять; монтировать; ассемблировать
assembler	Ассемблер
assembly	сборка; монтаж; узел; блок; совокупность; система
associate	соединять; объединять; связывать
associated	(при)соединенный; объединенный; связанный; соответствующий
documentation ~	соответствующая документация
association	объединение; взаимосвязь; совокупность
assurance	гарантия; обеспечение
assure	гарантировать; обеспечивать
attach	подсоединять(ся); подключать(ся); прилагать(ся)
attachment	подсоединение; подключение; (тех.) приспособление
attain	Достигать

attempt попытка; пытаться

attitude положение; ориентация; отношение

avail польза; выгода; быть полезным; помогать

availability готовность; доступность; наличие

available доступный; имеющийся (в наличии); имеющий место

have ~ иметь в наличии, иметь в распоряжении

when ~ при наличии

widely ~ Общедоступный

average Средний

avoid избегать; исключать; устранять; предотвращать

aware осведомленный; информированный

awareness осведомленность; информированность

B

background фон; предпосылка, основа; подготовка; квалификация; навыки (работы)

bar стержень; полоса; строка

base база; основа; основание;

data ~ база данных

information ~ совокупность информации

knowledge ~ база знаний

user ~ круг пользователей

based Основанный

batch пакет; пакетный файл

processing ~ пакетная обработка

benefit выгода; польза; преимущество; помогать; способствовать

bias смещать; смещение

binary Двоичный

coded ~ в двоичном представлении

bit	бит; двоичный разряд
blank	заготовка, болванка
block control	служебный заголовок; управляющий заголовок
board	панель; пульт; плата
chip ~	плата с микросхемами
circuit ~	монтажная плата
key ~	Клавиатура
switch ~	панель переключения
bootstrapping	начальная загрузка
branch	ветвь; раздел; отделение; разветвляться; переходить
break	разрыв; прерывание; пауза; прерывать; нарушать (работу); отказывать (о программе)
into ~	внедряться, проникать (в систему)
breakdown	разрушение; поломка
brief	краткий; сжатый
in ~	кратко; вкратце
bring	(пре)доставлять; давать
into ~	вводить; заносить в память
into action ~	приводить в действие
out ~	показывать; демонстрировать
browse	просматривать
browsing	просмотр
buffer	буфер; заносить в буфер
bug	ошибка; дефект; недоработка
data ~	ошибка в данных
loop ~	ошибка в цикле
security ~	недоработка системы защиты
bug-free	не содержащий ошибок

bug-test проверять на наличие ошибок

builder разработчик; изготовитель; создатель

building разработка; построение; формирование; создание

burden издержки; затраты; обязанности;

bus шина; канал; линия (передачи данных); соединять шиной

control ~ шина управления

data ~ шина данных

input ~ входная шина

input-output ~ шина ввода-вывода

memory ~ шина (доступа) к памяти

button кнопка; кнопочный

browse ~ кнопка просмотра

cancel ~ кнопка отмены

emergency ~ аварийная кнопка

exit ~ кнопка выхода

reset ~ кнопка сброса

start ~ кнопка запуска

byte байт; размером в байт

C

Cache кэш; файл для хранения (данных); хранить; сохранять

Caching работа с кэшем

Cage кассета, каркас

Calculate вычислять; рассчитывать

calculating device вычислительное устройство

calibrate градуировать; выверять; настраивать

Call вызов; обращение; вызывать; обращаться; называть

call for	требовать; предусматривать
close circuit	замкнуть цепь
cancel	отменять; аннулировать; отмена; аннулирование
capability	способность; возможность
capacitor	Конденсатор
capacity	емкость; объем; производительность; пропускная способность
media ~	емкость носителя
capacity	мощность, нагрузка, производительность; пропускная способность
capture	собирать (данные); переносить; записывать (в память)
card	плата; карта; карточка
cardfile	Картотека
carrier	носитель; держатель; сеть передачи данных
carry	нести; переносить
out ~	выполнять (команду)
cartridge	кассета; картридж
cathode-ray tube	электроннолучевая трубка
cause	заставлять; вынуждать; быть причиной; причина; основание
cell	ячейка; элемент
central processor	центральный процессор
chain	цепь; цепочка; последовательность
challenge	трудность; препятствие; представлять трудность
change	изменение; замена; изменять(ся); сменять(ся)
character	символ; знак; буква
table ~	таблица символов
chart	диаграмма; график; схема; таблица; строить график;

изображать

bar ~ столбиковая диаграмма

dot ~ точечная диаграмма

line ~ график

pie ~ круговая / секторная диаграмма

check контроль; проверка; проверять

checkout проверка; наладка; отладка

chip кристалл; микросхема

choose Выбирать

circuit цепь; контур; электрическая схема

circuitry (электронные) схемы

clear чистый; стертый; удаленный; очищать; стирать; удалять

code код; кодировать; программировать; система команд

coding программирование

column столбец; колонка; графа

communicate сообщать(ся); связывать

communication связь; сообщение; взаимодействие

comparative Сравнительный

compare сравнение; сравнивать; соотноситься

comparer / comparator компаратор; устройство сравнения

compatibility совместимость

compiler Компилятор

complete полный; целый; завершенный; завершать; заканчивать

completely полностью; целиком

computation вычисление; расчет

compute вычислять; рассчитывать

computer компьютер; вычислительная машина

advanced ~ современный компьютер

all-purpose ~ универсальный компьютер

analog ~ аналоговый компьютер

digital ~ цифровой компьютер

first-generation ~ компьютер первого поколения

general-purpose ~ универсальный компьютер

handheld ~ карманный компьютер

IBM-compatible ~ ИБМ-совместимый компьютер

mobile ~ портативный / переносной компьютер

notebook ~ блокнотный компьютер

Personal [PC] ~ персональный компьютер

portable ~ портативный компьютер

Mail ~ электронная почта

concept понятие; принцип; концепция

condition условие; состояние; режим

conduct an operation вести какую-л. работу

confirm подтверждать

confirmation Подтверждение

delivery ~ подтверждение приема

Consequently

Следовательно

Connection

подключение; установление связи; соединение; схема

consider рассматривать; учитывать; полагать; считать

considerable значительный; существенный

considerably значительно

consume потреблять; расходовать

consumer потребитель; абонент

consumption потребление; расход

power ~ расход энергии

content содержание; смысл

contrast контраст; противоположность

ased with ~ в отличие

in ~ напротив; наоборот

contribute содействовать; способствовать; вносить вклад

contribution вклад; содействие

consequently следовательно

control управление; регулирование; управлять; регулировать

access ~ управление доступом

device ~ управление устройством

distance ~ дистанционное управление

error ~ контроль за ошибками

inventory ~ инвентаризация; переучет

panel ~ панель управления

unit ~ блок управления

convenience удобство; пригодность

convenient удобный; пригодный

conversion преобразование

convert преобразовывать

converter преобразователь; конвертор

convey передавать; сообщать

conveying передача (информации)

compression ratio коэффициент сжатия (данных)

copy копия; экземпляр; копировать

core ядро; оперативная память; суть; основная часть

correct верный; правильный; нужный; требуемый; исправлять

correction исправление; устранение (неисправности); коррекция

corrective Корректирующий

corrector корректор; блок или программа корректирования

corrupt разрушать; портить; искажать; искаженный

corrupted искаженный; запорченный

corruption разрушение; искажение; порча; повреждение

data ~ искажение данных

cost стоимость; цена

cost-effective экономичный; экономически оправданный

count счет; подсчет; отсчет; считать; подсчитывать

counter счетчик;

binary ~ двоичный счетчик

character ~ счетчик символов

data ~ счетчик (элементов) данных

instruction ~ счетчик команд

pulse ~ счетчик импульсов

sequence ~ счетчик команд

software ~ программный счетчик

storage ~ накапливающий счетчик

time-out ~ счетчик времени ожидания

create создавать; формировать

crash крах, аварийный отказ, фатальный сбой, потерпеть аварию

creation создание; формирование

cross-network задержка (сигнала) в сетях

curriculum учебная программа

current-address register регистр текущего адреса

cycle цикл; период; такт; этап

D

D-algorithm алгоритм (для генерирования тестов в комбинационных логических схемах)

damage повреждение; разрушение

data данные; информация

application ~ данные прикладной программы

approximate ~ приближенные данные

available ~ имеющиеся данные

bad ~ неверные (искаженные) данные

calculation ~ расчетные данные

check ~ контрольные данные

help ~ справочные данные

missing ~ недостающие (отсутствующие) данные

source ~ исходные данные

database база данных; заносить в базу данных

deal иметь дело; работать

dealer посредник; поставщик

debug отлаживать (программу)

debugger отладчик

debugging отладка; наладка

decide решать; принимать решение

decision решение

decode декодировать

decoder Дешифратор

decrease уменьшение; снижение; уменьшать; снижать

default по умолчанию; подразумеваемый; умолчание;

	стандартный параметр
deficiency	недостаток; нехватка; отсутствие
define	определять; задавать
definition	определение; задание
degree	степень; мера;
of compatibility ~	степень совместимости
of protection ~	степень защиты
of security ~	степень безопасности
delay	задержка; запаздывание; задерживать; откладывать
delete	удалять; стирать; очищать
deleter	программа удаления
deletion	удаление; стирание
delivery	подача; доставка; поставка
demagnetize	Размагничивать
demand	требование; запрос; требовать; запрашивать
density	Плотность
data ~	плотность записи данных
drive ~	плотность дисковода
packing ~	плотность упаковки
storage ~	плотность заполнения памяти
depend	зависеть от (чего-либо)
dependence	зависимость
dependent	зависимый; зависящий
depending	в зависимости от
deposit	помещать; размещать
depository	склад; хранилище
design	проектирование; конструирование; разработка; построение

detail деталь; подробность

in ~ подробно; детально

detect обнаруживать; выявлять

detection обнаружение; выявление

error ~ выявление ошибок

failure ~ обнаружение неисправностей; выявление ошибок

detector детектор; средство обнаружения; датчик

device устройство; прибор; аппарат; приспособление

accounting ~ счетное устройство

alarm ~ сигнальное устройство

clock ~ датчик времени; таймер

computing ~ вычислительное устройство; способ вычислений

control ~ устройство управления

drawing ~ чертежное устройство

encoding ~ кодирующее устройство

incompatible ~ несовместимое устройство

measuring ~ измерительное устройство

pen ~ чертежное устройство; световое перо

plotting ~ чертежное устройство

printing ~ печатающее устройство

recording ~ записывающее устройство

sensing ~ датчик; детектор

switching ~ переключатель

devise разрабатывать; изобретать

digit цифра; разряд (числа); знак

binary ~ двоичная цифра

binary-coded ~ цифра в двоичной кодировке

check ~ контрольный разряд

information ~ информационный разряд

input ~ вводимая цифра

significant ~ значащая цифра

digital Цифровой

digitally цифровом представлении

digit-by(to)-digit поразрядный

digitize преобразовывать к цифровому ряду

digitizer аналого-цифровой преобразователь; графический планшет; сканер

dimension размер; измерение

dipolar имеющий два полюса

direct направлять; управлять; руководить; указывать

direction ение; руководство; указание

backward ~ обратное направление

clockwise ~ направление по часовой стрелке

counterclockwise ~ направление против часовой стрелки

data ~ направление передачи данных

forward ~ прямое направление

inverse / reverse ~ обратное направление

printing ~ направление печати

transmission ~ направление передачи данных

directory каталог; справочник; перечень (данных); руководство

disadvantage недостаток; неудобство

disagreement несоответствие; расхождение; противоречие

disappear исчезать; пропадать

discharge разгрузка; разгружать, освобождать (систему)

disclose раскрывать; обнаруживать

disconnect разъединять; отключать;

discount не учитывать; не принимать в расчет; скидка

discover обнаруживать; выявлять

discovery обнаружение; выявление

discrete дискретный; отдельный

descriptor описатель, дескриптор

disintegrate разделять(ся); распадаться на составные части

disk диск

blank ~ пустой диск

flexible ~ гибкий диск

floppy ~ гибкий, флоппи-диск

hard ~ жесткий диск

Capacity ~ емкость диска

displace перемещать; смещать

display дисплей; устройство (визуального) отображения

distortion искажение

distribute распределять; распространять

distributed распределенный; рассредоточенный; распространенный

distribution распределение; распространение

distributor распространитель; распределитель

diversity разнообразие; различие

dot точка; ставить точку

download загружать; считывать; считывание (файлов) с сервера

drive привод; дисковод; запоминающее устройство

disk ~ дисковод

magnetic-tape ~ запоминающее устройство на магнитной ленте

driver драйвер; двигатель

print ~ драйвер печати

software ~ программный драйвер

due to	благодаря; из-за; вследствие
dump	разгрузка; дамп; вывод; разгружать сбрасывать; выводить
duplication	дублирование; копирование
duplicator	копировальное устройство
E	
edit	редактировать;
editor	редактор; программа редактирования
effect	действовать; оказывать воздействие; влияние; эффект
efficiency	эффективность; коэффициент полезного действия
effort	усилия; работа
eject	выбрасывать; выталкивать; выдавать (данные); выброс; выдача
elaborate	разрабатывать; развивать
elaboration	развитие; разработка
eliminable	устранимый
eliminate	устранять; удалять; отменять; ликвидировать
elimination	устранение; отмена
e-mail	электронная почта
e-mailing	отправка (сообщений) по электронной почте
embrace	охватывать; содержать
emergency	авария; чрезвычайная ситуация; аварийный
emit	испускать; излучать; выдавать; генерировать (данные)
emphasize	выделять; подчеркивать
enable	разрешать; позволять; делать возможным; допускать
encapsulate	герметизировать; изолировать; помещать (в пакет)
encoder	шифратор; кодирующее устройство; шифровальщик
engine	механизм; устройство
ensure	обеспечивать; гарантировать

enter	входить; вводить; заносить
entire	целый; полный; весь
entirely	целиком; полностью
entry	ввод; занесение; вход
enumerate	перечислять
enumeration	перечисление; перечень
environment	среда; окружение; условия (эксплуатации); средства
application ~	прикладная среда
communications ~	коммуникационная среда
computing ~	вычислительная среда
execution ~	среда выполнения программы
external ~	внешняя среда
hardware ~	аппаратная среда
management ~	среда / средства управления
network ~	сетевая среда
processing ~	условия обработки
security ~	условия защиты; режим безопасности
software ~	программная среда
user ~	операционная среда
equal	равный; одинаковый
equality	равенство
equation	уравнение;
equip	оборудовать; оснащать
equipment	оборудование; приборы; аппаратура; (аппаратные) средства
erase	стирать; удалять
erasing	стирание; удаление; очистка
error	ошибка; погрешность

access ~ ошибка доступа

coding ~ программная ошибка

common ~ типичная ошибка

connection ~ неправильное соединение

operating ~ ошибка из-за нарушения правил эксплуатации

outstanding ~ неустраненная ошибка

permissible ~ допустимая ошибка

processing ~ ошибка при обработке данных; погрешность вычисления

startup ~ ошибка при начальной загрузке

time-out ~ ошибка из-за неготовности устройства к работе

unrecoverable ~ неисправимая ошибка

Handling ~ обработка ошибок

trapping ~ ловушка для ошибок

error-free не содержащий ошибок

error constellation ошибочная комбинация

error-prone подверженный ошибкам

essential существенный; значительный; неотъемлемый; необходимый

evaluate data оценивать данные

event событие; случай; исход

examination исследование; рассмотрение; просмотр; проверка

examine исследовать; проверять

except for за исключением

exchange обмен; замена

execute выполнять; исполнять

execution выполнение; исполнение

executive диспетчер; управляющая программа; операционная система

exit выход; выходить

expand расширять(ся); увеличивать; наращивать (возможности)

expansion расширение; увеличение;

experience опыт; квалификация; испытывать (трудности)

exponentiation возводить в степень

extend расширять; удлинять

extension расширение; дополнение; удлинение; продление

extract выделять; извлекать

extraction извлечение; выборка; выделение

extremely чрезвычайно; крайне; очень

F

fabricate изготовлять

fabrication изготовление

facility устройство; средство; удобство

facilities оборудование; приспособления; возможности; средства

communication ~ средства связи

database ~ средства (поиска) базы данных

display ~ средства (визуального) отображения / вывода на экран

management ~ средства управления

factor of advantage коэффициент преимущества

fail сбой; отказ; повреждение; выходить из строя; отказывать; не удаваться

failure отказ; повреждение; дефект; сбой; ошибка; неудача

firewall. межсетевой экран (МЭ) , брандмауэр, защитная система, сетевой заслон, "огненная стена" система (аппаратная или программная) или комбинация систем, образующая в целях защиты границу между двумя или более сетями, предохраняя от несанкционированного попадания в сеть или предупреждая выход из неё пакетов данных

fault неисправность; дефект; отказ; сбой; давать сбой; отказывать

assembly ~ дефект сборки

data ~ ошибка в данных

design ~ проектная недоработка

device ~ неисправность устройства

latent ~ скрытый дефект

random ~ случайный сбой /ошибка

feasibility возможность; осуществимость; выполнимость

feasible возможный; выполнимый; осуществимый

feature свойство; признак; особенность; характерная черта

feed подавать; питать; заправлять (бумагу); вводить (данные)

feedback обратная связь

feed in data загружать данные

field поле; область; зона; сфера (деятельности)

figure цифра; число; вычислять;

figure out вычислять; определять

file файл; заносить в файл

batch ~ пакетный файл

common ~ общий файл

data ~ файл / картотека данных

help ~ файл подсказок

input ~ входной файл

output ~ выходной файл

user ~ файл пользователя

recovery ~ восстановление файла

firmware встроенное программное обеспечение

flexibility гибкость; адаптируемость; настраиваемость;

	изменяемость
flexible	гибкий; адаптируемый; настраиваемый; изменяемый
floppy	гибкий диск; дискета
flow	ход выполнения (программы); последовательность; проходить
flowcharting	построение блок-схемы
font	шрифт; набор символов
alpha-numeric ~	текстовый шрифт
default ~	шрифт, выбираемый по умолчанию; стандартный шрифт
plotter ~	чертежный шрифт
print / type ~	печатный шрифт
force	сила; усилие; вынуждать; заставлять; вводить, вставлять (с силой)
fraction	дробь; доля; часть
frame	блок (данных); структура; система; корпус
framework	структура; система; схема; основа; основания; принципы
fraud	мошенничество; обман
frequency	частота
fulfill	выполнять; осуществлять; завершать
fulfillment	выполнение; осуществление; завершение
fundamental	основной; существенный; фундаментальный;
furnish	поставлять; снабжать

G

gadget	приспособление; вспомогательное устройство
gain	достигать; извлекать пользу; выигрывать; выгода; усиление

gather	собирать(ся)
gather data	собирать информацию
general	общий; универсальный;
generate	генерировать; создавать; производить
generation	создание; формирование; образование; поколение
give back	возвращаться
give out	выдавать; предоставлять
give up	отказывать (об устройстве); не справляться; отказываться
grade	степень; ранг; класс; сорт; упорядочивать; размещать по рангу
grading	классификация; упорядочивание; выравнивание
grapher	самописец
graphic(al)	графический
plotting tables ~	графические планшеты
graphics	графика
graphing	вычерчивание графиков, диаграмм или кривых, отображение графической информации
groundwork	основа; основание
guard	защита; защищать; предохранять
guidance	управление; наведение (на цель); руководство
guide	руководство; инструкция; справочник
installation ~	инструкция по установке (системы)
on-line ~	электронный справочник
programming ~	руководство по программированию
reference ~	справочное руководство
software ~	руководство по программному обеспечению
troubleshooting ~	основные принципы поиска неисправностей

user's ~	руководство для пользователя

H

habit	навык; привычка; свойство
computings ~	навыки работы с компьютером
handling	обработка; управление; регулирование
data ~	работа с данными
fault / error ~	обработка ошибок
hand-operated	управляемый вручную
hand-printed	машинописный
hang (up)	«зависать»; блокировать
hardware	аппаратура; оборудование; аппаратное обеспечение /средства
by ~	аппаратными средствами
computer ~	аппаратное обеспечение компьютера
device ~	аппаратная часть устройства
display ~	аппаратные средства вывода на экран
expansion ~	дополнительное аппаратное обеспечение
support ~	аппаратное обеспечение
hash	случайные данные; ненужная информация
hashing	хэширование, рандомизация, перемешивание
harm	вред; ущерб; повреждение
harmful	вредный
harmless	безвредный (о вирусе)
hazard	риск; опасность
heading	заголовок
healthy	исправный; работоспособный (о системе);

	незапорченный
help	подсказка; справка; помощь
hereafter	далее; в дальнейшем
hereby	таким образом; тем самым
hierarchy	иерархия
high-capacity	большой емкости
high-density	с высокой плотностью
high-fidelity (Hi-fi)	с высокой точностью воспроизведения
high-frequency	высокочастотный
high-level	высокоуровневый
high-quality	высококачественный
high-reliable	высоконадежный
hold	хранить; содержать (данные)
hole	отверстие; гнездо; окно
access ~	окно доступа
connector ~	гнездо разъема
home	начало; исходная позиция
hook	рычаг
hook-up	подключать; подсоединять (устройство)
human-oriented	ориентированный на пользователя
human being	человек
hurt	повреждение; вред; ущерб; повреждать; вредить
hypertext	гипертекст

I

icon	условный символ; пиктограмма; изображать условно
identifier	идентификатор; имя; обозначение

ideal coding	идеальное кодирование
identify	идентифицировать; распознавать; выявлять (ошибку)
ignorance	незнание
ignorant	несведущий; не знающий
imbed	встраивать; внедрять; включать
immunity	невосприимчивость; нечувствительность
implement	выполнять; осуществлять
implementation	реализация; осуществление; разработка; внедрение
implementor	конструктор; разработчик
improper	непригодный; недопустимый; неправильный; неподходящий
improve	улучшать; уточнять (данные)
improvement	улучшение; усовершенствование; уточнение (данных)
inaccurate	неточный; ошибочный
inadequate	несоответствующий; непригодный; неприемлемый
incapable	неспособный
include	включать; содержать
incompatible	несовместимый
inconsiderable	незначительный
incorporate	включать; содержать; встраивать; внедрять
increase	увеличивать; возрастать; увеличение; повышение
independent	независимый
in direct ratio - in inverse ratio - ratio of exchange	передаточное число
in full operation	на полном ходу
in operation	в действии
inferior	низший; худший (по качеству)
influence	влияние; воздействие; влиять; воздействовать

initial первоначальный; исходный

initially первоначально; в исходном состоянии

inject вносить; вводить

injection внесение; введение

injury повреждение; порча

ink-jet струйный (о принтере)

innovate вводить новшества; усовершенствовать

innovation нововведение; новшество; усовершенствование

innovative новаторский; инновационный

input ввод; входное устройство; вводить; подавать на вход

character ~ посимвольный ввод

command ~ ввод команды

data ~ ввод данных; устройство ввода данных

disk ~ ввод (данных) с диска

keyboard ~ ввод с клавиатуры

system ~ ввод по запросу системы

input/output устройство ввода-вывода

inquiry запрос; опрос

install устанавливать; монтировать

installation установка; размещение; монтаж; вставка; настройка

interaction взаимодействие

integrity целостность, сохранность, непротиворечивость и правильность данных

interface интерфейс; сопряжение; место стыковки; сопрягаться)

common ~ стандартный интерфейс

data ~ информационный интерфейс

database ~ интерфейс (программы) с базой данных

external ~ внешнее сопряжение

flexible ~	гибкий / настраиваемый интерфейс
floppy-disk ~	интерфейс гибкого диска
general-purpose ~	универсальный интерфейс
software/hardware ~	интерфейс ввода-вывода
interprete	интерпретировать; истолковывать
interpreter	интерпретатор; переводчик
interrupt	прерывание; прерываться
intricate	сложный; запутанный
instruction decoder	дешифратор команд
invade	вторгаться; проникать
invalid	неверный; недопустимый; недействительный; необоснованный
invalidate	аннулировать; отменять
invalidity	неверность; недопустимость; необоснованность
invasion	вторжение; проникновение
investigate	исследовать; расследовать
investigation	исследование
inverse ratio	обратное отношение
invisible	невидимый; неразличимый
involve	включать; вовлекать; вызывать
irregular	неправильный; непостоянный; нестандартный
irrelative	не связанный; несущественный; не относящийся к делу
irreplaceable	не подлежащий замене; несменный
issue	вывод; выдача; выводить; выдавать (сообщение); посылать
item	элемент; составная часть

J

jack	гнездо
jam	заедание; заклинивание
job	работа; задание; работать
join	соединение; соединять
joystick	джойстик (рычажковое устройство)
junction	соединение; стык
justification	выравнивание (данных); обоснование; доказательство
justify	выравнивать; обосновывать; доказывать; оправдывать

K

key	клавиша; кнопка; переключатель
break ~	клавиша прерывания
control <Ctrl> ~	управляющая клавиша
delete ~	клавиша удаления
end ~	клавиша перехода в конец
enter ~	клавиша ввода
erase ~	клавиша удаления
escape ~	клавиша выхода
home ~	клавиша перехода в начало
insert ~	клавиша вставки
page-down ~	клавиша листания вперед
page up ~	клавиша листания назад
pause ~	клавиша остановы (паузы)
reset ~	кнопка сброса
shift ~	клавиша переключения регистров

keyed overlay ключ в СУБД, последовательность знаков, используемая для идентификации записи в индексно-последовательном файле и быстрого доступа к ней

keyboard клавиатура; клавишный

kind вид; разновидность

know-how технология; методика; знания; приемы; жарг. ноу-хау

knowledge знания; осведомленность

be common ~ быть общеизвестным

programming ~ знания в области программирования

knowledgeable осведомленный; компетентный

L

lack отсутствие; недостаток

lagging отставание; запаздывание

language

all-purpose / general-purpose ~ универсальный язык

artificial ~ искусственный язык

assembler ~ язык ассемблера

business-oriented ~ язык для (программирования) экономических задач

compiler ~ язык компилятора

data ~ информационный язык

database ~ язык для работы с базой данных

high-level ~ язык высокого уровня

low-level ~ язык низкого уровня

modelling / simulation ~ язык моделирования

programming / development ~ язык программирования

launch запускать (программу); вводить в действие

launch an operation запускать действие

layout размещение; распределение

lead [led] свинец

learn-on-line обучаться с помощью компьютера

legitimate легальный, законный

letter буква; символ

level уровень; выравнивать

access ~ уровень доступа

data ~ информационный уровень

device ~ уровень устройств

error ~ уровень ошибки

hardware ~ аппаратный уровень

input ~ уровень входного сигнала

output ~ выходной уровень

performance ~ степень быстродействия

presentation ~ уровень представления

protection / security ~ уровень / степень защиты

software ~ программный уровень

transmission ~ уровень передаваемого сигнала

lifetime срок службы

line строка; линия; шина; канал

link связь; соединение; связывать; соединять

list список; перечень; таблица

listing распечатка; перечень; представление в виде списка

literacy грамотность

literate грамотный

lightning speed бешеная скорость, скорость с быстротой молнии

load загружать; заправлять (ленту)

loading загрузка; заправка;

locate размещать; располагать

location местоположение; позиция

logic логика; логическая последовательность; логический блок

processing ~ логическая последовательность обработки

program ~ логическая последовательность выполнения программы

loop цикл; петля; виток; контур

looping logic логическая схема выполнения (операций) в цикле

loss потеря; затраты

of performance ~ снижение быстродействия / пропускной способности

of productivity ~ снижение производительности труда

data ~ потеря данных

LSI-Large Scale Integration интеграция высокого уровня

lower понижать; уменьшать

manufacturing снижение производительности

M

magnetize намагничивать

mail (электронная) почта

main главный; основной

maintenance сопровождение, поддержка, эксплуатация

maintain поддерживать; сохранять; эксплуатировать

malfunction сбой; отказ; неисправность; отказывать; давать сбой

manage управлять; организовывать

management	управление; регулирование; организация
data ~	работа с данными
database ~	управление базой данных
error ~	управление обработкой ошибок
software ~	разработка и сопровождение программного обеспечения
task ~	управление ходом выполнения задач
manipulate	управлять; манипулировать; обрабатывать
manipulation	управление; работа; обработка; преобразование
manipulator	блок обработки
manual	руководство; справочник; инструкция; описание
help ~	справочное руководство
operation ~	руководство по эксплуатации
manufacture	изготовлять; производить; разрабатывать
manufacturer	изготовитель; производитель; разработчик
mark	признак; метка; знак; помечать; обозначать; выделять
match	сопоставлять; сравнивать; согласовывать; соответствовать
mean	значить; подразумевать
meaning	значение; смысл
means	средства; способ
means of communication	средство связи
measure	измерять; мера; критерий
measurement	измерение; размер
medium *(pl* media)	среда; носитель; средство; способ; средний
data ~	носитель данных
input ~	носитель для входных данных; способ ввода (данных)
output ~	носитель для выходных данных; способ вывода
portable / removable ~	съемный носитель

megabit мегабит

megabyte мегабайт

meet удовлетворять (условию); отвечать; соответствовать

member элемент набора, элемент множества

memo уведомление; памятка; служебная записка

memory память; запоминающее устройство

additional ~ добавочная память

core ~ оперативная память

extended ~ дополнительная память

external ~ внешняя память

high-capacity ~ память большой емкости

internal ~ внутренняя память

main ~ основная память

random-access (RAM) ~ оперативное запоминающее устройство (ОЗУ)

read-only (ROM) ~ постоянное запоминающее устройство (ПЗУ)

secondary ~ вторичная память

merge слияние; объединение; сливать(ся); объединять(ся)

message сообщение; запрос; посылать сообщение

meter измерительный прибор; датчик; счетчик

metering измерение

mode способ; метод; режим

free-running ~ режим свободного доступа

operating ~ рабочий режим

programming ~ режим программирования

read-only ~ режим доступа к данным без возможности их изменения

modification модификация; изменение; вариант; версия

modify модифицировать; изменять; преобразовывать

memorial descriptive техническое описание

monitor монитор; дисплей; наблюдать: контролировать; следить

monitoring мониторинг; наблюдение: контроль

mostly главным образом; большей частью; преимущественно

mouse мышь

movable перемешаемый; подвижный; съемный

move двигать; перемещать; передвигать; переходить

movement движение; перемещение

multitask многозадачный режим, совместное выполнение задач, работа с несколькими задачами

multiple множественный; многокомпонентный; составной

multiplication умножение; усиление

multiply умножать; усиливать; увеличивать

mutual взаимный; общий; совместный

N

need потребность; необходимость; требовать(ся); быть необходимым

network сеть; схема; контур

drive ~ сетевой накопитель

nonarithmetical неарифметическое действие; неарифметическая операция

noncomparable несравнимый

noncompatible несовместимый

noncompatible невычисляемый

noncontrollable неуправляемый

notation запись; представление; обозначение

binary ~ двоичная система

notepad блокнот

number число; количество; цифра

numeric числовой; цифровой

numerous многочисленный

O

objective цель; целевая функция; требование

observation наблюдение; отслеживание

observe наблюдать; следить; соблюдать (правила)

obtain получать; достигать

occur происходить; случаться

office equipment офисное оборудование, оргтехника

on-board расположенный на плате; встроенный; бортовой

ongoing продолжающийся; постоянный; непрерывный

on-line неавтономный; подключенный к компьютеру

onset начало; ввод в действие

open открывать; начинать; размыкать

operand операнд

address ~ адресный операнд

operate работать; действовать; функционировать

operation работа; действие

basic ~ основной режим работы

cancel ~ операция отмены

computer ~ работа компьютера

debugging ~ работа в режиме отладки

error-free ~ безотказная работа

exchange ~ операция обмена

input / outputs ~ операции ввода-вывода

opportunity возможность

option выбор; вариант; средство; возможность

optionally необязательно; по усмотрению; при желании

order команда; порядок; последовательность

of execution ~ последовательность выполнения

of use ~ очередность использования

put in ~ приводить в порядок

outline контур; очертание; схема; план; краткое изложение

out-of-order неисправный

output вывод; выход; устройство вывода; выводить

information ~ выходная информация

error ~ ошибка на выходе, ошибка выходной величины, ошибка вывода

Capacitance ~ выходная емкость

hard-copy ~ распечатка; данные, выведенные на печать

soft-copy ~ данные, выведенные на экран

P

package пакет; блок; модуль

application ~ прикладной пакет

data ~ пакет данных

packaged software готовое программное обеспечение

password пароль

pattern шаблон; образец; форма

recognition ~ распознавание образов

pen перо

graphic / light ~ световое перо

perform выполнять; осуществлять; работать; действовать

performance (рабочая) характеристика; производительность;

быстродействие; режим работы

application ~ скорость работы прикладной программы

computer ~ быстродействие компьютера

device ~ скорость работы устройства

error ~ скорость исправления ошибок

execution ~ скорость выполнения (программы)

memory ~ скорость доступа к памяти; скорость выборки

network ~ пропускная способность

processor ~ быстродействие процессора

permit разрешать; допускать

peripheral окружной, периферийный, второстепенный

permitted допустимый

pervade распространять; охватывать

photocell фотоэлемент

pick выбирать; извлекать

plotter графопостроитель

plug штепсель; вилка; штекер; подключать; подсоединять

point точка; место; узел; суть; указывать; отмечать

in of ~ в отношении (чего-л.)

out ~ указывать; отмечать

pointer указатель; стрелка

polarize поляризовать(ся), придавать определенное направление, разбивать(ся) на противоположные части, группы

potent могущественный; мощный; убедительный

power мощность; энергия; питание

supply ~ источник питания

predefined symbols заранее заданные символы

predict предсказывать; прогнозировать

predominant преобладающий

predominate преобладать; доминировать

prepare подготавливать; составлять

pressure давление

prevent предотвращать; предохранять препятствовать

prevention предотвращение; предупреждение

primarily главным образом; преимущественно; в основном

print печатать; выводить на экран

engine ~ механизм печати

head ~ головка печати

printer принтер; печатающее устройство

character ~ символьный принтер

dot-matrix ~ точечно-матричный принтер

graphical / image ~ графический принтер

impact ~ контактный принтер

ink-jet ~ струйный принтер

laser ~ лазерный принтер

letter-quality ~ принтер с типографским качеством печати

line (at-a-time) ~ принтер с построчной печатью

page (at-a-time) ~ ~ принтер с постраничной печатью

print out распечатка; вывод на печать или экран

productive capacity производительность, производственная мощность

procedure процедура; процесс; метод; алгоритм

accounting ~ процедура учета

computational ~ алгоритм вычислений

control ~ метод управления

error-correcting ~ процедура / алгоритм исправления ошибок

formatting ~ процедура / процесс форматирования

installation ~ процедура / процесс установки (системы)

solution ~ алгоритм решения

process процесс, обработка

processing обработка (данных)

processor процессор; программа обработки

control ~ управляющий процессор

data ~ программа обработки данных

error ~ блок обработки ошибок

general-purpose ~ универсальный процессор

image ~ графический процессор

mail ~ программа обработки сообщений электронной почты

message ~ программа обработки сообщений

numeric ~ числовой процессор

special-purpose ~ специализированный процессор

text / word ~ текстовый процессор

program программа; план; программировать

access ~ программа для доступа

application ~ прикладная программа

archived ~ заархивированная программа

binary ~ программа в двоичном коде

common ~ часто используемая, распространенная программа

compatible ~ совместимая программа

debugging ~ программа отладки

educational ~ обучающая программа

free ~ бесплатная программа

general-purpose ~ универсальная программа

high-performance ~ программа, выполняемая с большой скоростью

incompatible ~ несовместимая программа

machine language ~ программа в машинном коде

off-line ~ несетевая программа

on-line ~ сетевая программа

processing ~ программа обработки

protected-mode ~ программа, выполняемая в защищенном режиме

remote ~ дистанционная программа

running ~ выполняемая программа

self-loading ~ самозагружающаяся программа

simulation ~ программа моделирования

support ~ вспомогательная программа

utility ~ сервисная программа

watch-dog ~ сторожевая программа

programmable программируемый

programmer программист

programming программирование

environment ~ среда программирования

language ~ язык программирования

prompt подсказка; запрос

proof-read считывать с целью проверки (правильности записи)

proof-reader корректор

proper speed надлежащая скорость

properly правильно; как следует

property свойство; качество; pl. параметры; характеристики

propose предлагать; предполагать

protect защищать

protection защита; система / средства защиты

protector защитное устройство; предохранитель

provide доставлять; обеспечивать; снабжать; предусматривать

provided при условии, что; в том случае, если; только если

provider поставщик; провайдер

provision обеспечение; снабжение; pl. средства

pulse импульс

punched holes and blanks перфорированные отверстия и пробелы

punched tape перфолента

punch пробивать (отверстия)

punched card перфокарта

purpose цель; (пред)назначение

push нажимать; толкать

push-button кнопка

Q

quality качество; свойство; характеристика

image ~ качество изображения

running ~ рабочая характеристика

quantity количество; число; величина; значение

absolute ~ абсолютная величина

alternating ~ переменная величина

continuous ~ непрерывная величина

digital ~ числовое значение

discrete ~ дискретная величина

input ~ входная / вводимая величина

unknown ~ неизвестная величина

variable ~ переменная величина

quit выход (из программы); выходить (из программы)

quitting выход (из программы)

R

raise поднимать; повышать; увеличивать; подъем; повышение

random случайный; произвольный

random-access с произвольным доступом

memory (RAM) ~ память с произвольным доступом

range диапазон; область; интервал

ratio отношение; коэффициент; соотношение

rate степень; скорость; быстрота

of change ~ скорость изменения

of exchange ~ скорость обмена

of response ~ быстрота реакции

reader устройство считывания

bar-code ~ устройство считывания штрих-кода

character ~ устройство считывания / распознавания знаков

reading чтение; считывание

read-only работающий только в режиме чтения

reason причина; основание; довод; обосновывать; заключать

reasonable разумный; допустимый

receive принимать; получать

receiver приемное устройство

record запись; регистрация; записывать; регистрировать

recorder устройство / программа регистрации; самописец

data ~ устройство регистрации данных

tape ~ запись на (магнит.) ленту

reduce уменьшать; сокращать; понижать; сжимать

reduction уменьшение; сокращение; понижение; сжатие (данных)

reel катушка; бобина

release освобождать

reference ссылка; сноска; справочник; руководство

computer ~ руководство по работе с компьютером

hardware ~ документация по аппаратному обеспечению

for ~ для справки

in to ~ по отношению к

make ~ ссылаться; упоминать

user ~ руководство для пользователя

without to ~ независимо от

referenced вызываемый; указываемый

regardless несмотря на; независимо от

register регистр; устройство регистрации; счетчик; датчик

address ~ адресный регистр

base ~ базовый регистр

cash ~ кассовый аппарат

clock ~ счетчик времени; таймер

command / instruction ~ регистр команд

counter ~ регистр счетчика

general-purpose ~ регистр общего назначения

memory / storage ~ регистр памяти

operand ~ регистр операнда

special-purpose ~ регистр специального назначения

relate связывать; иметь отношение

relation отношение; соотношение; зависимость; связь

relative относительный

relatively относительно

reliability надежность

reliable	надежный
reload	перезагружать; повторная загрузка
rely	основывать(ся); полагать(ся)
remote	дистанционный
control program ~	программа дистанционного управления
management ~	дистанционное управление
remove	удалять; устранять; убирать
rename	переименовывать
replace	заменять; замещать
replacement	замена; замещение; смена; подстановка
represent	представлять
representation	представление
pictorial / picture ~	графическое представление
require	требовать
requirement	требование; необходимое условие; потребность
research	исследование; изучение; исследовать
reset	сброс; восстановление; возврат в исходное состояние; сбрасывать; восстанавливать
button ~	кнопка сброса
computer ~	перезагружать компьютер
resource	ресурс; средство; возможность
data ~	информационный ресурс
printer ~	средство вывода на печать
security ~	средство защиты
software ~	программный ресурс
storage ~	ресурс памяти
respect	отношение; учитывать; принимать во внимание; соблюдать
respond	отвечать; реагировать

response		отклик; реакция; ответ
	time ~	время реакции
responsibility		ответственность
responsible		ответственный
restore		восстанавливать; возвращать (в прежнее состояние)
retain		сохранять; удерживать
retrieve		отыскивать; извлекать, выбирать (данные); восстанавливать (файл)
retry		выполнять повторно; повторять
reusable		многократно используемый
reverse		возвращать; двигать в обратном направлении; перематывать назад; обратный ход
reversibility		обратимость; возможность изменить направление на противоположное
reversible		обратимый; реверсивный
reversion		возвращение; возврат
ribbon		лента
roller		ролик; валик
rotate		вращать(ся); чередовать(ся)
rotation		вращение; чередование; смена
routine		(стандартная) программа / операция; (установленный) порядок
ruggedness		прочность
rule		правило; управлять; руководить
ruler		(масштабная) линейка
run		выполнять, запускать (программу); работать; запуск; прогон; выполнение
running		запуск; выполнение; работа
run-time version		исполняемая версия

S

safe безопасный; надежный

safety безопасность; надежность

save сохранять; сберегать

scale шкала; масштаб

scaling масштабирование

scan просмотр; сканирование; развертка; просматривать

scanner сканер; устройство оптического считывания

bar-code ~ устройство считывания штрих-кода

color ~ цветной сканер

hand / manual ~ ручной сканер

laser ~ лазерный сканер

optical / visual ~ оптический сканер

scanning просмотр; поиск; развертка; считывание; сканирование

schedule план; расписание; график

scheduling составление расписания или графика; планирование

science наука; теория

scientific научный

scientist ученый

computer ~ специалист по вычислительной технике и информатике

screen экран; отображать на экране

saver ~ хранитель экрана

screening вывод на экран

search поиск; искать; просматривать

secure защищенный, безопасный, секретный, надежный, гарантированный защищать; обеспечивать защиту

security безопасность; сохранность

seek искать; поиск

select выбирать; выделять (на экране)

selection выбор; выделение

color ~ выбор цвета

directory ~ выбор каталога

drive ~ выбор дисковода / привода

function ~ выбор функции

keyboard ~ выбор клавиатуры

security ~ выбор способа защиты

selectivity избирательность

semiconductor полупроводник

bipolar ~ биполярный полупроводник

metal-oxide ~ структура металл-оксид полупроводник

sensibility чувствительность

sensitive чувствительный

sensor датчик

separate отделять(ся); отдельный; изолированный

separation разделение; отделение

sequence последовательность

alphabetic ~ алфавитный порядок

arithmetic ~ последовательность арифметических операций

binary ~ двоичная последовательность

character / string ~ порядок следования символов

code ~ последовательность кодов

command / instruction ~ порядок выполнения команд

data ~ порядок размещения данных

digital ~ цифровая последовательность

historical ~ хронологическая последовательность

increasing ~ возрастающая последовательность

in ~ последовательно; по порядку

out of ~	не по порядку
serve	обслуживать; служить
server	сервер; обслуживающая / сервисная программа
service	обслуживание; услуги; сервис
data ~	информационная услуга
debugging ~	средство отладки
installation ~	(сервисная) программа начальной установки
memory ~	программа обеспечения доступа у памяти
running ~	выполняемая сервисная программа
security ~	служба безопасности; средство защиты
set	набор; совокупность; серия
of actions ~	совокупность действий
of guidelines ~	набор рекомендаций
of keys ~	группа клавиш
of rules ~	набор правил
of utilities ~	набор сервисных программ
off ~	отключать
on ~	включать
shutdown	выключение, завершение (программы)
shape	форма; придавать форму
share	совместно использовать; делиться (информацией); часть; доля
sharing	совместное использование; коллективный доступ; разделение
shift	сдвигать; перемещать; сдвиг; смещение; смена регистра
shortcoming	недостаток; изъян; дефект
sign	знак; символ
significance	значимость; важность; значительность; значение; смысл
silicon	кремний

similar подобный; аналогичный

similarity сходство; подобие

similarly подобным образом; так же

simple-to-use простой в использовании

simplicity простота

simplify упрощать(ся)

simulate моделировать; имитировать

simulation моделирование; имитация

simulator имитатор; тренажер; программа моделирования / имитации

skip пропускать; переходить

slide скользить; сдвигать; смещать

rule ~ логарифмическая линейка

slot гнездо; разъем; щель; ниша

bus ~ гнездо для подключения к шине

expansion ~ разъем для модуля расширения

small-dimensioned малогабаритный

soft программный; программируемый; электронный (о копии); мягкий

software программное обеспечение; программные средства

compatibility ~ программная совместимость

engineering ~ технология проектирования программного обеспечения

package ~ программный пакет

program ~ прикладная программа

application ~ прикладное программное обеспечение

database ~ программное обеспечение для работы с базой данных

educational ~ программные средства обеспечения

management ~ управляющие программы

simulation ~ программные средства моделирования

solid body твердое тело; кристалл; полупроводник

solution решение

solve решать (проблему)

sound звук; звуковой сигнал

board ~ звуковая плата

card ~ звуковая плата

source источник; исходное устройство; исходная программа

code ~ исходный код

light ~ источник освещения

space пространство; область

exploration ~ исследование космоса

ship ~ космический корабль

vehicle ~ космический летательный аппарат

speed скорость; быстродействие

specific особый; особенный; определенный; конкретный

specifications (технические) характеристики, требования

specifics специальные черты; характерные особенности

specify задавать; определять; указывать; специфицировать

speed скорость; спешить; ускорять

of operation ~ быстродействие

of response ~ скорость реакции

spray распылять; разбрызгивать

spread разброс (значений); протяженность; продолжительность

out ~ расширять(ся); распространять(ся)

network ~ протяженность сети

stand for обозначать

stand-alone автономный

start запуск; начало; запускать

stationary стационарный, несъёмный, неподвижный; закреплённый

stationery бумага для печатающих устройств

state состояние; режим; сообщать; утверждать; констатировать

active ~ рабочее состояние

control ~ режим управления

default ~ стандартный режим (выбираемый по умолчанию)

emergency ~ аварийное состояние

read-only ~ режим чтения без (возможности) записи

step шаг; этап; стадия; ступень

one at a time ~ поэтапно; постепенно

down ~ понижать, уменьшать

out ~ выходить (из окна, цикла)

up ~ повышать; увеличивать

conversion ~ этап преобразования данных

program ~ шаг программы

programming ~ этап программирования

statistical data статистические данные

standard keyboard стандартная клавиша, коммутатор, коммутационная панель

stepping пошаговое продвижение

store data хранить данные

symbol символ; знак, обозначение

step by step пошаговый; поэтапный

stock запас; снабжать

broker ~ биржевой брокер

market forecasting ~ биржевые прогнозы

stop стопор; ограничитель; упор, останавливать(ся)

storage запоминающее устройство; память; хранение;

	запоминание
archival ~	архивная память
available ~	доступная память
buffer ~	буферная память
computer ~	запоминающее устройство / память компьютера
data ~	хранение данных
input ~	хранение входных данных
intermediate ~	промежуточное запоминающее устройство
internal ~	внутренняя память
magnetic-disk ~	запоминающее устройство на магнитных дисках
magnetic-tape ~	запоминающее устройство на магнитных лентах
main ~	основная память; оперативное запоминающее устройство (ОЗУ)
off-line ~	автономное запоминающее устройство; автономное хранение
on-line ~	оперативно доступная память; неавтономное хранение
sequential-access ~	запоминающее устройство с последовательным доступом
variable ~	память для хранения переменных
store	хранить; запоминать; заносить / размещать в памяти
stress	усилие; нагрузка, испытывать нагрузку, напряжение; напряжённое состояние, подвергать напряжению; приводить в напряжённое состояние (внешнее) воздействие
string	строка; последовательность
of characters ~	последовательность символов
subsequent	последующий; дальнейший
subsequently	в дальнейшем; затем; впоследствии
substitute	заменять; замещать
substitution	замена; подстановка
subtract	вычитать

subtraction вычитание

success успех

successful успешный

succession последовательность

successor следующий член (последовательности); очередная версия

suit походить; соответствовать

suitable подходящий; соответствующий

suite набор; комплект; группа; серия

protocol ~ набор протоколов

software ~ комплект программных средств

supply подача; питание; ввод; подавать; вводить; снабжать

data ~ ввод данных

paper ~ подача бумаги

power ~ источник питания

support поддержка; обеспечение; поддерживать; обеспечивать

surround окружать

surrounding окружающий; соседний

switch переключать; переставлять; переключатель; коммутатор

between programs ~ переходить к выполнению другой программы

between windows ~ переходить из одного окна в другое

in / on ~ включать; запускать

off ~ выключать; отключать

over ~ переключать

binary ~ двоичный переключатель

button ~ кнопочный переключатель

reset ~ кнопка сброса

system система; установка; устройство; способ; принцип; методика

artificial-intelligence ~ система искусственного интеллекта

assistance / help ~ справочная система

basic input / output ~ базовая система ввода-вывода

closed ~ замкнутая система

common ~ распространенная система

disk operating ~ дисковая операционная система

executive / operating ~ операционная система

general-purpose ~ универсальная система

healthy ~ исправная система

incompatible ~ несовместимая система

monitoring ~ система контроля

reference ~ справочная / информационная система

support ~ система поддержки, система сопровождения

tutorial ~ обучающая система

T

table таблица

tabulate табулировать; заносить в таблицу

tabulation занесение в таблицу

take брать; выбирать (команду); принимать (вид, значение)

advantage of ~ воспользоваться

care ~ принимать меры; проследить

notes ~ записывать; регистрировать

tape магнитная лента

backup unit ~ устройство получения резервных копий на магнитной ленте

drive ~ накопитель на магнитной ленте

technique метод; способ; техника; технические приемы; методика

advanced ~ усовершенствованная методика; современная технология

computing ~ вычислительная техника

display / video ~ техника отображения; способ вывода на экран

formatting ~ способ форматирования

hardware ~ метод аппаратного решения

measuring ~ измерительная техника

numerical ~ метод числовых вычислений

programming ~ методика программирования

software ~ метод программного решения

неразложимый на составляющие элемент арифметического, символьного или логического выражения

term

дистанционная связь, телесвязь, дистанционная передача данных

telecommunication осуществлять дистанционный доступ

telecommute дистанционная передача данных; дистанционная связь с помощью ЭВМ

telecomputing

телемаркетинг

telemarketing

интегрированные средства обработки и передачи информации

telematics

teleprocessing дистанционная обработка, телеобработка

technology технология; техника; методика; методы; способы

telesoftware программные средства, пересылаемые по телесвязи, дистанционное программное обеспечение

template шаблон; маска; образец; форма

temporarily временно

terminal терминал; зажим; вывод; конец

alphanumeric ~ текстовый терминал

character ~ текстовый терминал

point-of-sale ~	кассовый терминал
remote ~	удаленный терминал
security ~	защищенный терминал
adapter ~	терминальный адаптер
mode ~	терминальный режим
thin-film magnetic medium	тонкопленочный магнитный носитель
thorough	тщательный; подробный
thoroughly	тщательно; как следует
timing	хронометрирование; согласование во времени; расчет времени
tiny	сверхмалый; крошечный
title	заголовок; название
toggle	тумблер; переключатель
tool	средство; инструмент
total	общий; суммарный; совокупный; итоговый; весь; целый
touch pad	сенсорная панель
tracing	слежение; поиск; выявление; определение; трассировка
fault ~	поиск неисправностей
trace -	след, трасса, следить; прослеживать; отслеживать, запись, вычерчивать, калькировать, копировать, отыскивать (повреждение)
track	след; траектория; путь; следить; прокладывать путь
trackball	трекбол
transaction	транзакция; группа операций
transfer	передача; пересылка; переход; передавать; пересылать; переносить
rate ~	скорость пересылки
transform	преобразовывать; превращать; трансформировать
transformation	преобразование; трансформация

transformational, transformative		трансформационный; связанный с преобразованием
transformer		преобразователь; устройство преобразования; трансформатор
transition		переход; превращение; модификация
translate		транслировать; преобразовывать; переводить
translator		транслятор; преобразователь
transmission		передача; пересылка; распространение; пропускание
transmit		передавать; посылать; пропускать
transmitter		передатчик; датчик; преобразователь
transparent		прозрачный; незаметный
transparently		с соблюдением прозрачности; незаметным образом
trapping		вылавливание; перехват
	error ~	поиск ошибок
tremendous		огромный
trigger		пусковая кнопка
trouble		неисправность; pl.нарушения; неполадки; трудности; затруднения
troubleshoot		искать неисправности; диагностировать; отыскивать ошибки
tuner		ручка настройки; программа настройки (параметров)
tuning		настройка; регулирование
turn		поворот; оборот; виток; вращать; поворачивать; превращать
	off ~	выключать; отключать
	on ~	включать; запускать
tutorial		обучающая программа; средство обучения; учебное пособие
type		тип; вид; разновидность; способ; шрифт; печатать; выводить на печать

ahead ~ опережающий ввод с клавиатуры

ckeck ~ проверять соответствие типов

checking ~ контроль типов

in ~ вводить с клавиатуры

out ~ выводить на печать; распечатывать

heavy ~ жирный шрифт

italic ~ курсив

typewriter ~ машинописный шрифт

typewriter печатающее устройство

U

UCS система координат пользователя

ultimate крайний; последний; окончательный, предельный; максимальный

ultrareliable сверхнадёжный

unable неспособный

unacknowledged неподтвержденный (о приеме сообщений)

unaided eye невооруженный глаз

unattached неподсоединенный

unbelievable невероятный; неправдоподобный

unchanged неизменный; неизмененный

uncontrollable неуправляемый; нерегулируемый; неконтролируемый

underline подчеркивать

undertake предпринимать

undo отменять; отмена

unit устройство; модуль; механизм; узел; блок; элемент; единица

of data ~ блок данных

of language ~ элемент языка

of measurement ~ единица измерения

of memory ~ блок памяти

arithmetic ~ арифметическое устройство

arithmetic and logical ~ арифметико-логическое устройство

central processing ~ центральный процессор

computing ~ вычислительное устройство

control ~ устройство управления

input ~ устройство ввода

input / output ~ блок ввода-вывода

operational ~ работающее устройство

output ~ устройство вывода

power (supply) ~ блок питания

processing ~ устройство обработки; процессор

programming ~ устройство программирования; программатор

reader ~ считывающее устройство

recording ~ записывающее устройство

storage ~ запоминающее устройство

unload выгружать; удалять из памяти

unplug вынимать (разъем из гнезда); отсоединять; отключать

unplugging отсоединение; отключение

unsuitable неподходящий; непригодный

usage использование; применение; эксплуатация

use польза; использовать; применять

in ~ используемый; задействованный

of ~ полезный

of general ~ общеупотребительный

of no ~ бесполезный

make of ~ применять; использовать

used	используемый; применяемый
useful	полезный; пригодный
useless	бесполезный
user	пользователь; абонент
advanced / expert ~	квалифицированный пользователь
utility	полезность; пригодность; (сервисная) программа; вспомогательное средство
utilize	использовать

V

valid	правильный; допустимый
validity	правильность; адекватность; допустимость; пригодность
valuable	ценный; полезный
value	значение; величина; значимость
acceptable ~	допустимое значение
additional ~	дополнительное значение
binary ~	двоичное значение
byte ~	значение в виде байта
character ~	значение кода символа
check ~	контрольное значение
correct ~	правильное значение
data ~	информационное значение
invalid ~	неверное, недопустимое значение
numeric ~	числовое значение
output ~	выводимое / выходное значение
valid ~	верное / допустимое значение
variable	переменная (величина)

vary	менять(ся)
variety	разнообразие; разновидность; ряд, множество
velocity	Скорость
verification	проверка; контроль
verifier	устройство / программа проверки
verify	проверять; контролировать
versatile	разносторонний; многофункциональный; универсальный
versatility	разносторонность; многофункциональность; универсальность
version	версия; вариант
common ~	распространенная версия
data ~	вариант данных
electronic ~	электронная версия
executable ~	исполняемая версия
original ~	первоначальный вариант
view	вид; представление; просмотр
vice-versa	и наоборот
viewpoint	точка зрения
viewport	окно просмотра / вывода
integrity	нарушение целостности данных
virtual	виртуальный; нереальный; несуществующий
violation	нарушение
voltage	(электрическое) напряжение
volume	объем; величина; количество
sound ~	громкость звука
vulnerability	уязвимость; чувствительность; подверженность
vulnerable	чувствительный; уязвимый; подверженный

W

wafer	пластина; подложка
wait	ожидание; ждать, ожидать
want	недостаток; нехватка; потребность; недоставать; требоваться
wanted	нужный; необходимый
warning	Предупреждение
warehouse	хранилище, хранить
watchdog	сторожевая программа
waveguide	Волновод
wavelength	длина волны
way	путь; способ; средство; возможность
in a ~	в некотором отношении; до известной степени
in any ~	любым способом; как угодно
in differents ~	разными способами; по-разному
in no ~	ни в коей мере; никак
in the same ~	так же; таким же образом
weather forecasting	прогноз погоды
web	(информационная) сеть
information ~	информационная сеть (сайтов на серверах сети Internet)
World-Wide ~	всемирная информационная сеть
wide area network	глобальная сеть
width	ширина; разрядность (шины, памяти)
withdraw	удалять; убирать; вынимать
withdrawal	удаление; выемка; изъятие
word	слово; текстовый
processing ~	редактирование текстов
processing program ~	текстовый редактор

wrap ~ перенос слов

worksheet электронная таблица

world wide глобальный; всемирный

worm (компьютерный) червь

writer записывающее устройство; программа записи; автор; разработчик

X

xerocopy Ксерокопия

xerox Ксерокопировать

X-ray рентгеновский (об излучении монитора)

Y

yet тем не менее; все же; еще

yield выход (результатов); выдача; выдавать; получать (значение)

zero нуль; нулевой; обнулять

of ~ равный нулю

to out ~ Обнулять

time ~ начало отсчета времени

zone зона; область; полоса

buffer ~ буферная область

storage ~ область памяти