

Федеральное государственное бюджетное образовательное
учреждение высшего образования
«Брянский государственный аграрный университет»

КАФЕДРА ИНОСТРАННЫХ ЯЗЫКОВ



МЕДВЕДЕВА С.А., ГОЛУБ Л.Н.

**«АНГЛИЙСКИЙ ЯЗЫК ДЛЯ СТУДЕНТОВ
НАПРАВЛЕНИЯ ПОДГОТОВКИ
09.04.03 ПРИКЛАДНАЯ ИНФОРМАТИКА
(УРОВЕНЬ МАГИСТРАТУРЫ)»**

Учебное пособие

Брянская область,
2017

УДК 811.111 (07)
ББК 81.2 Англ
М 42

Медведева, С.А. Английский язык для студентов направления подготовки 09.04.03 Прикладная информатика (уровень магистратуры): учебное пособие / С.А. Медведева, Л.Н. Голуб. - Брянск: Изд-во Брянский ГАУ, 2017. – 110 с.

Пособие предназначено для студентов направления подготовки 09.04.03, изучающих дисциплину «Английский язык». Основной целью пособия является приобретение студентами коммуникативной компетенции, необходимой для квалифицированной информационной и творческой деятельности в различных сферах и ситуациях делового партнерства, совместной производственной и научной работы.

Рекомендовано к изданию решением учебно-методической комиссии института экономики и агробизнеса от 31.01.2017 г., протокол №3.

Рецензенты:

кандидат педагогических наук, доцент, заведующий кафедрой иностранных языков Брянского государственного аграрного университета М.В. Семьшев;

кандидат экономических наук, доцент, заведующий кафедрой информационных систем и технологий Брянского государственного аграрного университета Н.Д. Ульянова.

© Брянский ГАУ, 2017
© С.А.Медведева, 2017
© Л.Н.Голуб, 2017

Введение

Основной целью обучения студентов в магистратуре является приобретение студентами коммуникативной, необходимой для квалифицированной информационной и творческой деятельности в различных сферах и ситуациях делового партнерства, совместной производственной и научной работы. Подготовка современного выпускника как личности нравственной, интеллектуальной, способной решать как сложные профессиональные задачи, так и проблемы в сферах социального и межкультурного взаимодействия, немислима без развития и совершенствования умений иноязычного общения. Обязательным условием достижения поставленной цели является решение следующих задач

- достижение зрелого владения всеми видами чтения и перевода литературы разных функциональных стилей.

- овладение всеми видами монологического высказывания (информирование, пояснение, уточнение, инструктирование и иллюстрирование высказывания, а также умение сделать доклад на иностранном языке).

- осуществление и понимание высказываний профессионального и научного характера в ситуациях приема зарубежных специалистов, обмена профессионально-значимой информацией в процессе повседневных бесед, деловых переговоров, при заключении сделок и контактов, обсуждении условий делового партнерства и деловом общении по телефону.

- формирование умений вести деловую переписку, оформление договоров и контрактов, патентов, телексов, написания тезисов, докладов, отзывов и рецензий, заявок на участие в международных совещаниях и конгрессах.

Предлагаемое учебное пособие построено с учетом преемственности обучения и состоит из тринадцати самостоятельных блоков (Units), охватывающих следующие темы:

- Education in modern society. Higher education.
- Information-dependent society
- Development of microelectronics
- Data processing concepts
- Computer systems: an overview
- Functional organization of the computer
- Storage
- Central processing unit
- Input-output units
- Personal computers
- Computer programming
- Modern portable computers
- Mobile phones

Цель каждого блока - развитие умения чтения и адекватного перевода текстов по направлению подготовки и написания тезисов, докладов, рефератов и аннотаций.

Учебные тексты служат для первичного введения языковых явлений и иллюстрацией их употребления в иноязычной речи. При подборе текстов учитывалась их актуальность, информативность, частотность представленной в них лексики и уровень языковой подготовки студентов.

Перед каждым текстом даётся подробный список лексики, предназначенный для активного изучения и закрепления в ходе выполнения послетекстовых упражнений. Упражнения направлены на активизацию лексического материала и развитие навыков устной речи.

Грамматический материал охватывает основные явления грамматики английского языка и направлен на закрепление знаний, полученных на бакалаврском уровне подготовки студентов.

Unit 1 EDUCATION IN MODERN SOCIETY. HIGHER EDUCATION

1. Прочитайте и переведите текст.

learning materials — учебные материалы

to bring up to date — довести до современных требований

information explosion — информационный взрыв

training and instruction — подготовка и обучение

over years — за многие годы

curricula are enriched and broadened — программы (курсы обучения) обогащаются и расширяются

Text 1. HIGHER EDUCATION IN RUSSIA

Higher education plays an important part in the life of any country as it provides the country with highly-qualified specialists for future development and progress. It trains people to become teachers, engineers, doctors and other professional workers.

In all the industrial countries standards of living are steadily changing; this means that the kind of education, which was good enough thirty years ago, is not necessarily good for them today. The serious need to find ways and means of ensuring continuous and thorough adoption of the universities to contemporary needs in our rapidly changing world is widely recognized. And this means that styles of teaching, quality of learning materials and organization of the university itself have to be continuously brought up to date and improved.

Besides, knowledge and information which comes through the mass media must also be taken into consideration. This information explosion has affected every field of study, especially, of course, in the natural and applied sciences and in all other sciences as well. The increase of information requires new methods and new approaches to students' training and instruction.

At present a new system of education is introduced in this country — a distance education system. This computer system of learning helps working professionals to continue their education while remaining at their jobs. This system enables people to get knowledge and a good foundation in the sciences basic to his or her field of study. Distance learning has developed over years from satellite video courses to modern videoconferencing through personal computers.

The academic year usually lasts 9 months and is divided into two terms (semesters). The first- and second-year students obtain thorough instructions in the fundamental sciences of mathematics, physics, chemistry and drawing as well as computer engineering and a number of others. The curricula are enriched and broadened by instructions in such subjects as foreign languages, history and economics.

At the third year students get more advanced knowledge and begin to concentrate on their special interests, so to say, their «major» subject and take many courses in this subject. Specialized study and courses will help students to become specialists and prepare them for their future work.

After four years students will get a bachelor's degree. Then the students may go on with their studies and in a year or two of further study and research get a master's degree. After graduating from the university they may go on with their study and research and may get a still higher degree.

About 75 percent of students receive state grants and 15 percent are sponsored by enterprises. Universities have their own students' hostels and some of them have large and excellent sport centers.

Education is a process through which culture is preserved, knowledge and skills are developed, values are formed, and information is exchanged. Education is the way to success.

2. Уточните произношение следующих слов, встречающихся в тексте:

Highly-qualified, steadily, ensuring, thorough, adoption, contemporary, instructions, science, curricula, preserve.

3. Ответьте на вопросы по тексту.

1. When does the academic year begin in this country? 2. How many exams did you pass to enter the University? 3. Do you pay for your education? 4. Do students get grants? 5. What subjects do students study in the first year? 6. Which subject is the most interesting for you? 7. Is there a sport center in your University? 8. What degree do students get after four years of study? 9. What degree can a student get after two years of further study and research? 10. What new education system is introduced in this country? 11. What specialities do people get after graduating from a university? 12. Why is higher education important in the life of every country?

4. Переведите предложения, содержащие активный и пассивный залог.

1. Students asked the lecturer many questions. The lecturer was asked many questions. 2. The monitor told the first-year students to come to the laboratory. The first-year students were told to come to the laboratory. 3. Usually a lab assistant shows the equipment to the students. Usually the equipment is shown to the students by a lab assistant. Usually students are shown the equipment by a lab assistant. 4. Students watched the process with great attention. The process was watched with great attention. 5. Tomorrow our teacher will give us a new task. A new task will be given tomorrow. We shall be given a new task tomorrow. 6. Practice accompanies theory. Theory is accompanied by practice. 7. He asked me to bring a dictionary. He was asked to bring a dictionary. 8. The teacher told the students to sign their drawings. The students were told to sign their drawings. 9. The dean will send the students to a big plant in summer. The students will be sent to a big plant in summer. 10. He taught us to use the lab equipment. We were taught to use the lab equipment.

5.

А. Трансформируйте предложения из активного залога в пассивный

1. You open the door. 2. We asked questions. 3. He will finish his project next week. 4. He can do this exercise. 5. They invited me to their conference. 6. I saw a new film. 7. My sister writes letters regularly. 8. Universities develop new methods of students' training. 9. After graduating from the University the students may get a still higher degree. 10. The study of foreign languages, history and economics must improve the curricula of technological universities.

В. Переведите, если возможно, дайте несколько вариантов.

1. Mathematics, strength of materials, mechanics, elements of machines as well as engineering physics are studied at technological institutes. 2. The development of science is closely connected with the development of higher education. 3. Students are provided with hostels, well-equipped laboratories and libraries. 4. Any country must be provided with good specialists in all branches of science and technology for its further development. 5. Large sums of money are spent by the state to train highly-qualified engineers. 6. Much attention must be paid to improve the standards of higher education. 7. Students of technological institutes are trained to analyse various facts and theories. 8. The scientific and technological progress of a country is determined by the qualification of specialists. 9. Some institutes of technology are reorganized into universities. 10. The country must be provided with specialists capable of working with the technology of tomorrow effectively.

6. Найдите Participle I and Participle II, переведите предложения.

1. The students studying at the institutes passed entrance exams in summer. 2. The subjects studied in the first two years are very important for future engineers. 3. The lecture delivered by our dean was on new methods of technology. 4. The man delivering this lecture is our professor on mathematics. 5. An article discussing the new system of school education appeared in all newspapers. 6. The results of the experiments discussed yesterday will be published. 7. The attention paid to the study of fundamental subjects is great. 8. Students interested in computer engineering enter technological institutes. 9. The number of specialists connected with new branches of science and engineering is increased every year.

7. Прочитайте и переведите текст.

to consist of - состоять из

self-governing - самоуправляющийся

tuition - обучение

to proceed - продолжать делать (что-либо)

a gown - мантия

a major subject - профилирующий предмет

a graduate school - старшие курсы

a five point scale - пятибалльная шкала

Text 2. HIGHER EDUCATION IN THE UK AND THE USA

Part 1

Cambridge is one of the two main universities of England which is located at the Cam River. It was founded at the beginning of the 12th century. The University consists of 24 different colleges including 4 colleges for women. Each college is self-governing.

The head of the University is the chancellor who is elected for life. The teachers are commonly called «dons» and «tutors». Part of the teaching is by means of lectures organized by the University. Besides lectures teaching is carried out by tutorial system for which Cambridge University is famous all over the world. This is a system of individual tuition organized by the colleges.

Each student has a tutor who practically guides him through the whole course of studies. The tutor plans the student's work and once a week the student goes to his tutor to discuss his work with him. The training course lasts 4 years. The academic year is divided into 3 terms. The students study natural and technical sciences, law, history, languages, geography and many other subjects.

After three years of study a student may proceed to a Bachelor's degree, and later to the degrees of Master and Doctor. Students are required to wear gowns at lectures, in the University library, in the street in the evening, for dinners in the colleges and for official visits. All the students must pay for their education, examinations, books, laboratories, university hostel, the use of libraries, etc. Very few students get grants. Not many children from the working class families are able to get higher education, as the cost is high. The cost of education depends on the college and speciality.

A number of great men, well-known scientists and writers studied at Cambridge. Among them are: Erasmus, the great Dutch scholar, Bacon, the philosopher, Milton and Byron, the poets, Cromwell, the soldier, Newton and Darwin, the scientists.

Part 2

There is no national system of higher education in the United States. Higher education is given in colleges and universities. There are over 2100 various higher educational institutions, including colleges, technological institutes and universities. The average college course of study is 4 years. The academic year is usually 9 months or 2 terms (semesters) of four and a half months each. Classes usually begin in September and end in June. The first-year students are called freshmen. Students choose a major subject and take many courses in this subject. After four years, they get a traditional Bachelor's degree. Then the students may go on to graduate school and with a year or two of further study get a Master's degree.

After another year or two of study and research, they may get a still higher degree as Doctor of Philosophy (Ph. D.). The student's progress is evaluated by means of tests, term works and final examinations in each course. The student's work is given a mark, usually on a five point scale. Letters indicate the level of achievement.

«A» is the highest mark. «F» denotes a failure.

Most American colleges and universities charge for tuition. The methods of instruction in the universities are lectures, discussions, laboratory and course works and seminars. Most cities have colleges or universities that hold classes at night as well as in daytime. In this way people may work for a degree or just take a course in the subject that interests them.

8. Уточните произношение следующих слов, встречающихся в тексте:

Tutor, tutorial system, guide, through, languages, chancellor, major, require, sciences, law, scholar, further, evaluated, Bachelor's degree, Master's degree, failure, method.

9. Составьте 10 вопросов к тексту.

10. Прочитайте и переведите текст.

Text 3. OXFORD UNIVERSITY

Oxford is renowned the world over. It ranks in importance with Athens, Rome and Paris because of the stream scholars who, for hundreds of years, and particularly in the 20th century, have come to sit at the feet of learned men, and have returned to their own countries, their minds enriched with the distilled learning to be found here, and imbued with an abiding love for the place. They have absorbed the almost indefinable "spirit of Oxford", and many of them return again and again, so strong is the pull of the place.

This book is designed to help the visitor whose stay is short. So many visitors want to know where is the University. In their home country, the universities are easily identifiable because they are compact, purpose-built places, and probably isolated from the domestic and commercial buildings which form the heart of the city from which they take their name.

Oxford is different. It has a golden heart - an area of less than half a square mile in which is to be found the most varied assortment of historic buildings in the world. But they do not stand in isolation; they are intermingled, in the most delightful way, with houses, shops and offices.

Over the last decade millions of pounds have been spent in restoring and cleaning the stonework of college and university buildings, which had become blackened and decayed, and in many cases was in danger of disintegrating. Great care was taken in the restoration, and the result is that the university buildings present the honey-coloured facades which the great architects such as Wren and Hawksmoor created.

Interiors too, have been cleaned and restored - notably those of the Sheldonian Theatre and the Bodleian Library. Oxford is a place of great beauty, but it is not just a shrine to the past. It is a living entity and its historic buildings are the homes of masters and students whose learning, thinking and ideas have a profound influence on culture, education, science and politics, not only in England, but throughout the world.

The University did not come into being all at once. Oxford had existed as a city for at least 300 years before scholars began to resort to it. The end of the 12th century saw the real beginnings of the University. It is known that early in that century distinguished scholars were lecturing in Oxford, but it had no recognition as a place of learning. In about 1184 the University had become an accomplished fact as result of the migration to Oxford of students who brought their own traditions with them.

It is generally assumed that between 1164 and 1169, when Henry II forbade English clerks to go to the University of Paris, which at that time was the foremost in Europe, the scholars had to find somewhere else to continue their studies. Their choice fell on Oxford. The first group of scholars at Oxford may have been joined by others from Paris, and from other parts of Britain.

There is no "university" as such. Each college is practically autonomous, with its own set of rules for its good government. There is a central administration, providing services such as libraries and laboratories.

11. Уточните произношение следующих слов, встречающихся в тексте:

Rank, scholars, particularly, imbued, indefinable, short, purpose, varied, delightful, autonomous, distinguished, profound, disintegrating, foremost, migration.

12. Ответьте на вопросы:

- 1) Why is Oxford ranking amongst the world's top universities?
- 2) How does Oxford differ from other educational institutions?

- 3) Why do the Oxford's buildings need to be restored?
- 4) What architects have worked on the University's facades?
- 5) Why didn't Oxford deserve any recognition until the 12th century?
- 6) When was the heyday of Oxford?
- 7) Why does the author claim that there's no university such as Oxford?
- 8) Why did English clerks give up going to the University of Paris, which was considered to be the foremost in Europe?

13. Сопоставьте слова с их определениями:

Distinguished	Ahead of all others, especially in position or rank.
A scholar	Something that exists as a particular and discrete unit.
To intermingle	Standing above others in character or attainment or reputation.
An entity	An exposition of a given subject delivered before an audience or a class, as for the purpose of instruction.
Foremost	To mix or become mixed together.
A lecture	One who attends school or studies with a teacher.

Unit 2 INFORMATION-DEPENDENT SOCIETY

1. Прочитайте текст и скажите, как вы понимаете термины «информационное общество» и «компьютерная грамотность».

computer literacy — компьютерная грамотность

problem-solving device — устройство, обеспечивающее решение задачи

be aware of — понимать, сознавать

opportunity — возможность

basics — основы

application — применение, использование

to restate — пересматривать, переосмысливать

significant — значительный

achievements — достижения

computing — вычисление, счет; работа на компьютере

to embrace — охватывать

dimension — измерение

instruction — команда, инструкция, указание

to direct the operation — направлять работу

to process — обрабатывать

subscription magazine — журнал по подписке

data processing — система обработки данных

store manager — директор магазина

to have much in common — иметь много общего

Text 1. COMPUTER LITERACY

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

There was a time when only privileged people had an opportunity to learn the basics, called the three Rs: reading, writing, and arithmetic. Now, as we are quickly becoming an information-dependent society, it is time to restate this right as the right to learn reading, writing, and computing. There is little doubt that computers and their many applications are among the most significant technical achievements

of the century. They bring with them both economic and social changes. “Computing” is a concept that embraces not only the old third R, arithmetic, but also a new idea — computer literacy.

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

2. Ответьте на вопросы и выполните задания, используя информацию текста.

1. What does “a computer-literate person” mean? 2. Are you aware of the potential of computers to influence your life? 3. What do the people mean by “the basics”? 4. What is the role of computers in our society? 5. What is “computing”? 6. What is a program? 7. Prove that we all are on the way to becoming computer-literate. 8. Give examples of using computers in everyday life.

3. Прочитайте, переведите и запомните следующие выражения.

An information-dependent society; a computer-literate citizen; an everyday problem-solving device; to be aware; to influence the quality of life; to have an opportunity; to learn the basics; to learn computing; the most significant technical achievements; to embrace computer literacy; to prepare programs; to direct the operations of a computer; to be on the way of becoming computer-literate; to process information; to have much in common; a data processing system.

4. Вспомните образование и случаи употребления the Past Simple Tense.

A. Назовите три формы следующих неправильных глаголов.

To be, to have, to mean, to learn, to become, to bring, to know, to think, to buy, to pay, to take, to do, to begin, to give, to make, to keep, to get, to read, to show.

B. Преобразуйте следующие предложения в Past Simple.

1. Many people have an opportunity to use computers. 2. There is no doubt that computers solve problems very quickly. 3. Instructions direct the operation of a computer. 4. Computers bring with them both economic and social changes. 5. Computing embraces not only arithmetic, but also computer literacy. 6. It is well-known that computers prepare laboratory tests. 7. Those persons are computer literate and think of buying a new computer. 8. They receive a subscription magazine once a month. 9. My mother is ill and visits her doctor every other day. 10. Experts know much about how to prepare programs.

5. Прочитайте текст 2 и скажите, что такое компьютер и каковы его основные функции.

intricate — сложный, запутанный

electronic circuit — электронная цепь (схема)

to operate switches — приводить в действие переключатели

to store numbers — запоминать числа

to manipulate — управлять; обращаться; преобразовывать

to input / to feed in — вводить (информацию)

to turn on = to switch on — включать

to turn off = to switch off — выключать

to process data — обрабатывать данные

to supply — подавать, вводить; снабжать, обеспечивать

addition — сложение

subtraction — вычитание

division — деление

multiplication — умножение
exponentiation — возведение в степень
user — пользователь
input device — устройство ввода
disk drive — дисковое запоминающее устройство, дисковод
tape drive — запоминающее устройство на магнитной ленте
cathode-ray tube — электронно-лучевая трубка
to make decisions — принимать решения
instantaneously — мгновенно, немедленно

Text 2. WHAT IS A COMPUTER?

A computer is a machine with an intricate network of electronic circuits that operate switches or magnetize tiny metal cores. The switches, like the cores, are capable of being in one or two possible states, that is, on or off; magnetized or demagnetized. The machine is capable of storing and manipulating numbers, letters, and characters (symbols).

The basic idea of a computer is that we can make the machine do what we want by inputting signals that turn certain switches on and turn others off, or magnetize or do not magnetize the cores.

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

It is considered that computers have many remarkable powers. However, most computers, whether large or small, have three basic capabilities.

First, computers have circuits for performing arithmetic operations, such as: addition, subtraction, division, multiplication, and exponentiation.

Second, computers have a means of communicating with the user. After all, if we couldn't feed information in and get results back, these machines wouldn't be of much use. Some of the most common methods of inputting information are to use terminals, diskettes, disks, and magnetic tapes. The computer's input device (a disk drive or tape drive) reads the information into the computer. For outputting information two common devices used are: a printer, printing the new information on paper, and a cathode-ray-tube display, which shows the results on a TV-like screen.

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

A computer can solve a series of problems and make thousands of logical decisions without becoming tired. It can find the solution to a problem in a fraction of the time it takes a human being to do the job.

A computer can replace people in dull, routine tasks, but it works according to the instructions given to it. There are times when a computer seems to operate like a mechanical "brain," but its achievements are limited by the minds of human beings. A computer cannot do anything unless a person tells it what to do and gives it the necessary information; but because electric pulses can move at the speed of light, a computer can carry out great numbers of arithmetic-logical operations almost instantaneously. A person can do the same, but in many cases that person would be dead long before the job was finished.

6. Ответьте на вопросы, используя информацию текста.

1. What is a computer? 2. What are the two possible states of the switches? 3. What are the main functions of a computer? 4. In what way can we make the computer do what we want? 5. What is the basic task of a computer? 6. In what form does a computer accept information? 7. What is a program? 8. What

are data? 9. What is memory? 10. What three basic capabilities have computers? 11. What are the ways of inputting information into the computer? 12. What is the function of an input device? 13. What devices are used for outputting information? 14. What decisions can the computer make? 15. What are the computer's achievements limited by?

7. Найдите в тексте 2 английские эквиваленты следующих слов и словосочетаний.

Сложная сеть электронных цепей; управлять (приводить в действие) переключателями; возможные состояния; хранить (запоминать) числа; обрабатывать символы; посредством ввода сигналов; включать; выключать; размагничивать сердечники; обработка информации; информация в виде команд; символы, называемые данными; выполнять математические операции; выдавать результаты; обеспечивать необходимую информацию; иметь замечательные возможности; основные свойства; сложение, вычитание, деление, умножение; возведение в степень; средства для общения с пользователем; устройство ввода; дисковод; считывать информацию; вывод информации; катодно-лучевая трубка; принимать решения; выполнять тысячи логических операций; без усталости; находить решение задачи; значительно меньший промежуток времени; человек; нудная рутинная работа; в соответствии с введенной программой; вырабатывать свои суждения; возможности ограничены программой, заложенной в него человеком; дать требуемую информацию; электрические импульсы; со скоростью света; мгновенно производить огромное количество математических операций; человеку может не хватить всей жизни, чтобы закончить работу.

8. Составьте пары или группы близких по значению слов из перечня слов, приведенных ниже.

Например: A. to perform, to exercise, to carry out;

B. a man, a person, a human being.

Verbs: to turn on, to provide, to type, to accept, to help, to learn, to observe, to call, to tell, to keep, to feed, to solve, to relate, to switch off, to communicate, to receive, to supply, to switch on, to assist, to print, to study, to input, to turn off, to decide, to store, to say, to name, to watch.

Nouns: work, machine, fundamentals, display, application, capabilities, job, storage, screen, state, basics, use, concept, specialist, journal, character, memory, idea, expert, magazine, position, symbol, command, data, solution, device, instruction, powers, information, decision.

Adjectives: basic, tiny, common, small, main, significant, routine, general, remarkable, uninterested, intricate, important, wonderful, complex, little.

Adverbs: rapidly, probably, instantaneously, in a moment, quickly, perhaps.

9. Выполните перевод текста 3.

to maintain records — вести учет

deposits and withdrawal — вклады и изъятие (выемка)

guidance — наведение (на цель); управление; руководство

on-board environment — бортовое окружение

pattern recognition — распознавание образов

Text 3. APPLICATION OF COMPUTERS

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

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

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

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

Computers find application in astronomy and upper atmosphere re-search. Weather forecasting, library information services can benefit from computers too

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

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

At last air traffic control is impossible without computer application. It fully depends upon computer-generated information.

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

Unit 3 DEVELOPMENT OF MICROELECTRONICS

1, Прочитайте текст и скажите, что изучает электроника и какие открытия способствовали ее развитию.

applied physics — прикладная физика

generation — создание, формирование, выработка

scientific research — научные исследования

due to the efforts — благодаря усилиям

manipulation — управление, обработка, преобразование

to replace vacuum tubes — заменять электронные лампы

a piece of semiconductor — полупроводниковый кристалл

reduced weight — уменьшенный вес

power consumption — потребление (расход) электроэнергии

to carry out — выполнять, осуществлять

solid body — твердое тело; кристалл; полупроводник

to respond — отвечать, реагировать

at a rate — со скоростью

integrated circuit (IC) — интегральная схема

batch processing — пакетная обработка

to assemble — собирать, монтировать

to lower manufacturing — снижать производительность

to increase reliability — увеличивать надежность

Text 1. DEVELOPMENT OF ELECTRONICS

Electronics is a field of engineering and applied physics dealing with the design and application of electronic circuits. The operation of circuits depends on the flow of electrons for generation, transmission, reception, and storage of information.

Today it is difficult to imagine our life without electronics. It surrounds us everywhere. Electronic devices are widely used in scientific research and industrial designing; they control the work of plants and

power stations, calculate the trajectories of spaceships and help the people discover new phenomena of nature. Automatization of production processes and studies on living organisms became possible due to electronics.

The invention of vacuum tubes at the beginning of the 20th century was the starting point of the rapid growth of modern electronics. Vacuum tubes assisted in manipulation of signals. The development of a large variety of tubes designed for specialized functions made possible the progress in radio communication technology before the World War II and in the creation of early computers during and shortly after the war.

The transistor invented by American scientists W. Shockly, J. Bardeen and W. Brattain in 1948 completely replaced the vacuum tube. The transistor, a small piece of a semiconductor with three electrodes, had great advantages over the best vacuum tubes. It provided the same functions as the vacuum tube but at reduced weight, cost, power consumption, and with high reliability. With the invention of the transistor all essential circuit functions could be carried out inside solid bodies. The aim of creating electronic circuits with entirely solid-state components had finally been realized. Early transistors could respond at a rate of a few million times a second. This was fast enough to serve in radio circuits, but far below the speed needed for high speed computers or for microwave communication systems.

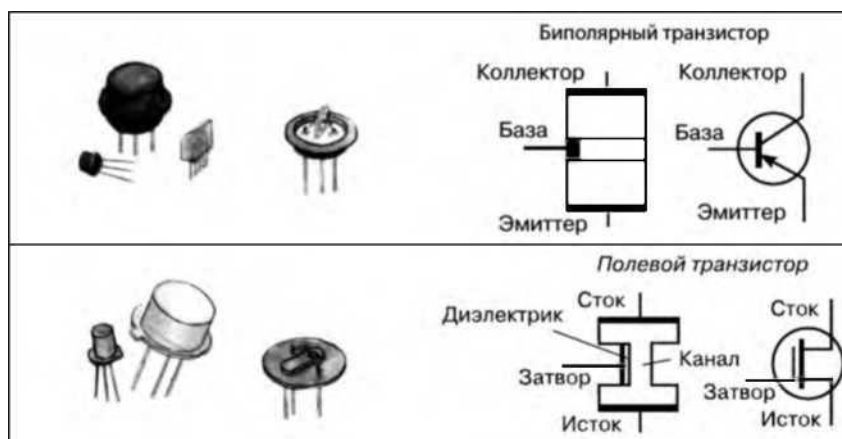


Fig. 1. Schemes of bipolar and field-effect transistors

The progress in semiconductor technology led to the development of the integrated circuit (IC), which was discovered due to the efforts of John Kilby in 1958. There appeared a new field of science — integrated electronics. The essence of it is batch processing. Instead of making, testing, and assembling discrete components on a chip one at a time, large groupings of these components together with their interconnections were made all at a time. IC greatly reduced the size of devices, lowered manufacturing costs, and at the same time they provided high speed and increased reliability.

2. Ответьте на вопросы, используя информацию текста.

1. What is electronics?
2. Can you imagine modern life without electronics?
3. Where are electronic devices used?
4. What was the beginning of electronics development?
5. What made the progress in radio communication technology possible?
6. What is the transistor?
7. When was the transistor invented?
8. What aim was realized with the invention of the transistor?
9. When were integrated circuits discovered?
10. What advantages did the transistors have over the vacuum tubes?

3. Догадайтесь о значении следующих интернациональных слов и словосочетаний.

Electronics; electrons; physics; information; microelectronics; industrial design; to calculate trajectories; phenomena of nature; automatization of production processes; organisms; vacuum tubes; specialized functions; progress in radio communication technology; transistor; electrode; components; to realize; communication system; technology; discrete components; chip.

4. Найдите в тексте английские эквиваленты следующих словосочетаний.

Прикладная физика; передача и прием информации; поток электронов; трудно представить; научные исследования; промышленное проектирование; вычислять траекторию космических кораблей; обнаруживать явления природы; благодаря электронике; отправная точка; способствовать управлению сигналами; быстрый рост; разнообразие ламп; создание первых компьютеров; полностью заменил; полупроводниковый кристалл; уменьшить вес; сократить стоимость; потребление электроэнергии; высокая надежность; твердотельные компоненты; довольно быстро... но гораздо ниже; высокоскоростной компьютер; микроволновые системы связи; полупроводниковая технология; область науки; интегральная схема; пакетная обработка; сборка дискретных компонентов на кристалле; снизить производственные затраты; обеспечить высокую скорость.

5. Переведите следующие «цепочки существительных». Запомните, что переводить ряд существительных, не связанных предложениями, следует, как правило, с конца.

Power consumption; power consumption change; signals manipulation; transistor invention; circuit functions; communication systems; data processing system; integrated circuits development; science field; process control; automatization processes control; circuit components; size reduction; electronics development; communication means; problem solution; space exploration; pattern recognition; customers' accounts; air traffic control.

Text 2. MICROELECTRONICS AND MICROMINIATURIZATION

6. Прочитайте и переведите текст.

performance — рабочая характеристика, параметры; производительность, быстродействие

to predict — прогнозировать

capability — способность, возможность

branch of science — область науки

to embrace — охватывать

circuit assembly — сборка схемы

film technique — пленочная технология (метод, способ)

invisible to unaided eye — невидимый невооруженному глазу

to react — реагировать

speed of response — скорость реакции (отклика)

advantage/disadvantage — достоинство, преимущество/ недостаток

benefit — выгода, польза; помогать, приносить пользу

to result from — возникать, происходить в результате

packing density — плотность упаковки

small-scale integrated circuit (IC) — малая интегральная схема (МИС)

medium-scale IC — средняя интегральная схема (СИС)

large-scale IC — большая интегральная схема (БИС)

very-large-scale IC — сверхбольшая интегральная схема (СБИС)

fineline — прецизионный, с элементами уменьшенных размеров

transmission line — линия передачи

waveguide — волновод

to emerge — появляться, возникать

to displace — перемещать, смещать

mode — вид, метод, способ, режим работы

pattern — шаблон, образец, образ, изображение

power — мощность, энергия, питание; производительность, быстродействие; способность, возможность

The intensive effort of electronics to increase the reliability and performance of its products while reducing their size and cost led to the results that hardly anyone could predict. The evolution of electronic

technology is sometimes called a revolution: a quantitative change in technology gave rise to qualitative change in human capabilities. There appeared a new branch of science — microelectronics.

Microelectronics embraces electronics connected with the realization of electronic circuits, systems, and subsystems from very small electronic devices. Microelectronics is a name for extremely small electronic components and circuit assemblies, made by film or semiconductor techniques. A microelectronic technology reduced transistors and other circuit elements to dimensions almost invisible to unaided eye. The point of this extraordinary miniaturization is to make circuits long-lasting, low in cost, and capable of performing electronic functions at extremely high speed. It is known that the speed of response depends on the size of transistor: the smaller the transistor, the faster it is. The smaller the computer, the faster it can work.

One more advantage of microelectronics is that smaller devices consume less power. In space satellites and spaceships this is a very important factor.

Another benefit resulting from microelectronics is the reduction of distances between circuit components. Packing density increased with the appearance of small-scale integrated circuit, medium-scale IC, large-scale IC and very-large-scale IC. The change in scale was measured by the number of transistors on a chip. There appeared a new type of integrated circuits, microwave integrated circuit. The evolution of microwave IC began with the development of planar transmission lines. Then new IC components in a fine line transmission line appeared. Other more exotic techniques, such as dielectric waveguide integrated circuits emerged.

Microelectronic technique is continuing to displace other modes. Circuit patterns are being formed with radiation having wavelength shorter than those of light.

Electronics has extended man's intellectual power. Microelectronics extends that power still further.

7. Ответьте на вопросы, используя информацию текста.

1. What would you say about electronics? 2. Why is the development of electronics called a revolution? 3. What is microelectronics? 4. What techniques does microelectronics use? 5. What is the benefit of reducing the size of circuit elements? 6. What do you understand by the term of microminiaturization? 7. What does the speed of the signal response depend on? 8. What advantages of microelectronics do you know? 9. What scales of integration are known to you? 10. How are microelectronics techniques developing?

8. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Интенсивные усилия; увеличить надежность; увеличить параметры; уменьшить размер и стоимость; вряд ли кто-нибудь мог прогнозировать; количественные и качественные изменения; область науки; пленочная технология; полупроводниковый метод; сокращать элементы схемы; суть миниатюризации в том, что; создать схемы с долгим сроком службы; чрезвычайно высокая скорость реакции; чем меньше, тем быстрее; преимущество; расходовать энергию; польза; уменьшение расстояния между элементами схемы; большая интегральная схема; микроволновая интегральная схема; волновод; линия передач; смещать; изображение схем; расширять возможности человека.

9. Переведите следующие слова. Обратите внимание на то, что префиксы *dis-*, *in-*, *un-*, *non-*, *ir-* придают словам отрицательное значение.

dis-: disadvantage, disconnect, disappear, disclose, discomfort, discontinue, discount, discredit, discriminate, disintegrate.

in-: invisible, inaccurate, inactive, incapable, incompact, insignificant, inhuman, informal, ineffective, indifferent, indecisive, inconsumable, incorrect.

un-: uncontrollable, unbelievable, unable, unchanged, uncomfortable, uncommunicative, undisciplined, unexpected, unfavorable, unforgettable, unkind.

non-: non-effective, nonaggressive, non-comparable, non-computable, non-constant, non-controllable, non-digital, non-dimensional, nonprogrammable, non-usable.

ir-: irregular, irrelative, irresponsive, irrational, irreplaceable.

Unit 4

DATA PROCESSING CONCEPTS

1. Прочтите текст и скажите, как вы понимаете термины «обработка информации» и «иерархия запоминания информации».

data processing — обработка информации (данных)
to convert — преобразовывать, переводить (в другие единицы)
to accomplish — завершать, заканчивать; осуществлять, выполнять
to house — помещать, размещать
to improve — улучшать, совершенствовать
to control — управлять, регулировать; управление, регулирование
to store — хранить, запоминать, заносить в память (размещать в памяти)
storage — запоминающее устройство, память; хранение
resource — ресурс, средство, возможность
facility — устройство, средство;
facilities — приспособления, возможности
equipment — оборудование, аппаратура, приборы, устройства
available — доступный, имеющийся (в наличии), возможный
display — дисплей, устройство (визуального) отображения, показ
manner — способ, образ (действий)
sequence — последовательность, порядок (следования)
successively — последовательно
data storage hierarchy — иерархия (последовательность) запоминания информации (данных)
to enter — входить; вводить (данные), заносить, записывать
comprehensive groupings — полные (обширные, универсальные) образования
meaningful — имеющий смысл, значащий (о данных)
item — элемент, составная часть
record — запись, регистрация; записывать, регистрировать
file — файл; заносить в файл (хранить в файле)
set — набор, множество, совокупность, серия, группа, система
data base — база данных
related — смежный, взаимосвязанный, относящийся (к чему-л.)

Text 1. DATA PROCESSING AND DATA PROCESSING SYSTEMS

The necessary data are processed by a computer to become useful information. In fact this is the definition of data processing. Data are a collection of facts — unorganized but able to be organized into useful information. Processing is a series of actions or operations that convert inputs into outputs. When we speak of data processing, the input is data, and the output is useful information. So, we can define data processing as a series of actions or operations that converts data into useful information.

We use the term data processing system to include the resources that are used to accomplish the processing of data. There are four types of resources: people, materials, facilities, and equipment. People provide input to computers, operate them, and use their output. Materials, such as boxes of paper and printer ribbons, are consumed in great quantity. Facilities are required to house the computer equipment, people, and materials.

The need for converting facts into useful information is not a phenomenon of modern life. Throughout history, and even prehistory, people have found it necessary to sort data into forms that were easier to understand. For example, the ancient Egyptians recorded the ebb and flow of the Nile River and used this information to predict yearly crop yields. Today computers convert data about land and water into recommendations to farmers on crop planting. Mechanical aids to computation were developed and improved upon in Europe, Asia, and America throughout the 17th, 18th, and 19th centuries. Modern

computers are marvels of an electronics technology that continues to produce smaller, cheaper, and more powerful components.

Basic data processing operations

Five basic operations are characteristic of all data processing systems: inputting, storing, processing, outputting, and controlling. They are defined as follows.

Inputting is the process of entering data, which are collected facts, into a data processing system. Storing is saving data or information so that they are available for initial or for additional processing. Processing represents performing arithmetic or logical operations on data in order to convert them into useful information. Outputting is the process of producing useful information, such as a printed report or visual display.

Controlling is directing the manner and sequence in which all of the above operations are performed.

Data storage hierarchy

It is known that data, once entered, are organized and stored in successively more comprehensive groupings. Generally, these groupings are called a data storage hierarchy. The general groupings of any data storage hierarchy are as follows.

- 1) Characters, which are all written language symbols: letters, numbers, and special symbols.
- 2) Data elements, which are meaningful collections of related characters. Data elements are also called data items or fields.
- 3) Records, which are collections of related data elements.
- 4) Files, which are collections of related records. A set of related files is called a data base or a data bank.

2. Ответьте на вопросы, используя информацию текста 1.

1. What is processing?
2. What is data processing?
3. What does the term of data processing system mean?
4. What basic operations does a data processing system include?
5. What is inputting/storing/outputting information?
6. What do you understand by resources?
7. How did ancient Egyptians convert facts into useful information?
8. When were mechanical aids for computation developed?
9. What does data storage hierarchy mean?
10. What are the general groupings of any data storage hierarchy?

3. Найдите в тексте английские эквиваленты следующих словосочетаний.

Системы обработки информации; определение (термина) обработки данных; совокупность фактов; последовательность действий; преобразование входных данных в полезную информацию; включать ресурсы; завершить обработку данных; обеспечивать ввод информации в компьютер; ленты принтера; расходовать в большом количестве; размещать компьютерное оборудование; нуждаться (требовать) в приспособлениях; явление современной жизни; на протяжении доисторического периода; превращать информацию в выражения; регистрировать отливы и приливы; прогнозировать урожай зерновых культур; механические средства вычисления; ввод данных; хранение данных; первоначальная обработка данных; дополнительная обработка; выдача полезной информации; напечатанное сообщение; зрительное отображение; последовательность запоминания информации; записанные символы языка; элементы информации; база данных; набор взаимосвязанных файлов.

4. Переведите следующие цепочки существительных.

Data resource; storage resource; network resource; security resource; system resource.
Communication facilities; data base facilities; display facilities; management facilities.
Distance control; device control; keyboard control; position control; program control.
Computer storage; laser storage; file storage; disk storage; data storage hierarchy.
Character sequence; instruction sequence; message sequence; pulse sequence.
Batch file; catalog file; data file; help file; input file; output file; menu file; user file.
Command input; data input; disk input; file input; keyboard input; program input.

5. Проанализируйте неличные формы глагола и правильно переведите предложения.

1. Data are processed to become useful information. 2. We use the term data processing to include the resources applied for processing of information. 3. Resources required for accomplishing the processing of data are called data processing system. 4. Processing is a series of operations converting inputs into outputs. 5. Facilities are required to house the computer equipment. 6. Egyptians used the information to predict crop yields. 7. Information to be put into the computer for processing should be coded into ones and zeroes. 8. Processing is operations on data to convert them into useful information. 9. The first machines designed to manipulate punched card data were widely used for business data processing. 10. Holerith built one machine to punch the holes and the other to tabulate the collected data.

6. Прочитайте текст и скажите, каковы основные достоинства компьютеров. Переведите текст.

manual — ручной, выполняемый вручную

to take advantage of smth — воспользоваться чем-л.

capability — способность, возможность, характеристика

accuracy — точность, правильность, четкость (изображения)

correctly — правильно, верно

to eliminate — устранять, удалять, отменять, ликвидировать

to make errors — допускать ошибки (погрешности)

error-prone — подверженный ошибкам

to remain vulnerable — оставаться уязвимым, чувствительным

invalid data — неверные, неправильные, недопустимые данные

communications networks — сети передачи данных, сети связи

travel — перемещение, прохождение, путь, ход

instant response — мгновенный ответ (реакция)

to respond — отвечать, реагировать

access — доступ, обращение; обращаться, иметь доступ

capacity of storage — объем (емкость) памяти

to retrieve — извлекать, выбирать (данные); восстанавливать (файл)

value — значение, величина; значимость, ценность; оценка; оценивать

objective — цель, требование; целевая функция

cost-effective — экономичный, экономически оправданный

challenge — трудность, препятствие; представлять трудность

Text 2. ADVANTAGES OF COMPUTER DATA PROCESSING

Computer-oriented data processing systems or just computer data processing systems are not designed to imitate manual systems. They should combine the capabilities of both humans and computers. Computer data processing systems can be designed to take advantage of four capabilities of computers.

1. Accuracy. Once data have been entered correctly into the computer component of a data processing system, the need for further manipulation by humans is eliminated, and the possibility of error is reduced. Computers, when properly programmed, are also unlikely to make computational errors. Of course, computer systems remain vulnerable to the entry by humans of invalid data.

2. Ease of communications. Data, once entered, can be transmitted wherever needed by communications networks. These may be either earth or satellite-based systems. A travel reservations system is an example of a data communications network. Reservation clerks throughout the world may make an enquiry about transportation or lodgings and receive an almost instant response. Another example is an office communications system that provides executives with access to a reservoir of data, called a corporate data base, from their personal microcomputer work stations.

3. Capacity of storage. Computers are able to store vast amounts of information, to organize it, and to retrieve it in ways that are far beyond the capabilities of humans. The amount of data that can be stored on devices such as magnetic disks is constantly increasing. All the while, the cost per character of data

stored is decreasing.

4. Speed. The speed, at which computer data processing systems can respond, adds to their value. For example, the travel reservations system mentioned above would not be useful if clients had to wait more than a few seconds for a response. The response required might be a fraction of a second.

Thus, an important objective in the design of computer data processing systems is to allow computers to do what they do best and to free humans from routine, error-prone tasks. The most cost-effective computer data processing system is the one that does the job effectively and at the least cost. By using computers in a cost-effective manner, we will be better able to respond to the challenges and opportunities of our post-industrial, information-dependent society.

7. Ответьте на вопросы, используя информацию текста.

1. What capabilities should data-processing systems combine when designed? 2. What are the main advantages of computers? 3. What do you know of computers accuracy? 4. What is the function of communications networks? 5. Give examples of a data communications network. 6. What do you understand by capacity storage? 7. What other values of computer data processing systems do you know? 8. What is an important objective in the design of computer data processing systems? 9. What is the most effective computer data processing system? 10. What is the best way of responding to the challenges and opportunities of our post-industrial society?

8. Найдите в тексте английские эквиваленты следующих словосочетаний.

Система обработки информации компьютером; система ориентирования на обработку данных; запоминать огромное количество информации; извлекать информацию; добавить значимости; компьютером; сочетать возможности человека и машины; ограничивать управление; вряд ли допустят ошибку; оставаться уязвимым; недопустимые данные; легкость осуществления связи; сеть передачи информации; системы, основанные на использовании спутников; служащие по резервированию жилья; получить мгновенный ответ; наводить справки; хранилище данных; корпоративная база данных; объем памяти, упомянутый выше; доля секунды; подверженный ошибкам; экономически оправданный.

9. Вспомните значения новых слов и догадайтесь о значении их производных.

To eliminate: elimination, eliminable, eliminator, unlimited.

To respond: respondent, response, responsible, irresponsible, responsibility.

Accuracy: inaccuracy, accurate, inaccurate, accurately.

Correctly: correct, incorrect, to correct, correction, correctional, corrective, corrector.

Vulnerable: invulnerable, vulnerability, invulnerability.

Invalid: valid, invalidity, validity.

Access: accessible, inaccessible, accessibility, inaccessibility.

10. Преобразуйте предложения, содержащие модальные глаголы:

а) в прошедшее время;

б) будущее время.

1. Computers can replace people in dull routine work. 2. The program is a set of instructions that may also include data to be processed. 3. Computer-controlled robots must increase the productivity of industry. 4. They can help in making different decisions. 5. The pupils may work with computers at the lessons. 6. Electric pulses can move at the speed of light. 7. Storage devices must have capacities for the input, output data and programs and for intermediate results. 8. Business minicomputers can perform to 100 million operations per second. 9. In order to solve scientific problems researchers must deal with the language of science — mathematics. 10. Programmers must write application programs in a way that computers can understand.

Unit 5 COMPUTER SYSTEMS: AN OVERVIEW

1. Прочитайте текст и скажите, о каких типах компьютеров и сферах их применения вы узнали.

architecture — архитектура, структура
architect — разработчик архитектуры (системы, структуры)
unit — устройство, модуль, блок, элемент, составная часть
accessory equipment — вспомогательные устройства
engineering background — техническая подготовка, квалификация
analyst — аналитик, системный разработчик
product line — серия (компьютерных) продуктов
manufacturer — изготовитель, производитель, разработчик
application programmer — прикладной программист
to simulate — моделировать, имитировать
voltage — напряжение
pressure — давление, сжатие
digital computer — цифровой компьютер
hybrid computer — смешанного типа, аналого-цифровой компьютер
discrete — дискретный, отдельный
continuous quantity — непрерывная величина
on-going process — продолжающийся, постоянный, непрерывный процесс
to rely — основываться на чем-л., полагаться
to install — устанавливать, размещать, монтировать, настраивать
household appliances — домашние приборы / устройства
microwave oven — микроволновая печь
indoor climate control system — система регуляции температуры в доме

Text 1. COMPUTER SYSTEM ARCHITECTURE

As we know, all computer systems perform the functions of inputting, storing, processing, controlling, and outputting. Now we'll get acquainted with the computer system units that perform these functions. But to begin with let's examine computer systems from the perspective of the systems designer, or architect.

It should be noted that computers and their accessory equipment are designed by a computer system architect, who usually has a strong engineering background. As contrasted with the analyst, who uses a computer to solve specific problems, the computer system architect usually designs computer that can be used for many different applications in many different businesses. For example, the product lines of major computer manufacturers such as IBM, Digital Equipment Corporation, and many others are the result of the efforts of teams of computer system architects.

Unless you are studying engineering, you don't need to become a computer systems architect. However, it is important that as a potential user, applications programmer, or systems analyst you understand the functions of the major units of a computer system and how they work together.

Types of computers

The two basic types of computers are analog and digital. Analog computers simulate physical systems. They operate on the basis of an analogy to the process that is being studied. For example, a voltage may be used to represent other physical quantities such as speed, temperature, or pressure. The response of an analog computer is based upon the measurement of signals that vary continuously with time. Hence, analog computers are used in applications that require continuous measurement and control.

Digital computers, as contrasted with analog computers, deal with discrete rather than continuous quantities. They count rather than measure. They use numbers instead of analogous physical quantities to simulate ongoing or real-time processes. Because they are discrete events, commercial transactions are in

a natural form for digital computation. This is one reason that digital computers are so widely used in business data processing.

Machines that combine both analog and digital capabilities are called hybrid computers. Many business, scientific, and industrial computer applications rely on the combination of analog and digital devices. The use of combination analog devices will continue to increase with the growth in applications of microprocessors and microcomputers. An example of this growth is the trend toward installing control systems in household appliances such as microwave ovens and sewing machines. In the future we will have complete indoor climate control systems and robots to do our housecleaning. Analog sensors will provide inputs to the control centers of these systems, which will be small digital computers.

2. Ответьте на вопросы, используя информацию текста.

1. Who designs computers and their accessory equipment? 2. What is the role of an analyst? 3. Is it necessary for a user to become a computer system architect? 4. What functions do computer systems perform? 5. What types of computers do you know? 6. What is the principle of operation of analog computers? 7. How do digital computers differ from analog computers? 8. Where are digital and analog computers used? 9. What are hybrid computers? 10. Where do they find application?

3. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Функции ввода, хранения, обработки, управления и вывода информации; познакомиться; системные блоки; для начала; вспомогательные устройства; разработчик компьютерной системы; хорошая компьютерная подготовка; различные сферы применения; корпорация цифрового оборудования; прикладной программист; системный разработчик; главные устройства компьютерной системы; моделировать физические величины; измерение сигналов; в отличие от; иметь дело скорее с дискретными, чем непрерывными величинами; в режиме реального времени; коммерческие операции; цифровое вычисление; аналого-цифровые компьютеры; тенденция к установке систем управления; домашние приборы.

4. Образуйте (и переведите) имена существительные от приведенных ниже глаголов с помощью суффиксов.

A. -er, -or

To control, to compute, to design, to use, to manufacture, to work, to simulate, to operate, to protect, to process, to deal, to perform, to examine, to program, to execute, to transmit, to convert, to print, to consume, to record.

B. -tion, -sion

To organize, to collect, to combine, to apply, to represent, to add, to incorporate, to transact, to compute, to produce, to operate, to execute, to protect, to substitute, to prepare, to invent, to decide, to eliminate, to communicate, to correct, to inform.

C. -ment

To require, to measure, to equip, to invest, to accomplish, to improve, to develop, to achieve, to displace, to govern, to move.

5. Прочитайте текст 2 и объясните, как вы понимаете термины «аппаратное обеспечение» и «программное обеспечение». Переведите текст.

hardware — аппаратное обеспечение, аппаратура, оборудование

software — программное обеспечение, программные средства

system software — системное программное обеспечение

application software — прикладное программное обеспечение

firmware — встроенное / микропроцессорное программное обеспечение

visible units — видимый блок, устройство

procedure — процедура, процесс, метод, методика, алгоритм

to associate — соединять, объединять, связывать

associated documentation — соответствующая документация
to execute applications programs — выполнять прикладные программы
payroll — платежная ведомость
inventory control — инвентаризация, переучет
investment analyses — анализ инвестиций (капиталовложений)
to protect — защищать
read-only memory (ROM) — постоянное запоминающее устройство (ПЗУ)
to refer to — относиться к; ссылаться на
to substitute — заменять, замещать
to cause — заставлять, вынуждать; причина, основание
to accomplish — завершать, заканчивать; выполнять, осуществлять
performance — производительность; быстроедействие; рабочая характеристика

Text 2. HARDWARE, SOFTWARE, AND FIRMWARE

The units that are visible in any computer are the physical components of a data processing system, or hardware. Thus, the input, storage, processing, and control devices are hardware. Not visible is the software — the set of computer programs, procedures, and associated documentation that make possible the effective operation of the computer system. Software programs are of two types: systems software and applications software.

Systems software are the programs designed to control the operation of a computer system. They do not solve specific problems. They are written to assist people in the use of the computer system by performing tasks, such as controlling all of the operations required, to move data into and out of a computer and all of the steps in executing an applications program. The person who prepares systems software is referred to as a systems programmer. Systems programmers are highly trained specialists and important members of the architectural team.

Applications software are the programs written to solve specific problems (applications), such as payroll, inventory control, and investment analysis. The word program usually refers to an applications program, and the word programmer is usually a person who prepares applications software.

Often programs, particularly systems software, are stored in an area of memory not used for applications software. These protected programs are stored in an area of memory called read-only memory (ROM), which can be read from but not written on.

Firmware is a term that is commonly used to describe certain programs that are stored in ROM. Firmware often refers to a sequence of instructions (software) that is substituted for hardware. For example, in an instance where cost is more important than performance, the computer system architect might decide not to use special electronic circuits (hardware) to multiply two numbers, but instead write instructions (software) to cause the machine to accomplish the same function by repeated use of circuits already designed to perform addition.

6. Ответьте на вопросы, используя информацию текста.

1. What is hardware? 2. What is the definition of software? 3. What are the types of software? 4. What are systems software? 5. What kind of tasks do systems software perform? 6. Who prepares systems software? 7. What is applications software? 8. What problems do applications software solve? 9. What is firmware? 10. How can a computer system architect use firmware?

7. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Видимые устройства; система обработки данных; аппаратное обеспечение; набор компьютерных программ; соответствующая документация; эффективная работа; системное программное обеспечение; прикладное программное обеспечение; системный программист; платежная ведомость; переучет; анализ инвестиций; прикладная программа; работающий только в режиме чтения; постоянное запоминающее устройство; последовательность команд; в случае; производительность;

электронная цепь; умножать числа; заставить машину выполнять ту же функцию; выполнять сложение.

8. Вспомните значения новых слов и попытайтесь перевести словосочетания, употребляемые с этими словами.

Architecture: communication architecture; computer architecture; disk architecture; microprocessor architecture; network architecture; security architecture; system architecture; virtual architecture.

Software: systems software; applications software; database software; disk software; educational software; game software; management software; simulation software.

Hardware: computer hardware; device hardware; display hardware; memory hardware; mouse hardware; network hardware; systems hardware; video hardware.

Procedure: accounting procedure; computational procedure; control procedure; data-processing procedure; decision procedure; error-correcting procedure; formatting procedure; installation procedure; management procedure; solution procedure.

Protection: computer protection; data protection; device protection; display protection; error protection; hardware protection; software protection; resource protection; security protection; system protection; virus protection.

9. Озаглавьте каждый компонент текста.

STEPS IN THE DEVELOPMENT OF COMPUTERS

1. In 1948 due to the invention of transistors there appeared the possibility to replace vacuum tubes. The transistor occupied an important place on the way to computer development. The potential advantage of the transistor over the vacuum tube was almost as great as that of the vacuum tube over the relay. A transistor can switch flows of electricity as fast as the vacuum tubes used in computers, but the transistors use much less power than equivalent vacuum tubes, and are considerably smaller. Transistors are less expensive and more reliable. They were mechanically rugged, had practically unlimited life and could do some jobs better than electronic tubes. Transistors were made of crystalline solid material called semiconductor. With the transistor came the possibility of building computers with much greater complexity and speed.

2. The integrated circuit constituted another major step in the development of computer technology. Until 1959 the fundamental logical components of digital computers were the individual electrical switches, first in the form of relays, then vacuum tubes, then transistors. In the vacuum tubes and relay stages, additional discrete components, such as resistors, inductors, and capacitors were required in order to make the whole system work. These components were generally each about the same size as packaged transistors. Integrated circuit technology permitted the elimination of some of these components and integration of most of the others on the same chip of semiconductor that contains the transistor. Thus the basic logic element — the switch, or “flip-flop”, which required two separate transistors and some resistors and capacitors in the early 1950s, could be packaged into a single small unit in 1960. The chip was an important achievement in the accelerating step of computer technology.

3. In 1974 a company in New Mexico, called Micro Instrumentation Telemetry System (MITS) developed the Altair 8800, a personal computer (PC) in a kit. The Altair had no keyboard, but a panel of switches with which to enter the information. Its capacity was less than one percent that of the 1991 Hewlett-Packard handheld computer. But the Altair led to a revolution in computer electronics that continues today. Hardware manufacturers soon introduced personal computers, and software manufacturers began developing software to allow the computers to process words, manipulate data, and draw. During the 1980s computers became progressively smaller, better, and cheaper.

Today the personal computer can serve as a work station for the individual. A wide array of computer functions is now accessible to people with no technical background.

FUNCTIONAL ORGANIZATION OF THE COMPUTER

1. Прочитайте текст и назовите основные функциональные блоки компьютера и их назначение.

operation — операция; работа; действие; срабатывание

to relate — связывать, устанавливая отношения

a broad view — широкий взгляд, обзор

unit — устройство, модуль, блок, узел, элемент, ячейка

input — ввод, устройство ввода, вводить, подавать на вход

to insert — вставлять; вносить; включать

storage = memory — память, запоминающее устройство

available — доступный, имеющийся в наличии

at the appropriate time — в нужное время

arithmetic-logical unit — арифметико-логическое устройство

output — вывод, устройство вывода; выводить, подавать на выход

to remove — удалять, устранять, вынимать, исключать

control unit — блок управления

cause — заставлять, вынуждать, быть причиной; причина, основание

to feed (fed, fed) — подавать; питать; вводить (данные)

to interpret — интерпретировать, истолковывать

to issue commands — выдавать команды

pulse — no-pulse — (есть) импульс — холостой импульс

Text 1. FUNCTIONAL UNITS OF DIGITAL COMPUTERS

As we know, all computer operations can be grouped into five functional categories. The method in which these five functional categories are related to one another represents the functional organization of a digital computer. By studying the functional organization, a broad view of the computer is received.

The five major functional units of a digital computer are:

- 1) Input — to insert outside information into the machine;
- 2) Storage or memory — to store information and make it available at the appropriate time;
- 3) Arithmetic-logical unit — to perform the calculations;
- 4) Output — to remove data from the machine to the outside world and
- 5) Control unit — to cause all parts of a computer to act as a team.

Figure 5 shows how the five functional units of the computer act together. A complete set of instructions and data are usually fed through the input equipment to the memory where they are stored. Each instruction is then fed to the control unit. The control unit interprets the instructions and issues commands to the other functional units to cause operations to be performed on the data. Arithmetic operations are performed in the arithmetic-logical unit, and the results are then fed back to the memory. Information may be fed from either the arithmetic unit or the memory through the output equipment to the outside world.

The five units of the computer must communicate with each other. They can do this by means of a machine language which uses a code composed of combinations of electric pulses. These pulse combinations are usually represented by zeros and ones, where the one may be a pulse and the zero — a no-pulse. Numbers are communicated between one unit and another by means of these one-zero or pulse — no pulse combinations. The input has the additional job of converting the information fed in by the operator into machine language. In other words, it translates from our language into the pulse — no-pulse combinations understandable to the computer. The output's additional job is converting the pulse — no-pulse combinations into a form understandable to us, such as a printed report.

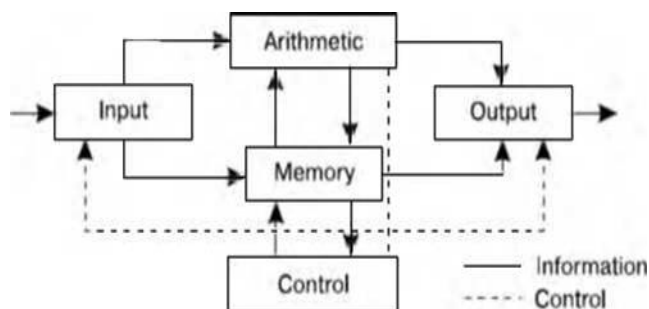


Fig. 5. Functional units of a computer

2. Дайте ответы на вопросы, используя информацию текста.

1. What represents the functional organization of a computer? 2. What can we get by studying the functional organization? 3. What is the function of the input device? 4. What does memory serve for? 5. What is the task of the arithmetic-logical unit? 6. What is the function of the output? 7. What is the main purpose of the control unit? 8. How do all units of the computer communicate with each other? 9. What is the additional job of the input? 10. What is the additional function of the output?

3. Найдите в тексте английские эквиваленты следующих словосочетаний.

Функциональная организация; действия компьютера; связывать друг с другом; вводить информацию извне; делать информацию доступной; выполнять вычисления; выводить информацию; блок управления; выдавать команды; заставлять выполнять команды; выходное устройство; внешний мир; связываться друг с другом; комбинация электрических импульсов; холостой импульс; импульсы, распознаваемые компьютером.

4. Разделите приведенные ниже слова на три группы, определяя по суффиксу часть речи — существительное или наречие. Переведите слова.

Organization, functional, прилагательное, available, equipment, processor, completely, architectural, converter, convertible, controller, removable, logical, addition, additional, usually, accomplishment, operator, operation, mainly, communication, insertion, electronic, digital, instruction, generally, arithmetic, daily, development, central, lately, visible, substitution, understandable.

5. Вспомните значения новых слов и попытайтесь перевести словосочетания, употребляемые с этими словами.

Computer: analog computer; digital computer; hybrid computer; all-purpose computer; general-purpose computer; fifth-generation computer; game computer; handheld computer; mobile computer; multimedia computer; notebook computer; pocket computer; portable computer.

Unit: unit of memory; unit of data; unit of measurement; arithmetic unit; arithmetic-logic unit; central processing unit; computing unit; control unit; functional unit; input unit; output unit; network unit; system unit.

Function: arithmetic function; checking function; complex function; computer function; continuous function; conversion function; distribution function; encoding function; logical function; numeric function; output function; program function; search function; software function; support function; utility function; variable function.

Control: access control; batch control; coding control; distance/remote control; error control; execution control; hardware control; input/output control; memory control; power control; production control; program control; rate control; self-acting control; software control; system control.

6. Вспомните значения следующих прилагательных и преобразуйте их в сравнительную и превосходную степень.

A. Small; fast; new; long; late; wide; young; easy; great; dull; rich; bulky; large; vast; early; old; broad.

B. Frequent; reliable; approximate; significant; intricate; possible; basic; remarkable; common; modern; dependent; general; necessary; successful; scientific; universal.

C. Good; bad; little; many.

7. Прочитайте текст 2 и скажите, какую дополнительную информацию вы узнали о действии основных устройств компьютера.

large-scale — большой, крупномасштабный

flip-flop — триггер

circuit — цепь, контур, схема

employ — использовать, употреблять, применять

logic gates — логический элемент, схема пропускания (сигналов), проход

feasible — возможный, выполнимый, осуществимый

interpret orders — интерпретировать, истолковывать команды

operate switches — приводить в действие переключатели

convey — передавать, сообщать

in response to — в ответ на

correct operand — нужный операнд

original input data — исходная вводимая информация

proceed — продолжать(ся), возобновлять(ся), действовать

room — (свободное) место, свободная память

Text 2. SOME FEATURES OF A DIGITAL COMPUTER

It should be noticed that even in a large-scale digital system, such as in a computer, or in a data-processing, control, or digital-communication system, there are only a few basic operations which must be performed. These operations may be operated many times. The four circuits most commonly employed in such systems are known as the OR, AND, NOT and FLIP-FLOP. They are called logic gates or circuits.

An electronic digital computer is a system which processes and stores very large amount of data and which solves scientific problems of numerical computations of such complexity and with such speed that solution by human calculation is not feasible. So the computer as a system can perform numerical computations and follow instructions with extreme speed but it cannot program itself.

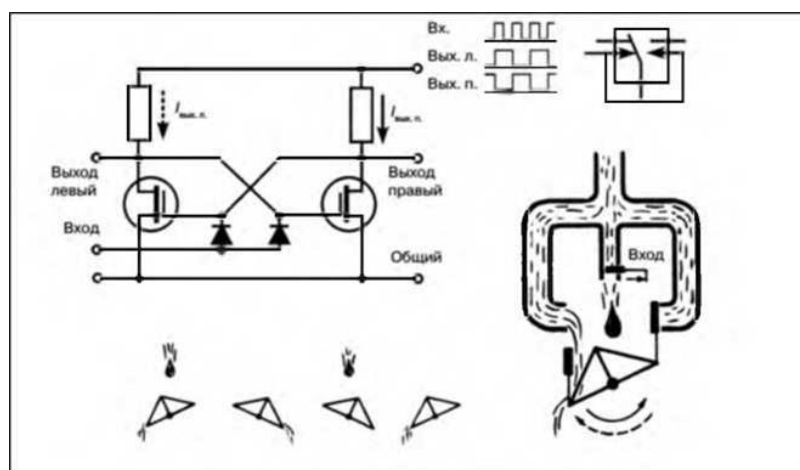


Fig. 6. FLIP-FLOP

We know that the numbers and the instructions which form the program, the computer is to follow, are stored in an essential part of the computer called the memory. The second important unit of the computer is the control whose function is to interpret orders. The control must convert the command into an appropriate set of voltages to operate switches and carry out the instructions conveyed by the order. The

third basic element of a computer is the arithmetic device, which contains the circuits performing the arithmetic computations: addition, subtraction, etc. The control and arithmetic components are called the central processor. Finally a computer requires appropriate input-output devices for inserting numbers and orders into the memory and for reading the final result.

Suppose a command to perform an addition or division has been transmitted to the central processor. In response to this order the control must select the correct operands from the memory, transmit them to the arithmetic unit and return to the memory the result of the computation. The memory serves for storing not only the original input data, but also the partial results which will have to be used again as the computation proceeds.

Lastly, if the computation doesn't stop with the execution of this instruction and the storage of the partial result, the control unit must automatically pass on to the next instruction. The connection of the control unit back to the input permits insertion of more data when there is room in the memory.

8. Ответьте на вопросы, используя информацию текста.

1. What are the most commonly used circuits in any computer? 2. How are they called? 3. What kind of a system is a digital computer? 4. Is there any-thing that a computer cannot do itself? What is it? 5. Where are the instructions and digits stored? 6. What is the function of the control? 7. What does the arithmetic device serve for? 8. What components form the central processor? 9. What other devices in addition to the above-mentioned ones does a computer require? 10. How are computations performed in a computer?

9. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Крупномасштабная цифровая система; система обработки данных; система цифровой связи; наиболее широко распространенные схемы; логические схемы; решать научные проблемы; выполнять числовые расчеты; интерпретировать команды; приводить в действие переключатели; выполнять команды; нуждаться (требовать) в необходимом устройстве ввода-вывода; введение чисел и команд; считывание конечных результатов; передавать команду в центральный процессор; в ответ на; хранение частичных результатов; позволить введение новых данных; свободное место в памяти.

10. Подберите пары или группы близких по значению слов из предложенных ниже. Переведите слова на русский язык.

Verbs: relate, employ, insert, perform, remove, operate, show, interpret, select, issue, use, receive, perform, cause, print, make, compute, connect, execute, take away, require, act, convert, carryout, demand, permit, demonstrate, choose, transmit, type, store, get, calculate, proceed, continue, keep, allow.

Nouns: response, unit, component, computation, storage, gate, amount, digit, element, memory, instruction, device, equipment, connection, circuit, order, command, information, relation, quantity, answer, calculation, number, data.

Adjectives: broad, complete, each, appropriate, every, basic, essential, digital, original, full, wide, initial, major, large, numerical, common, necessary, usual, important, general, great.

Unit 7 STORAGE

1. Прочитайте текст и скажите, что такое запоминающее устройство в компьютере и о каких его типах вы узнали из текста.

primary/secondary storage — первичное/вторичное запоминающее устройство

main storage — основная память, оперативное запоминающее устройство

internal storage — внутреннее ЗУ

sequence — последовательность, порядок следования

intermediate results — промежуточные результаты

ongoing process — продолжающий(ся), постоянный процесс

similarity — сходство, подобие
 to retain — сохранять, удерживать
 to locate — размещать(ся), располагать(ся)
 value — значение, величина; значимость, ценность; оценка
 binary digit — двоичная цифра, двоичный знак
 adjacent — смежный, соседний, примыкающий
 strings of characters — последовательность символов
 consecutive — последовательный, смежный, соседний

Text 1. STORAGE UNITS

Computer system architecture is organized around the primary storage unit because all data and instructions used by the computer system must pass through primary storage. Our discussion of computer system units will begin with the functions of the primary and secondary storage units. This leads to the examination of the central processing unit and from there to the consideration of the input and output units. Therefore, the sequence in which we'll describe the functional units of a digital computer is: 1) storage units, primary and secondary; 2) central processing unit; 3) input and output units.

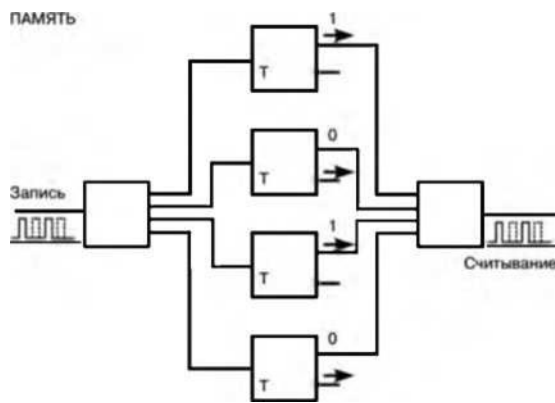


Fig. 10. Storage

As you know, there are primary and secondary storage units. Both contain data and the instructions for processing the data. Data as well as instructions must flow into and out of primary storage.

Primary storage is also called main storage or internal storage. The specific functions of internal storage are to hold (store): 1) all data to be processed; 2) intermediate results of processing; 3) final results of processing; 4) all the instructions required for ongoing process. Another name for primary storage is memory, because of its similarity to a function of the human brain. However, computer storage differs from human memory in important respects. Computer memory must be able to retain very large numbers of symbol combinations, without forgetting or changing any details. It must be able to locate all its contents quickly upon demand. The combinations of characters, that is, the letters, numbers, and special symbols by which we usually communicate, are coded. The codes used by computer designers are based upon a number system that has only two possible values, 0 and 1. A number system with only two digits, 0 and 1, is called a binary number system. Each binary digit is called a bit, from Binary digiT. As the information capacity of a single bit is limited to 2 alternatives, codes used by computer designers are based upon combinations of bits. These combinations are called binary codes. The most common binary codes are 8-bit codes because an 8-bit code provides for 28, or 256 unique combinations of 1s and 0s, and this is more than adequate to represent all of the characters by which we communicate.

Data in the form of coded characters is stored in adjacent storage locations in main memory in two principal ways: 1) as “strings” of characters — in bytes; and 2) within fixed-size “boxes” — in words. A fixed number of consecutive bits that represent a character is called a byte. The most common byte size is 8-bit byte. Words are usually 1 or more bytes in length.

Secondary Storage. Primary storage is expensive because each bit is represented by a high-speed device, such as a semiconductor. A million bytes (that is, 8 million bits) is a large amount of primary storage. Often it is necessary to store many millions, sometimes billions, of bytes of data. Therefore slower, less expensive storage units are available for computer systems. These units are called secondary storage. Data are stored in them in the same binary codes as in main storage and are made available to main storage as needed.

2. Ответьте на вопросы, используя информацию текста.

1. What are the functional units of a digital computer? 2. What units make up the central processing unit? 3. How is computer system organized? 4. What are the two main types of storage units? 5. What do they contain? 6. What is the function of a primary storage? 7. Why is primary storage often called memory? 8. In what respect does computer memory differ from human memory? 9. What are codes based on? 10. What is secondary storage and what is it used for?

3. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Функциональный блок; цифровой компьютер; устройство ввода; устройство управления; арифметико-логическое устройство; центральный процессор; структура компьютерной системы; первичное запоминающее устройство; вторичное ЗУ; рассмотрение; поэтому последовательность; оперативное ЗУ; внутренняя память; промежуточные результаты; подобие функции человеческого мозга; размещать содержимое по требованию; система счисления; двоичная система счисления; возможные величины; объем информации; двоичный код; смежные ячейки памяти; последовательность символов; быстродействующее устройство; полупроводник; доступный.

4. Вспомните значения новых слов и попытайтесь перевести словосочетания, употребляемые с этими словами.

Storage: available storage; buffer storage; computer storage; data storage; magnetic disk storage; magnetic tape storage; input storage; intermediate storage; internal storage; laser storage; main storage; primary storage; secondary storage; sequential-access storage; variable storage; virtual storage.

Value: absolute value; acceptable value; additional value; binary value; byte value; character value; constant value; correct value; data value; digit value; discrete values; invalid value; negative value; numerical value; output value; valid value.

Digit: binary digit; binary-coded digit; check digit; information digit; input digit; non-significant digit; significant digit; digit-by-digit.

Sequence: out of sequence; alphabetic sequence; arithmetic sequence; binary sequence; character sequence; code sequence; instruction sequence; data sequence; digital sequence; historical sequence; increasing sequence; program sequence; string sequence.

5. Найдите в тексте слова, близкие по значению к следующим.

Memory; element; information; command; examination; character; quantity; number; place; computer architect; likeness.

To apply; to form; to move; to hold; to demand; to connect; to supply; to place; to name; to start; to examine.

Continuous; significant; consecutive; usual; enough; main; initial; general.

6. Прочитайте текст 2 и скажите, как вы понимаете термин «запоминающая среда» и какие компоненты ее составляют. Переведите текст.

medium (pl. media) — носитель; среда

capacity — емкость, объем (памяти); пропускная способность

media capacity — емкость носителя

data access time — время доступа к данным

per bit — на единицу информации

to transfer — передавать(ся), переносить(ся), пересылать(ся)
archival storage — архивное ЗУ, архивная память
to depend — зависеть, полагаться, рассчитывать на
to rotate — вращать(ся); чередовать(ся), сменять(ся)
reason — причина, основание, довод; обосновывать, делать вывод
solid-state device — твердотельный прибор
magnetic core — магнитный сердечник
bipolar semiconductor — биполярный полупроводник
metal-oxide semiconductor (MOS) — структура металл — оксид — полупроводник
randomly — произвольно
random-access memory (RAM) — оперативное запоминающее устройство (ОЗУ)
sound recording — звукозапись
to arrange — размещать, располагать, устанавливать, монтировать
tape device — ЗУ на магнитной ленте
to range — классифицировать, располагать в порядке; лежать в диапазоне
magnetic disk storage — ЗУ на магнитном диске
moving-head device — устройство сдвигающейся головкой
predominant — преобладающий, доминирующий
flexible — гибкий, настраиваемый, изменяемый
floppy (disk) — гибкий диск (дискета), ЗУ на гибком диске
to meet the demands — удовлетворять потребности

Text 2. STORAGE DEVICES

Storage media are classified as primary storage or secondary storage on the basis of combinations of cost, capacity, and access time. The cost of storage devices is expressed as the cost per bit of data stored. The most common units of cost are cents, millicents (0.001 cents), and microcents (0.000001 cents). The time required for the computer to locate and transfer data to and from a storage medium is called the access time for that medium. Capacities range from a few hundred bytes of primary storage for very small computers to many billions of bytes of archival storage for very large computer systems.

Memories may be classified as electronic or electromechanical. Electronic memories have no moving mechanical parts, and data can be transferred into and out of them at very high speeds. Electromechanical memories depend upon moving mechanical parts for their operation, such as mechanisms for rotating magnetic tapes and disks. Their data access time is longer than is that of electronic memories; however, they cost less per bit stored and have larger capacities for data storage. For these reasons most computer systems use electronic memory for primary storage and electromechanical memory for secondary storage.

Primary storage has the least capacity and is the most expensive; however, it has the fastest access time. The principal primary storage circuit elements are solid-state devices: magnetic cores and semiconductors. For many years magnetic cores were the principal elements used in digital computers for primary storage. The two principal types of semiconductors used for memory are bipolar and metal-oxide semiconductors (MOS). The former is faster, the latter is more commonly used at present. Because data can be accessed randomly, semiconductor memories are referred to as random-access memory, or RAM.

There is a wide range of secondary storage devices. Typical hardware devices are rotating electromechanical devices. Magnetic tapes, disks, and drums are the secondary storage hardware most often used in computer systems for sequential processing. Magnetic tape, which was invented by the Germans during World War II for sound recording, is the oldest secondary storage medium in common use. Data are recorded in the form of small magnetized “dots” that can be arranged to represent coded patterns of bits.

Tape devices range from large-capacity, high-data-rate units used with large data processing systems to cassettes and cartridges used with small systems. Magnetic disk storage, introduced in the early

1960s, has replaced magnetic tape as the main method of secondary storage. As contrasted with magnetic tapes, magnetic disks can perform both sequential and random processing. They are classified as moving-head, fixed-head, or combination moving-head and fixed-head devices. Magnetic disks are the predominant secondary storage media. They include flexible or floppy disks, called diskettes. The “floppies” were introduced by IBM in 1972 and are still a popular storage medium to meet the demands of the microcomputer market.

7. Ответьте на вопросы, используя информацию текста.

1. How are storage media classified? 2. How is the cost of storage devices expressed? 3. What is the access time for storage media? 4. How does the storage capacity range? 5. What are the two main types of storage devices? 6. What are electronic storage devices? 7. What are the principal primary storage circuit elements? 8. What are the main secondary storage devices? 9. What is the oldest secondary medium and when was it invented? 10. What is a floppy?

8. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Запоминающие устройства; носители памяти; первичные ЗУ; вторичные ЗУ; время доступа; стоимость ЗУ; диапазон емкости памяти; архивная память; движущиеся механические части; вращающиеся магнитные ленты и диски; по этим причинам; твердотельные устройства; магнитные сердечники; полупроводники; оперативное ЗУ; аппаратное обеспечение вторичной памяти; звукозапись; намагниченные точки; представлять зашифрованную комбинацию единиц информации; в отличие от магнитных лент; последовательная и произвольная обработка; устройства с движущейся и фиксированной головкой; удовлетворять потребности; гибкий диск.

9. Выполните перевод текста.

DIGITAL COMPUTER OPERATION

1. A digital computer is a machine capable of performing operations on data represented in digital or number form. The individual operations performed by a digital computer are very simple arithmetic or logical processes involving the manipulation of the bits in words or characters of information. The great power of any digital computer rests in the ability to store large volumes of data and to perform these operations at extremely high speed.

In most electronic digital computers the method of number representation is based on the system of binary notation. The binary notation system is most widely used because of the convenience in constructing logic circuits and storage devices capable of handling data in this form. For example, a magnetic memory unit consists of many thousand individual magnetic cells, each of which can be energized in either of two ways to represent the binary digits 0 or 1. If these cells are grouped to form words or binary coded characters, information can be stored for processing in units of specified size. In the same way, digital data can be recorded as a series of magnetized spots on a magnetic tape or a magnetic disk.

2. The computer has pervaded most fields of human activity and is the most important innovation of our age. Born out of the technology of communication, it is capable of handling enormous amounts of information at tremendous speeds. What makes it so potent is the fact that a single mechanism can perform any information-processing task. The same mechanism can control industrial processes, guide space vehicles or help to teach children. This diversity of tasks is made possible by the simple idea of the stored program.

A program is the enumeration of determining commands. It specifies the method used for the solution of a problem in detail. When the machine is in operation, both the commands and the numbers to be processed are constantly being taken out of and put into a depository of information known as a memory.

It can be seen that the processes performed by a digital computer are essentially simple. These operations can be performed at extremely high speeds and with a high degree of coordination between the different functional units of the hardware system, and this ability means that digital computers can undertake highly complex tasks.

10. Составьте на английском языке план текста, выделив его основные темы. План можно составить в вопросной, назывной или тезисной форме. Познакомьтесь с образцами планов, представленных после текста; сравните со своим планом.

MEMORY

It is interesting to note that memory, one of the basic components of the computer, is often called storage. It stores calculation program, the calculation formulae, initial data, intermediate and final results. Therefore, the functions of the computer memory may be classified in the following way. Firstly, the computer memory must store the information transmitted from the input and other devices. Secondly, memory should produce the information needed for the computation process to all other devices of the computer.

Generally, memory consists of two main parts called the main, primary or internal, memory and the secondary or external memory. The advantage of the primary memory is an extremely high speed. The secondary memory has a comparatively low speed, but it is capable of storing far greater amount of information than the main memory. The primary storage takes a direct part in the computational process. The secondary storage provides the information necessary for a single step in the sequence of computation steps.

The most important performance characteristics of a storage unit are speed, capacity, and reliability. Its speed is measured in cycle time. Its capacity is measured by the number of machine words or binary digits. Its reliability is measured by the number of failures (отказ) per unit of time.

План в вопросной форме

1. What is memory?
2. What is the function of memory?
3. What are the main parts of memory?
4. What are advantages and disadvantages of a storage unit?
5. What are their functions?
6. What are performance characteristics of the main and secondary memory?
7. What units are performance characteristics measured by?

План в назывной форме

1. The definition of memory.
2. The main functions of memory.
3. Classification of memory.
4. Advantages and disadvantages of memory components.
5. The functions of memory components.
6. Performance characteristics of memory.
7. The units for measuring the performance characteristics of memory.

План в тезисной форме

1. Memory is one of the basic components of the computer.
2. Memory stores initial data, intermediate and final results.
3. It produces the information needed to other devices of the computer.
4. Memory consists of the main (internal) and the secondary (external) storage.
5. The main memory has high speed, but small capacity; the secondary memory possesses lower speed but greater capacity.
6. The main memory performs computation; the secondary memory provides information sequentially, step by step.
7. The performance characteristics — speed, capacity, and reliability — are measured by cycles, binary digits, and the number of failures per unit of time.

Unit 8 CENTRAL PROCESSING UNIT

1. Прочитайте текст и скажите, какой компонент составляет сердце компьютерной системы и в чем заключается его функция.

central processing unit (CPU) — центральный процессор (ЦП)
interchangeably — взаимозаменяемым образом
precisely — точно
internal memory — внутренняя память, внутреннее ЗУ
activity — деятельность, работа, действия операции
to issue — посылать (сигнал); выводить, выдавать (сообщение)
response — ответ, отклик, реакция; отвечать, реагировать
to interpret — интерпретировать, истолковывать
according to — согласно, в соответствии с
level — уровень, степень, мера; выравнивать
input-output port — порт ввода-вывода
control unit (CU) — устройство управления
arithmetic-logic unit (ALU) — арифметико-логическое устройство
switch — переключатель, коммутатор; переключать; переходить
direct — направлять, адресовать, указывать; прямой, непосредственный
step-by-step operations — пошаговые операции
to select — выбирать, выделять (на экране)
on the other hand — с другой стороны
exponentiation — возведение в степень
call for — требовать; предусматривать
to load — загружать, выполнять загрузку

Text 1. CENTRAL PROCESSING UNIT

It is well-known in computer science that the words “computer” and “processor” are used interchangeably. Speaking more precisely, “computer” refers to the central processing unit (CPU) together with an internal memory.

The internal memory, control and processing components make up the heart of the computer system. Manufacturers design the CPU to control and carry out basic instructions for their particular computer.

The CPU coordinates all the activities of the various components of the computer. It determines which operations should be carried out and in what order. The CPU controls the operation of the entire system by issuing commands to other parts of the system and by acting on responses. When required, it reads information from the memory, interprets instructions, performs operations on the data according to the instructions, writes the results back into the memory, and moves information between memory levels or through the input-output ports.

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

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

The ALU, on the other hand, is that part of the computer in which the actual arithmetic operations, namely, addition, subtraction, multiplication, division, and exponentiation, called for in the instructions are performed.

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

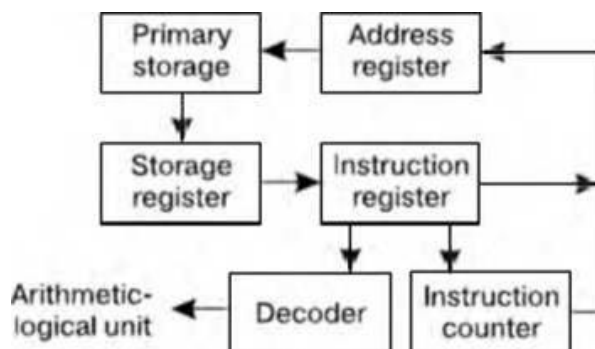


Fig. 12. Control unit functional diagram

2. Ответьте на вопросы, используя информацию текста.

1. What words in computer science are used interchangeably and why? 2. What components make up the heart of the computer system? 3. What is the function of the CPU? 4. In what way does the CPU control the operation of the whole system? 5. What is the sequence of operations the CPU performs (use five verbs)? 6. What are the CPU functional units made of? 7. What is the function of the CU? 8. What operations are performed in the ALU? 9. Where are data processed? 10. Where are data to be processed loaded into?

3. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Хорошо известно; к компьютеру относятся; внутренняя память; составлять суть; выполнять; координировать деятельность; определяя, в каком порядке; управлять работой всей системы; при необходимости; в соответствии с командами; уровни памяти; порт ввода-вывода; переключатели; режим включения или выключения; передавать сигналы; указывать последовательность пошаговых операций; основная память; управлять ходом выполнения программы; с другой стороны; выполнять вычитание, сложение, возведение в степень, деление, умножение; для того чтобы.

4. Вспомните значения новых слов и попытайтесь перевести словосочетания, употребляемые с этими словами.

Direction: backward direction; clockwise direction; counterclockwise direction; data direction; forward direction; inverse/reverse direction; negative direction; positive direction; printing direction; transmission direction.

Level: access level; application level; data level; device level; difficulty level; error level; function level; hardware level; high level; input level; output level; performance level; presentation level; program level; protection level; resource level; security level; software level; structural level; system level; transmission level.

Processor: arithmetic processor; central processor; command processor; control processor; data processor; error processor; general-purpose processor; special-purpose processor; image processor; language processor; mail processor; message processor; numeric processor; parallel processor; peripheral processor; text processor.

Switch: to switch between programs; to switch between windows; to switch disks; to switch on; to switch off; to switch over; binary switch; command switch.

Step: conversion step; final step; procedure step; program step; programming step; step by step; one step at a time; to step down; to step out; to step up; to take steps.

5. Прочитайте текст и скажите, о каких компонентах центрального процессора и их назначении вы узнали. Переведите текст.

to manage — управлять; организовывать; справляться

to obtain — получать, достигать, добиваться

to cause — заставлять, вынуждать, вызывать, быть причиной; причина, основание

flow — поток; ход (выполнения программы); последовательность

counter — счетчик

register — регистр, устройство регистрации, счетчик, дат-чик

instruction register — регистр команд

storage register — регистр памяти, запоминающий регистр

address register — адресный регистр

temporarily — временно

decoder — дешифратор

operand address — адрес (хранения) операнда

mark — отметка, маркер, знак; помечать, обозначать, выделять

timing mark — отметка времени

accumulate — накапливать(ся), суммировать, собираться

accumulator — сумматор, накапливающий регистр, устройство суммирования

compare — сравнивать, соотноситься

comparer — компаратор, устройство сравнения

content - содержимое, смысл; объем, количество

involve — включать, содержать, заключать (в себе)

core — суть; основная часть; ядро; оперативная память

add — складывать, суммировать, прибавлять, присоединять

added — добавочный, дополнительный

adder — сумматор, блок суммирования

at least — по крайней мере

Text 2. THE CPU MAIN COMPONENTS

As it is known, the two functional units of the CPU are the control unit (CU) and the arithmetic-logical unit (ALU). The control unit manages and coordinates the entire computer system. It obtains instructions from the program stored in main memory, interprets the instructions, and issues signals that cause other units of the system to execute them.

The control unit operates by reading one instruction at a time from memory and taking the action called for by each instruction. In this way it controls the flow between the main storage and the arithmetic-logical unit.

The control unit has the following components: a counter that selects the instructions, one at a time, from memory; a register that temporarily holds the instructions read from memory while it is being executed; a decoder that takes the coded instruction and breaks it down into individual commands necessary to carry it out; a clock, which produces marks at regular intervals. These timing marks are electronic and very rapid.

The sequence of control unit operations is as follows. The next instruction to be executed is read out from primary storage into the storage register. The instruction is passed from the storage register to the instruction register. Then the operation part of the instruction is decoded so that the proper arithmetic or logical operation can be performed. The address of the operand is sent from the instruction register to the address register. At last the instruction counter register provides the address register with the address of the next instruction to be executed.

The arithmetic-logic unit (ALU) executes the processing operations called for by the instructions brought from main memory by the control unit. Binary arithmetic, the logical operations, and some special functions are performed by the arithmetical-logical unit.

Data enter the ALU and return to main storage through the storage register. The accumulator serving as a register holds the results of processing operations. The results of arithmetic operations are returned to the accumulator for transfer to main storage through the storage register. The comparer performs logical comparisons of the contents of the storage register and the accumulator. Typically, the comparer tests for conditions such as “less than,” “equal to,” or “greater than.”

So as you see the primary components of the arithmetic-logical unit are banks of bistable devices, which are called registers. Their purpose is to hold the numbers involved in the calculation and hold the results temporarily until they can be transferred to memory. At the core of the ALU is a very high speed binary adder, which is used to carry out at least the four basic arithmetic functions (addition, subtraction, multiplication, and division). The logical unit consists of electronic circuitry which compares information and makes decisions based upon the results of the comparison.

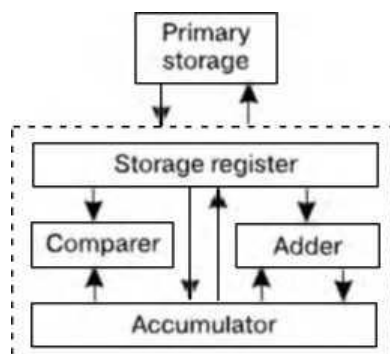


Fig. 13. Arithmetic-logic unit functional diagram

6. Ответьте на вопросы, используя информацию текста.

1. What are the functional units of CPU?
2. What is the function of CU?
3. How does CU operate?
4. What is the function of a counter?
5. What role does a decoder play?
6. What is the sequence of CU operations?
7. What is the function of the arithmetic-logical unit?
8. What operations are performed by ALU?
9. What primary components does ALU consist of?
10. What is the function of an accumulator/comparer?

7. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Функциональные блоки; устройство управления; арифметико-логическое устройство; управлять работой всей системы; получать команды; основная память; посылать сигналы; считывать команды поэтапно; таким образом; временно сохранять информацию; производить пометки через равные промежутки времени; последовательность операций; регистр памяти; регистр команд; адресный регистр; счетчик; датчик; дешифратор; адрес операнда; высокоскоростной двоичный сумматор; по крайней мере; вычитание; сложение; умножение; деление; принимать решения; результаты сравнения.

8. Вспомните значения новых слов и попытайтесь перевести словосочетания, употребляемые с этими словами.

Register: address register; base register; clock register; command/instruction register; counter register; CPU register; hardware register; input/ output register; memory register; operand register; general-purpose register; special-purpose register.

Counter: binary counter; character counter; data counter; instruction counter; pulse counter; sequence counter; storage counter; software counter; time-out counter.

Selection: color selection; directory selection; drive selection; file selection; function selection; keyboard selection; menu selection; security selection.

Management: data management; database management; disk management; error management; information management; memory management; network management; resource management; task management; window management.

9. Найдите в текстах 1 и 2 слова, близкие по значению к следующим.

Verbs: to work; to control; to receive; to keep; to send; to perform; to demand; to choose; to supply; to pass; to name; to include; to apply; to come back; to found; to explain; to form; to define; to arrange.

Nouns: computer; answer; commands; memory; element; device; information; state; aim; heart; solution; computation.

Adjectives: main; whole; separate; quick; correct; large; main (storage); following; every; following; specific; different; real.

10. Прочитайте текст и составьте к нему план в назывной форме. Прочитайте текст еще раз, разверните пункты плана и составьте реферат на русском языке, озаглавьте текст.

It is known that one of the fundamental parts of the computer is a control unit. This unit controls the computation process automatically, without man's participation. It sends signals to all other parts of the computer to specify what they must do. First of all, the control unit tells the main memory what data must be transferred to the arithmetic-logical unit and other devices. Then it enables the arithmetic-logical unit to perform the required operation. Finally, it places the obtained results in the main memory.

It is important to note that the control unit operation is determined by an algorithm of a problem solution. The algorithm is a sequence of arithmetic and logical operations. These operations must be performed on the initial data for solving the problem.

Description of an algorithm in a form acceptable by a computer is called a program. A program is a list of sequential computer instructions enabling a computer to solve a problem. In order to be acceptable by the computer instructions must be encoded into a digital form.

In conclusion it should be pointed out that the main feature of a computer is automatic control of the problem solution process. It is based on the programmed-control principle.

11. Выполните письменный перевод текстов. Озаглавьте тексты.

1. In 1960s advances in microelectronic components led to the development of the minicomputer, followed more recently by an even smaller micro-computer. Both have filled a need for small but relatively flexible processing systems able to execute comparatively simple computing functions at lower costs.

In 1971 Intel Corporation delivered the first microprocessor, the 4004. All the logic to implement the central processing unit of a tiny computer was put onto a single silicon chip less than $\frac{1}{4}$ inch square. That design was soon followed by many others. The progress toward smaller computers is continuing, designers are working at nano-computers and pico-computers.

When the central processing unit of a computer is implemented in a single, or very small number of integrated circuits, we call it a microprocessor. When a computer includes a microprocessor as its major component, such device is called a microcomputer.

Today the hardware in data-processing machines is built out of micro-electronic devices. Advances in microelectronic devices give rise to advances in data-processing machinery.

2. The computer has made it possible to mechanize much of the information interchange and processing that constitute the nervous system of our society.

The versatility and convenience of the microprocessor has changed the entire architecture of modern computer systems. No longer is the processing of information carried out only in the computer's central processing unit. Today there is a trend toward distributing more processing capability throughout a computer system, with various areas having small local processors for handling operations in those areas.

There are a number of advantages of distributed processing. First, since many elements of the computer can be working on different portions of the same task, the work may be done faster. Second, if one element in the network malfunctions, its workload can be shifted to another element or shared among several elements, so that the entire work is relatively immune to failure. Third, the network can be small enough to be contained within a single laboratory or building, or it can be spread out over a wide area.

Unit 9

INPUT-OUTPUT UNITS

1. Прочитайте текст и скажите, какие устройства относятся к сфере ввода-вывода информации.

environment — среда, окружение; режим работы
external environment — внешняя среда
human-related — (взаимо)связанный с человеком
human-independent — независимый от человека
remote terminal — удаленный терминал
reel of magnetic tape — бобина с магнитной лентой
input-output interface — интерфейс (сопряжение, место стыковки) ввода-вывода
scan — просматривать; сканировать; развертывать
scanner — сканер, устройство оптического считывания
bar-code scanner / bar-code reader — устройство считывания штрих-кода
regardless of — несмотря на, независимо от
to match characteristics — сопоставлять параметры
similarly — подобным образом, так же, аналогично
to fall between — падать, попадать в интервал между
card reader — устройство считывания платы (карты)
line printer — построчный принтер, принтер печатания строки
page printer — принтер с постраничной печатью
character printer — принтер с посимвольной печатью
optical character reader — оптическое считывающее устройство текста
optical mark reader — оптическое считывающее устройство знаков
visual display — визуальный индикатор
digitizer — аналого-цифровой преобразователь, сканер
keyboard input device — клавишное устройство ввода
plotter — графопостроитель
voice recognition and response
unit — устройство распознавания голоса и реагирования

Text 1. INPUT-OUTPUT ENVIRONMENT

Data and instructions must enter the data processing system, and information must leave it. These operations are performed by input and output (I/O) units that link the computer to its external environment.

The I/O environment may be human-related or human-independent. A remote banking terminal is an example of a human-related input environment, and a printer is an example of a device that produces output in a human-readable format. An example of a human-independent input environment is a device that measures traffic flow. A reel of magnetic tape upon which the collected data are stored in binary format is an example of a human-independent output.



Fig. 14. Input-output environment

Input-output interfaces. Data enter input units in forms that depend upon the particular device used. For example, data are entered from a keyboard in a manner similar to typing, and this differs from the way that data are entered by a bar-code scanner. However, regardless of the forms in which they receive their inputs, all input devices must provide a computer with data that are transformed into the binary codes that the primary memory of the computer is designed to accept. This transformation is accomplished by units called I/O interfaces. Input interfaces are designed to match the unique physical or electrical characteristics of input devices to the requirements of the computer system. Similarly, when output is available, output interfaces must be designed to reverse the process and to adapt the output to the external environment. These I/O interfaces are also called channels or input-output processors (IOP).

The major differences between devices are the media that they use and the speed with which they are able to transfer data to or from primary storage.

Input-output device speed. Input-output devices can be classified as high-speed, medium-speed, and low-speed. The devices are grouped according to their speed. It should be noted that the high-speed devices are entirely electronic in their operation or magnetic media that can be moved at high speed. Those high-speed devices are both input and output devices and are used as secondary storage. The low-speed devices are those with complex mechanical motion or operate at the speed of a human operator. The medium-speed devices are those that fall between — they tend to have mechanical moving parts which are more complex than the high-speed devices but not as complex as the low-speed.

High-speed devices: magnetic disk; magnetic tape.

Medium-speed devices: card readers; line printers; page printers; computer output microfilms; magnetic diskette; optical character readers; optical mark readers; visual displays.

Low-speed devices: bar-code readers; character printers; digitizers; key-board input devices; plotters; voice recognition and response units.

2. Дайте ответы на следующие вопросы.

1. What is the purpose of input and output devices? 2. What types of input-output devices do you know? 3. Why are data transformed into a binary code while entering the input device? 4. What is an example of a human in-dependent output? 5. What is an I/O interface? 6. What are the major differences between the various I/O devices? 7. What types of I/O devices tend to be high-speed devices? 8. What type of devices tends to be low-speed devices?

3. Найдите в тексте английские эквиваленты следующих словосочетаний.

Среда устройств ввода-вывода; система обработки информации; внешняя среда; связан с человеком; независим от человека; удаленный банковский терминал; измерять поток данных; бобина с магнитной лентой; хранить собранную информацию; двоичный формат; интерфейс ввода-вывода; вводить с клавиатуры; устройство считывания штрих-кода; несмотря на; преобразовать в двоичный код; сопоставлять параметры; подобным образом; интерфейс вывода; изменить процесс в обратном направлении; настроить устройство ввода-вывода к внешней среде; главное отличие; основная память; вторичная память; низкоскоростные устройства; в соответствии.

4. Вспомните значения новых слов и попытайтесь перевести словосочетания, употребляемые с этими словами.

Environment: application environment; communication environment; execution environment; external environment; hardware environment; interface environment; management environment; multimedia environment; network environment; processing environment; security environment; software environment; user environment.

Interface: channel interface; common interface; data interface; database interface; display interface; external interface; flexible interface; floppy-disk interface; general-purpose interface; hardware interface; low-level interface.

Scanner: bar-code scanner; black-and-white scanner; color scanner; desktop scanner; hand scanner; laser scanner; manual scanner; optical scanner; visual scanner.

Terminal: batch terminal; desktop terminal; display terminal; printer terminal; remote terminal; security terminal; logical terminal; text terminal.

5. Прочитайте текст, составьте реферат на английском языке, озаглавьте текст. Для составления реферата используйте следующие клише.

The text / article under review... (gives us a sort of information about...)

The article deals with the problem...

The subject of the text is...

At the beginning (of the text) the author describes... (dwells...; explains...; touches upon...; analyses...; comments...; characterizes...; underlines...; reveals...; gives account of...)

The article begins with the description of..., a review of..., the analysis of...

The article opens with...

Then (after that, further on, next) the author passes on to..., gives a detailed (thorough) analysis (description), goes on to say that...

To finish with, the author describes...

At the end of the article the author draws the conclusion that...;

the author sums it all up (by saying...)

In conclusion the author...

As it is well-known, a computer cannot perform or complete any useful work unless it is able to communicate with its external environment. All data and instructions enter and leave the central processing unit through primary storage. Input-output devices are needed to link primary storage to the environment, which is external to the computer system. So input devices are used to enter data into primary storage. Output units accept data from primary storage to provide users with information or to record the data on a secondary storage device. Some devices are used for both the input and output functions.

The data with which these devices work may or may not be in a form that humans can understand. For example the data that a data entry operator keys into the memory of a computer by typing on a keyboard are readable by humans. However, the data that tell a computer about the performance of an automobile engine are not in a form that humans can read. They are electrical signals from an analog sensor. Similarly, output may be on a printed page, which humans can read easily, or upon some other medium where the data are not visible, such as on magnetic tape or disk.

As we know, all of the data flow from input to final output is managed by the control unit in the CPU. Regardless of the nature of the I/O devices, special processors called I/O interfaces are required to convert the input data to the internal codes used by the computer and to convert internal codes to a format which is usable by the output device.

6. Прочитайте текст и назовите приборы, которые служат для введения информации в компьютер. Переведите текст.

keyboard — клавиатура

key — клавиша, кнопка, переключатель; ключевой, основной, главный; переключать; набирать на клавиатуре

manipulator — манипулятор, блок обработки

trackball — трекбол

touch panel — сенсорная панель

graphic plotting tables — графические планшеты

sound card — звуковая карта (плата)

enable — разрешать, позволять, допускать, делать возможным

operating mode — режим работы

press a button — нажать на кнопку

keep buttons depressed — удерживать кнопки в нажатом состоянии

double-click — двойное нажатие

erase images — удалять, стирать изображение (объект)

roller — ролик, валик

track — следить, прослеживать, проходить; след, траектория, путь, дорожка; соединение

by means of — посредством

permitting capacity — разрешающая способность

Text 2. INPUT DEVICES

There are several devices used for inputting information into the computer: a keyboard, some coordinate input devices, such as manipulators (a mouse, a track ball), touch panels and graphical plotting tables, scanners, digital cameras, TV tuners, sound cards, etc.

When personal computers first became popular, the most common device used to transfer information from the user to the computer was the keyboard. It enables inputting numerical and text data. A standard keyboard has 104 keys and three more ones informing about the operating mode of light indicators in the upper right corner.

Later when the more advanced graphics became to develop, user found that a keyboard did not provide the design capabilities of graphics and text representation on the display. There appeared manipulators, a mouse and a track ball, that are usually used while operating with graphical interface. Each software program uses these buttons differently.

The mouse is an optic-mechanical input device. The mouse has three or two buttons which control the cursor movement across the screen. The mouse provides the cursor control thus simplifying user's orientation on the display. The mouse's primary functions are to help the user draw, point and select images on his computer display by moving the mouse across the screen.

In general software programs require to press one or more buttons, sometimes keeping them depressed or double-click them to issue changes in commands and to draw or to erase images. When you move the mouse across a flat surface, the ball located on the bottom side of the mouse turns two rollers. One is tracking the mouse's vertical movements; the other is tracking horizontal movements. The rotating ball glides easily, giving the user good control over the textual and graphical images.

In portable computers touch panels or touch pads are used instead of manipulators. Moving a finger along the surface of the touch pad is transformed into the cursor movement across the screen.

Graphical plotting tables (plotters) find application in drawing and inputting manuscript texts. You can draw, add notes and signs to electronic documents by means of a special pen. The quality of graphical plotting tables is characterized by permitting capacity that is the number of lines per inch, and their capability to respond to the force of pen pressing.

Scanner is used for optical inputting of images (photographs, pictures, slides) and texts and converting them into the computer form.

Digital video cameras have been spread recently. They enable getting video images and photographs directly in digital computer format. Digital cameras give possibility to get high-quality photos.

Sound cards produce sound conversion from analog to digital form. They are able to synthesize sounds. Special game-ports and joysticks are widely used in computer games.

7. Ответьте на вопросы, используя информацию текста.

1. What devices are used for inputting information into the computer? 2. What was the most common device in early personal computers? 3. What is the function of a keyboard? 4. Why do many users prefer manipulators to keyboard? 5. How does the mouse operate? 6. What is its function? 7. What role does the ball on the bottom of the mouse play? 8. What is used in portable computers instead of manipulators? 9. What is the touch pad's principle of operation? 10. Where do graphical plotting tables find application?

8. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Введение информации; координатные устройства ввода; манипуляторы; мышь; трекбол; сенсорная панель; графические планшеты; цифровые камеры; сканеры; ТВ-тюнеры; стандартная кла-

виатура; числовая и текстовая информация; световые индикаторы; клавиши; режим работы; презентация текста на мониторе; графический интерфейс; программные средства; оптико-механическое устройство ввода; управлять движением курсора; упрощать ориентацию пользователя на экране; указывать и выбирать изображения; удерживать кнопки в нажатом состоянии; двойное нажатие; стирать объекты; ровная поверхность; вращать ролики; следить за вертикальным движением; легко скользить; портативный компьютер; рукописный текст; посредством; разрешающая способность.

9. Вспомните значения новых глаголов и переведите слова, производные от них.

To accomplish: accomplished; unaccomplished; accomplishment.

To adapt: adaptable; inadaptible; adaptability; inadaptability; adaptation; adapter.

To digitize: digit; digitization; digitize; digitizer.

To erase: erasable; erasability; eraser; erasing; erasure.

To match: matcher; matching.

To permit: permitted; permissible; permissibility; permissible; permission.

To print printable: printed; printer; printing.

To scan: scanning; scanner.

To recognize: recognition; recognizer; recognizable; unrecognizable.

To respond: response; responsible; irresponsible; responsibility; irresponsibility.

To reverse: reversed; reversible; irreversible; reversion; reversibility.

To transform: transformer; transformation; transformational; transformative.

10. Прочитайте текст и назовите типы принтеров и их назначение.

human-readable form — удобная для чтения форма

performance — (рабочая) характеристика, производительность, быстродействие, скорость работы, пропускная способность

character printer — принтер с посимвольной печатью, символьный принтер

line printer — принтер с построчной печатью

page printer — принтер с постраничной печатью

(non) impact printer — (бес)контактный принтер

letter-quality printer — принтер с типографским качеством печати

dot-matrix printer — точно-матричный принтер

ink-jet printer — струйный принтер

laser-beam printer — лазерный принтер

to identify — идентифицировать, распознавать, обозначать

approach — подход, метод, принцип; приближение

at a time — за один раз, одновременно

to cause — вызывать, приводить к (чему-л.), заставлять, вынуждать

to strike against a ribbon — ударять по ленте

typewriter — печатное устройство

to spray drops of ink — распылять капли чернил

to affect — влиять, воздействовать, сказываться на (чем-л.)

technique — метод, способ, техника, методика, технология

printer output — вывод на печать, распечатываемые данные

Text 3. OUTPUT DEVICES. PRINTERS

Printers provide information in a permanent, human-readable form. They are the most commonly used output devices and are components of almost all computer systems. Printers vary greatly in performance and design.

We will classify printers as character printers, line printers, and page printers in order to identify

three different approaches to printing, each with a different speed range. In addition, printers can be described as either impact or nonimpact. Printers that use electromechanical mechanisms that cause hammers to strike against a ribbon and the paper are called impact printers. Nonimpact printers do not hit or impact a ribbon to print.

Character printers print only one character at a time. A typewriter is an example of a character printer. Character printers are the type used with literally all microcomputers as well as on computers of all sizes whenever the printing requirements are not large. Character printers may be of several types. A letter-quality printer is a character printer which produces output of typewriter quality. Letter-quality printers typically have speeds ranging from 10 to 50 characters per second. Dot-matrix printers form each character as a pattern of dots. These printers have a lower quality of type but are generally faster printers than the letter-quality printers — in the range of 50 to 200 characters per second. One of the newest types of character printer is the ink-jet printer. It sprays small drops of ink onto paper to form printed characters. The ink has a high iron content, which is affected by magnetic fields of the printer. These magnetic fields cause the ink to take the shape of a character as the ink approaches the paper.

Line printers are electromechanical machines used for high-volume paper output on most computer systems. Their printing speeds are such that to an observer they appear to be printing a line at a time. They are impact printers. The speeds of line printers vary from 100 to 2,500 lines per minute. Line printers have been designed to use many different types of printing mechanisms. Two of the most common print mechanisms are the drum and the chain. Drum printers use a solid, cylindrical drum, rotating at a rapid speed. Speeds of drum printers vary from 200 to over 2,000 lines per minute. Chain printers have their character set on a rapidly rotating chain called a print chain. Speeds of chain printers range from 400 to 2,400 lines per minute.

Page printers are high-speed nonimpact printers. Their printing rates are so high that output appears to emerge from the printer a page at a time. A variety of techniques are used in the design of page printers. These techniques, called electro photographic techniques, have developed from the paper copier technology. Laser-beam printers use a combination of laser beam and electro photographic techniques to create printer output at a rate equal to 18,000 lines per minute.

11. Ответьте на вопросы, используя информацию текста.

1. What are the three types of printers? 2. What is a letter-quality printer? 3. What is a dot-matrix printer? 4. What type of printer is the most common with microcomputer systems? 5. What is the most common printer type used on large computer systems? 6. What is an impact printer? Give an example. 7. What is a nonimpact printer? Give examples. 8. What are the most widely used printers? 9. How do you distinguish between a letter-quality printer and a dot-matrix printer? 10. Which of these printers is slower? 11. What types of character printers do you know? 12. How are printed characters formed by means of an ink-jet printer? 13. What are the main types of a line printer? Which of them is faster? 14. What techniques are used in the operation of page printers?

12. Найдите в тексте английские эквиваленты следующих словосочетаний.

Удобная для восприятия человека форма; наиболее часто употребляемые устройства вывода информации; различаться по рабочим характеристикам и внешнему виду; принтеры с посимвольной печатью; принтеры с построчной печатью; принтеры с постраничной печатью; различные методы печати; диапазон скорости; принтеры контактные и бесконтактные; ударять по ленте; печатать по одному символу; буквально все компьютеры; а также; требования печати; принтер с типографским качеством печати; точечно-матричные принтеры; струйные принтеры; разбрызгивать капли чернил; высокое содержание железа; магнитные поля; принимать форму символа; кажется, печатают по строке; барабанный принтер; цепочечные принтеры; лазерный принтер.

13. Вспомните значения новых слов и попытайтесь перевести словосочетания с этими словами.

Approach: comprehensive approach; database approach; educational (training) approach; general ap-

proach; graphic approach; self-study approach; step-by-step approach; trial-and-error approach.

Performance: application performance; computer performance; device performance; disk performance; display performance; error performance; execution performance; memory performance; network performance; processor performance.

Printer, black-and-white printer; color printer; character (at-a-time) printer; dot-matrix printer; graphical (image) printer; impact printer; ink-jet printer; laser printer; letter-quality printer; matrix printer; network printer; page (at-a-time) printer.

Technique: advanced technique; analog technique; computing technique; display (video) technique; formatting technique; hardware technique; measuring technique; modeling (simulation) technique; multimedia technique; numerical technique; programming technique; scanning technique; software technique; testing technique.

14. Переведите предложения, содержащие инфинитивный оборот Nominative with the Infinitive (сложное подлежащее).

1. Printers are known to vary greatly in performance and design. 2. They are expected to be the most commonly used devices. 3. Magnetic fields are supposed to affect a high iron content of the ink. 4. The ink-jet printer is stated to be one of the newest types of character printers. 5. Electro photographic techniques proved to have developed from the paper copier technology. 6. An impact printer is considered to produce a printed character by impacting a character font against the paper. 7. Dot-matrix printers seem to have a lower quality of type. 8. The most common printer type used on larger systems is sure to be the line printer. 9. A lot of techniques are believed to be used in the design of printers. 10. A laser is certain to be an acronym for light amplification by stimulated emission of radiation.

15. Прочитайте текст и составьте письменно реферат на английском языке.

MAGNETIC MEDIA DEVICES

Some of the devices mentioned above can perform both the input and output functions. Magnetic disk, magnetic diskette, and magnetic tape are examples of such devices. Magnetic disks, diskettes, and tapes can record data as output from primary storage and can also serve as input devices returning the data to primary storage.

Data are recorded on magnetic disks and magnetic tapes either by out-putting the data from primary storage or by using a data recorder. Data recorders are not input devices, and they are not connected to the computer system. Instead they are offline recorders. The magnetic media recording devices are key-to-disk, key-to-diskette, and key-to-tape machines.

Key-to-disk devices are used as data-recording stations in multistation shared-processor systems. They are able to correct data before storing it on a magnetic disk and before its entry into the main computer system.

Key-to-diskette systems store data on flexible disks, called diskettes. Diskettes are inexpensive and reusable.

Key-to-tape devices can record data on reels, on cassettes, and on tape cartridges. The magnetic tape reels produced by key-to-tape systems are in a computer-compatible format for subsequent direct data input into a computer. However, data on cartridges and cassettes often are transferred to higher-speed media, such as a full-sized reel of magnetic tape or magnetic disk, for data transfer to the computer.

16. Выполните перевод следующего текста письменно.

KEYBOARD DEVICES

1. There is a wide variety of keyboard devices, or terminals, available for use in entering data directly into a computer. The visual display terminal (VDT) is the most popular type of I/O device in use

today. It consists of a typewriter-like keyboard for inputting and a cathode ray tube (CRT) for displaying output data. Each character entered through the keyboard is also displayed on the CRT. When keyed, the data are held in a small memory, called a buffer, within the terminal itself. The data are not sent on to the computer until the operator presses an enter key on the keyboard. This allows the operator the opportunity to proofread or verify the data being entered by reading the data displayed on the screen. There are three major uses of VDTs: alphanumeric displays, graphic displays, and input through a light pen.

Alphanumeric displays. The most common use of the visual display terminal is to display alphanumeric data, that is, character data. Because of their relatively fast output rates and their ability to provide a viewer with an “instant” output, video displays have replaced printers for many applications.

Graphic displays. Visual display terminals with a graphic display capability provide a very powerful and versatile tool for many users. Graphic-display devices provide not only a means of displaying high-resolution drawings but also the capability of manipulating and modifying the graphic display. The businessperson can use the graphic display to present data in the form of line charts, bar charts, or pie charts. Graphic displays can be very effective in information systems for business manager.

2. Different types of keyboard devices, such as visual display terminals, teleprinter terminals, and point-of-sale devices are among the keyboard devices.

A light pen is a photosensitive pen-like instrument which can sense a position on the cathode ray tube (CRT) when the end of the pen is held against the screen. The light pen is an input device. By sensing the position on the screen when you touch it by the light pen, you are inputting data to the main storage. The light pen is commonly used by engineers to modify designs.

Teleprinter terminals. There are situations where it is desirable to have a printed copy of data outputted to a terminal. If a user finds a printed copy to be required, the solution could be a teleprinter terminal. A teleprinter terminal has a keyboard for input and a typewriter-like printer for output. These printers are character printers and are therefore slower output devices than CRT displays.

A point-of-sale (POS) device is the electronic equivalent of a cash register; however it is capable of capturing more data than a cash register. Most point-of-sale devices are online terminals attached to a computer for processing the transaction while the customer is making the purchase. The significant features of most of the current electronic POS devices include: the capability of entering extensive information about the sale, the guiding of the operator through the possible transactions by a series of lighted indicators or messages, a provision for transmission of the data to a central computer, and the provision for a local computational capability such as price extensions and tax calculations.

Unit 10 PERSONAL COMPUTERS

1. Прочитайте текст и скажите, существуют ли отличия персональных компьютеров от больших компьютеров и в чем они заключаются.

personal computers — персональные компьютеры

competitive operating system — конкурирующая операционная система

IBM (International Business Machine) — фирма по производству компьютеров

to enter the fray — вступать в борьбу

computer of choice — лучший компьютер

to fall by the wayside — оставаться в стороне; уступать дорогу

to survive onslaught — выдерживать конкуренцию

word size — размер слова, разрядность двоичного слова

soft-copy output — вывод электронной, программно-управляемой копии

hard-copy output — вывод «твердой», печатной копии

online storage — неавтономное хранение данных в ЗУ

offline storage — автономное хранение данных отдельно от компьютера

input media — носитель для входных данных

output media — носитель для выходных данных

general-purpose — универсальный, общего назначения
stand-alone — автономный
to plug in — подключать, подсоединять
leisure activities — досуговая деятельность

Text 1. PERSONAL COMPUTERS

Personal computers are supposed to appear in the late 1970s. One of the first and most popular personal computers was the Apple II, introduced in 1977 by Apple Computer. During the late 1970s and early 1980s, new models and competitive operating systems seemed to appear daily. Then, in 1981, IBM entered the fray with its first personal computer, known as the IBM PC. The IBM PC quickly became the personal computer of choice, and most other personal computer manufacturers fell by the wayside. One of the few companies to survive IBM's onslaught was Apple Computer, which is sure to remain a major player in the personal computer marketplace. In less than a decade the microcomputer has been transformed from a calculator and hobbyist's toy into a personal computer for almost everyone.

What is a personal computer? How can this device be characterized?

— First, a personal computer being microprocessor-based, its central processing unit, called a microprocessor unit, or MPU, is concentrated on a single silicon chip.

— Second, a PC has memory and word sizes that are smaller than those of minicomputers and large computers. Typical word sizes are 8 or 16 bits, and main memories range in size from 16 K to 512 K.

— Third, a personal computer uses smaller, less expensive and less powerful input, output and storage components than do large computer systems. Most often, input is by means of a keyboard, soft-copy output being displayed on a cathode-ray tube screen. Hard-copy output is produced on a low-speed character printer.

— A PC employs floppy disks as the principal online and offline storage devices and also as input and output media.

— Finally, a PC is a general-purpose, stand-alone system that can begin to work when plugged in and be moved from place to place.

Probably the most distinguishing feature of a personal computer is that it is used by an individual, usually in an interactive mode. Regardless of the purpose for which it is used, either for leisure activities in the home or for business applications in the office, we can consider it to be a personal computer.

2. Ответьте на вопросы, используя информацию текста.

1. When did the first personal computer appear? 2. What was one of the first PC model? 3. What is a personal computer? 4. What are the four main characteristics of a PC? 5. What does the term "microprocessor-based" mean? 6. What are the typical word sizes of a PC? 7. How is input carried out in personal computers? 8. What principle storage devices does PC use? 9. What kind of a system is a PC? 10. What differs personal computers from large computer systems?

3. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Конкурирующая операционная система; появляться ежедневно; вступать в борьбу; лучший компьютер; остаться в стороне; выдержать конкуренцию; главный поставщик на компьютерном рынке; игрушка для любителя; микропроцессорный; цельный кристалл (микросхема) из кремния; размер слова; компоненты меньшей мощности; посредством; вывести на экран; низкоскоростной принтер с посимвольной печатью; использовать гибкие диски; приборы (неавтономного хранения данных; универсальный; автономная система; отличительная черта; интерактивный режим; независимо от цели; досуговая деятельность.

4. Переведите сложные предложения: бессоюзные (A); с сочинительной связью (B).
Запомните следующие сочинительные союзы: and, but, or, while, both ... and, as well as, not only... but also, either... or, neither... nor.

A. 1. The computer you told me about was constructed at a Russian plant. 2. We hope we'll buy the computer your friend spoke so much about. 3. This is the principle the electronic computer is based upon. 4. The teacher says we may ask any questions we like. 5. Elements integrated circuits are made of are electrically interconnected components. 6. The main tendencies of IC development scientists are working at are to increase the scale of integration and to improve reliability. 7. Where are the computer games I gave you yesterday? — The computer games you are asking about are on the top shelf. 8. He was one of the greatest scientists the world had ever known.

B.1. These devices can perform both the input and output functions. 2. Data are recorded on magnetic disks and tapes either by output-ting the data from primary storage or by using a data recorder. 3. Neither the programmer nor the analyst could explain the cause of the computer errors. 4. Data as well as instructions must flow into and out of primary storage. 5. This grammar exercise is not only too long but also very difficult. 6. Printers may be either impact or nonimpact. 7. Character printers are used with all microcomputers as well as on computers of all sizes. 8. Both primary and secondary storage contain data and the instructions for processing the data. 9. The CPU functional units can be in one of two states: either "on" or "off." 10. High-speed devices are both input and output devices that are used as secondary storage.

5. Прочитайте текст и укажите сферы деятельности, где используются персональные компьютеры.

word processing — обработка текста

telephone dialing — набор номера телефона

security — безопасность, охрана

appliance — устройство, прибор

maintenance — поддержание, сохранение; эксплуатация

application software — прикладные программы

to delete — удалять, стирать, очищать память

to move paragraphs around — менять местами абзацы

accountant — бухгалтер

accounting — бухгалтерский учет

income tax — подоходный налог

stock market forecasting — биржевые прогнозы

worksheet — электронная таблица

scheduling — составление расписания (графика)

computer-assisted instructions — компьютерные команды

to meet the demands — удовлетворять потребности

record-keeping — регистрация, ведение записей

grading — оценивание, классификация

Text 2. APPLICATION OF PERSONAL COMPUTERS

Personal computers have a lot of applications, however, there are some major categories of applications: home and hobby, word processing, professional, educational, small business and engineering and scientific.

Home and hobby. Personal computers enjoy great popularity among experimenters and hobbyists. They are an exciting hobby. All hobbyists need not be engineers or programmers. There are many games that use the full capabilities of a computer to provide many hours of exciting leisure-time adventure.

The list of other home and hobby applications of PCs is almost endless, including: checking account management, budgeting, personal finance, planning, investment analyses, telephone answering and dialing, home security, home environment and climate control, appliance control, calendar management, maintenance of address and mailing lists, and whatnot.

Word processing. At home or at work, applications software, called a word processing program, enables you to correct or modify any document in any manner you wish before printing it. Using the CRT monitor as a display screen, you are able to view what you have typed to correct mistakes in spelling or grammar, add or delete sentences, move paragraphs around, and replace words. The letter or document can be stored on a diskette for future use.

Professional. The category of professional includes persons making extensive use of word processing, whose occupations are particularly suited to the desktop use of PCs. Examples of other occupations are accountants, financial advisors, stock brokers, tax consultants, lawyers, architects, engineers, educators, and all levels of managers. Applications programs that are popular with persons in these occupations include accounting, income tax preparation, statistical analysis, graphics, stock market forecasting, and computer modeling. The electronic worksheet is, by far, the computer modeling program most widely used by professionals. It can be used for scheduling, planning, and the examination of "what if" situations.

Educational. Personal computers are having and will continue to have a profound influence upon the classroom, affecting both the learner and the teacher. Microcomputers are making their way into classrooms to an ever-increasing extent, giving impetus to the design of programmed learning materials that can meet the demands of student and teacher.

Two important types of uses for personal computers in education are computer-managed instruction (CMI) and computer-assisted instruction (CAI). CMI software is used to assist the instructor in the management of all classroom-related activities, such as record-keeping, work assignments, testing, and grading. Applications of CAI include mathematics, reading, typing, computer literacy, programming languages, and simulations of real-world situations.

6. Ответьте на вопросы, используя информацию текста.

1. What are the main spheres of PC application? 2. Do you enjoy computer games? 3. Is it necessary for a person to be an analyst or a programmer to play computer games? 4. What other home and hobby applications, except computer games, can you name? 5. What is "a word processing program"? 6. What possibilities can it give you? 7. Can you correct mistakes while typing any material and how? 8. What other changes in the typed text can you make using a display? 9. Which professions are in great need of computers? 10. How can computers be used in education?

7. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Много областей применения; тем не менее; обработка текстов; пользоваться популярностью; любители; способности компьютера; бесконечный перечень; анализ инвестиций; набор номера телефона; автоответчик; ведение календаря; хранение адресов и почты; и так далее; прикладные программы; исправлять ошибки в написании; стирать предложения; переставлять абзацы; бухгалтер; биржевые брокеры; консультант по налогам; юристы; работники образования; управленцы; бухгалтерский учет; подоходный налог; компьютерное моделирование; электронные таблицы; составление расписания; оказывать огромное влияние; прокладывать путь; дать толчок; удовлетворять потребности; учебная деятельность; компьютерная грамотность; моделирование реальных жизненных ситуаций.

8. Найдите в текстах 1 и 2 слова:

а) близкие по значению к следующим словам:

Verbs: to print; to produce; to convert; to keep; to found; to erase; to name; to change; to use; to start; to switch on; to supply; to give possibility; to involve.

Nouns: rate; analyst; possibilities; use; plays; control; post; mode; profession; consultant; teacher; director; bookkeeper; fight; producer; attack; amateur; device; crystal; error; storage; primary (memory); monitor; characteristic; aim.

Adjectives: flexible; thrilling; main; little; general;

б) противоположные по значению следующим:

Verbs: to finish; to switch on; to take; to delete.

Nouns: online; input; work.

Adjectives: cheep; weak; common; general; large; soft; high; easy.

9. Расшифруйте следующие аббревиатуры и переведите их.

PC; PU; CU; ALU; CPU; MPU; IBM; DOS; CRT; ROM; RAM; IC; SSI; MSI; LSI; VLSI; MP; CD; I/O; IOP; CMI; CAL

10. Переведите безличные предложения. Обратите внимание на их специфику.

1. It is well-known that personal computers enjoy great popularity among experimenters and hobbyists. 2. It took years to produce a high-speed computer performing a lot of functions. 3. When making up the summary of the text, one should put down the exact title of the article, the author's name, and the date of the edition. 4. It is difficult to imagine modern life without a computer. 5. It is quite impossible to listen to your English pronunciation: you make bad mistakes while reading. 6. Concerning these substances one must say that they vary in their composition. 7. When working with these substances, one should be very careful. 8. It was once a universal practice to manufacture each of the components separately and then assemble the complete device by wiring (монтаж) the components together with metallic conductors. 9. It was no good: the more components and interactions, the less reliable the system. 10. It should first be made clear what the term "microelectronics" means.

11. Переведите сложноподчиненные предложения. Запомните союзы (союзные слова), вводящие придаточные предложения: that; so that; if, whether; which; when; while; since; till; until; whatever; whenever; in order to; regardless of, etc.

1. It is well-known in computer science that the words "computer" and "processor" are used interchangeably. 2. The operation part of the instruction is decoded so that the proper arithmetic and logic operation can be performed. 3. It is difficult to establish whether this problem can be solved at all. 4. Programs and data on which the control unit and the arithmetic-logical unit operate must be in internal memory in order to be processed. 5. The CU has a register that temporarily holds the instructions read from memory while it is being executed. 6. Regardless of the nature of the I/O devices, I/O interfaces are required to convert the input data to the internal codes used by the computer and to convert internal codes to a format which is usable by the output devices. 7. The purpose of registers in the ALU is to hold the numbers and the results of the calculation until they can be transferred to the memory. 8. Since the computer deals with pulses, the input device is a way of converting numbers written on paper into pulses and sending them to the storage. 9. The principal characteristics of personal computers are that they are single-user system and are based on microprocessors. 10. However, although personal computers are designed as single-user systems, it is common to link them together to form a network.

12. Прочитайте текст и составьте письменно реферат на английском языке.

A MODEM

The piece of equipment that allows a computer to communicate with other computers over telephone lines is called a modem. The modem allows the individual to access information from all over the world and uses that information in everyday life. Connecting with banks, Automatic Teller Machines, cash registers to read credit cards, access travel agents, buy products, e-mail, access databases, and teleconferencing, the modems provide easy access to many services. Files can be transferred easily, by uploading to another machine, or downloading to your own machine within a matter of minutes. The computer modem can be used as a telephone answering system, and documents can be faxed from one computer to another assuring fast and easy access to important documents.



A modem takes computer information and changes it into a signal that can be sent over telephone lines. The modem is a bridge between digital and analog signals. The computer is of the digital type, and the telephone uses analog technology. The modem converts the Os and Is of the computer (off- on switches) into an analog signals modulating the frequency of the electronic wave or signal. The modem does just the opposite and demodulate the signal back into digital code. The modem gets its name from MODulate and the DEModulate. Most people believe that you need a separate phone line for a modem, but that is not true.

Your modem and telephone can share one line, the problem arises when someone else needs to use the telephone while the modem is in use. Also disable call waiting, it could disrupt your modem connection while the modem is in use.

There are three kinds of modems — internal, external, and fax. All modems do the same thing, they allow computers to communicate through telephone lines. This lets computers exchange information everywhere. Internal modem is a circuit board that plugs into one of the expansion slots of the computer. Internal modems usually are cheaper than external modems, but when problems occur, fixing and troubleshooting the modem can sometimes prove to be quite difficult. External modem attaches to the back of the computer by way of a cable that plugs into the modem port. It is usually less expensive and very portable. It can be used with other computers very easily by unplugging it and plugging it into another computer. Fax modem can be hooked up to your telephone and used to send information to your computer. Your computer can also send information to a fax machine. Most computer modems are modems with faxing capabilities.

13. Выполните письменно перевод следующего текста по вариантам.

bootstrapping — начальная загрузка

lever-like — рычажковый

MICROCOMPUTER SYSTEM ORGANIZATION

1. The organization of a microcomputer system is the same as that of a larger computer system. The microprocessor unit (MPU), usually concentrated in a single chip, consists of the control unit and the arithmetic logic unit. Internal memory is made up of random access memory (RAM) and read-only memory (ROM). Because RAM is only temporary storage, all microcomputers require some instructions to get started after they are turned on, and these are contained in ROM. A microcomputer includes both an MPU and internal memory.

The portion of the system software that is in ROM brings into RAM the additional instructions required to operate the microcomputer. Typically these instructions are stored on a magnetic disk; hence, they are called a disk operating system, or DOS. This start-up process is called bootstrapping. ROM also contains other programs that help to make personal computers easy to use, such as a programming language. Computer games are also stored in ROM cartridges.

In addition to the MPU, RAM, ROM, and associated control circuits, other components, called peripheral devices, are needed to make a complete microcomputer system. The principal peripheral units are: input devices, output devices, mass storage units, and communication components. Like a DOS, the

programs that control the flow of data between a microcomputer and its peripheral devices are a part of systems software.

The most common input device used with personal computers is the keyboard. Most personal computer keyboards have extra keys that perform special functions and that can be used to control the movement of a cursor on a screen. A lever-like device, called a joystick, is also used as an input device, commonly for playing video games.

2. The CRT (cathode-ray tube) screen used with personal computers is called a monitor. Keyboards and monitors may be part of a single unit that also contains the microcomputer and the disk drives, or they may be separate units. Besides the monitor, the most common input units are dot-matrix and letter-quality printers. Dot-matrix printers are suitable for most microcomputer applications. Letter-quality printers are usually used for high-quality office correspondence. Both types of printers are considered to be low-speed character printers.

Mass storage units are available over a range of capacities and access times. Floppy disks, or diskettes, are the most common mass storage media. They store patterns of bits on magnetically coated, flexible plastic platters. A floppy disk platter is sealed permanently in a paper jacket with a small window for reading and writing. Hard disk storage systems are also available. They may be fixed or removable. Some mass storage units contain both floppy and hard disk devices.

Low-cost modulator-demodulator devices, called modems that allow microcomputer systems to communicate over telephone lines have become increasingly popular. Modems permit networks of personal computer owners to exchange information or to access large data banks. These data banks may be dedicated to special applications, such as law or medicine, or they may provide a variety of consumer services.

Unit 11 COMPUTER PROGRAMMING

1. Прочитайте текст и объясните, как вы понимаете термин «компьютерное программирование».

program logic — логическая последовательность выполнения программы

flowchart — блок-схема; составлять блок-схему

flowcharting — построение блок-схемы

pictorial representation — наглядное представление

predefined symbols — заранее заданные символы

specifics — специальные черты, характерные особенности

emplate — шаблон, маска, образец, эталон

pseudo code — псевдокод, псевдопрограмма

burden — нагрузка

programming rules — правила программирования

consume — потреблять, расходовать

emphasize — выделять, подчеркивать

top-down approach — принцип нисходящей разработки

looping logic — логическая схема выполнения (операций) в цикле

Text 1. COMPUTER PROGRAMMING

Programming is the process of preparing a set of coded instructions which enables the computer to solve specific problems or to perform specific functions. The essence of computer programming is the encoding of the program for the computer by means of algorithms. The thing is that any problem is expressed in mathematical terms, it contains formulae, equations, and calculations. But the computer cannot manipulate formulae, equations, and calculations. Any problem must be specially processed for the computer to understand it, that is — coded or programmed.

The phase in which the system's computer programs are written is called the development phase. The programs are lists of instructions that will be followed by the control unit of the central processing unit (CPU). The instructions of the program must be complete and in the appropriate sequence, or else the wrong answers will result. To guard against these errors in logic and to document the program's logical approach, logic plans should be developed.

There are two common techniques for planning the logic of a program. The first technique is flowcharting. A flowchart is a plan in the form of a graphic or pictorial representation that uses predefined symbols to illustrate the program logic. It is, therefore, a "picture" of the logical steps to be performed by the computer. Each of the predefined symbols shapes stands for a general operation. The symbol shape communicates the nature of the general operation, and the specifics are written within the symbol. A plastic or metal guide called a template is used to make drawing the symbols easier.

The second technique for planning program logic is called pseudo code. Pseudo code is an imitation of actual program instructions. It allows a program-like structure without the burden of programming rules to follow. Pseudo code is less time-consuming for the professional programmer than is flowcharting. It also emphasizes a top-down approach to program structure.

Pseudo code has three basic structures: sequence, decision, and looping logic. With these three structures, any required logic can be expressed.

2. Ответьте на вопросы, используя информацию текста.

1. What is programming? 2. What is the essence of programming? 3. What should be done with the problem before processing by the computer? 4. What is a program? 5. What are instructions? 6. What are the main techniques for planning the program logic? 7. What is a flowchart? 8. What is a template and what is it used for? 9. What do you understand by "pseudo code"? 10. What are the basic structures of pseudo code?

3. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Совокупность закодированных команд; суть компьютерного программирования; кодирование посредством алгоритма; формулы, уравнения, вычисления; обработать особым образом; перечень команд; необходимая последовательность; защищать от ошибок; составлять план логической последовательности; общепринятая методика; логическая последовательность выполнения программы; построение блок-схемы; наглядное представление; заранее заданные символы; шаблон; псевдо программа; без издержек; выделять принцип нисходящей обработки; расходовать меньше времени; логическая схема выполнения операций в цикле; необходимая последовательность операций.

4. Подберите из предложенных ниже русских словосочетаний значения следующих терминов на английском языке.

Program: access program; application program; archived program; binary program; common program; compatible/incompatible program; control/management program; database program; debugging program; educational/teaching/training program; free program; general-purpose program; high-performance program; offline program; online program; operating (-system) program; processing program; protected-mode program; remote program; running program; self-loading program; simulation program; support program; utility program; virus-detection program; watch-dog program.

Программа в двоичном коде; прикладная программа; (несовместимая программа; бесплатная программа; программа отладки; сторожевая программа; дистанционная программа; программа моделирования; сервисная программа; вспомогательная программа; программа для доступа (к данным); заархивированная программа; программа, работающая с базой данных; обучающая программа; программа, выполняемая с большой скоростью; универсальная программа; программа, выполняемая в защищенном режиме; программа обработки данных; программа операционной системы (системная программа); выполняемая программа; (не)сетевая программа; самозагружающаяся про-

грамма; часто используемая (распространенная) программа; программа управления; программа обнаружения вирусов.

5. Прочитайте текст и объясните, что представляют собой языки программирования.

programming language — язык программирования

coded form — кодированный вид, кодированное представление

to convey — передавать, сообщать

to improve — улучшать, совершенствовать

machine oriented language — машинно-ориентированный язык

business-oriented language — язык для (программирования) экономических задач

problem-oriented language — проблемно-ориентированный язык

string of binary — строка двоичного представления

data handling — обработка данных, работа с данными

field-name length — длина имени поля

incorporate features — включать свойства (особенности)

versatile — многофункциональный, разносторонний, универсальный

generous — большой, значительный (о количестве)

mathematical relationship — математическая связь (соотношение)

Text 2. PROGRAMMING LANGUAGES

Let's assume that we have studied the problem, designed a logical plan (our flowchart or pseudo code), and are now ready to write the program instructions. The process of writing program instructions is called coding. The instructions will be written on a form called a coding form. The instructions we write will be recorded in a machine-readable form using a keypunch, key-to-tape, or key-to-disk, or entered directly into computer memory through a terminal keyboard.

The computer cannot understand instructions written in just any old way. The instructions must be written according to a set of rules. These rules are the foundation of a programming language. A programming language must convey the logical steps of the program plan in such a way that the control unit of the CPU can interpret and follow the instructions. Programming languages have improved throughout the years, just as computer hardware has improved. They have progressed from machine-oriented languages that use strings of binary Is and Os to problem-oriented languages that use common mathematical and/or English terms.

There are over 200 problem-oriented languages. The most common of them are COBOL, FORTRAN, PL/I, RPG, BASIC, PASCAL.

COBOL

COBOL was the most widely used business-oriented programming language. Its name is an acronym for Common Business-Oriented Language. COBOL was designed to solve problems that are oriented toward data handling and input-output operations. Of course, COBOL can perform arithmetic operations as well, but its greatest flexibility is in data handling. COBOL also was designed as a self-documenting language. Self-documenting languages are those that do not require a great deal of explanation in order to be understood by someone reading the program instructions. The self-documenting aspect of COBOL is made possible by its sentence-like structure and the very generous maximum symbolic field-name length of 30 characters. With a field-name length of up to 30 characters, the name can clearly identify the field and its purpose.

FORTRAN IV

The FORTRAN IV language is oriented toward solving problems of a mathematical nature. The name FORTRAN comes from the combination of the words formula translation. The version of FORTRAN IV has been designed as algebra-based programming language. Any formula or those mathematical relationships that can be expressed algebraically can easily be expressed as a FORTRAN instruction. FORTRAN is the most commonly used language for scientific applications.

PL/I

PL/I stands for programming language I. It was designed as a general-purpose language incorporating features similar to COBOL for data handling instructions and features similar to FORTRAN for mathematical instructions. PL/I is much more than a combination of the good features of both COBOL and FORTRAN, as it has many capabilities that are unique. Yet, although PL/I is one of the most versatile and the most powerful of the programming languages, it is not the most commonly used. COBOL and FORTRAN have been available for a longer period of time than PL/I, and many more users work with those languages.

6. Ответьте на вопросы, используя информацию текста.

1. What is the process of writing instructions called? 2. What is a code? 3. How must instructions be written? 4. What is the foundation of any programming language? 5. How was the development of programming languages progressing throughout the years? 6. What are the most common problem-oriented languages? 7. What is COBOL? 8. What functions was COBOL designed for? 9. What does FORTRAN serve for? 10. What capabilities has PL/I?

7. Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Языки программирования; блок-схема; кодированная форма; вид, удобочитаемый для компьютера; в соответствии с набором правил; представить логические шаги программы; таким образом; совершенствовать языки программирования; машинно-ориентированные языки; проблемно-ориентированные языки; обычный термин; язык для программирования экономических задач; обработка информации; операции по вводу-выводу данных; гибкость; идентифицировать поле и его цели; решение проблем математического характера; сферы научного применения; универсальный язык; включать свойства; уникальные возможности; многофункциональный и самый мощный из языков программирования.

8. Найдите в текстах 1 и 2 слова, близкие по значению к следующим.

Nouns: command; line; characteristic; form; evolution; enumeration; mistake; method; character; manual (instruction); consumption; storage; basics; abbreviation; interpretation; correlation; possibility.

Verbs: include; inform; process; protect; apply; permit; stress; suppose; learn; make up; write; key; explain; define; perfect; advance; decide; execute; demand.

Adjectives: full; incorrect; usual; necessary; accessible; required; considerable; floppy; possible.

9. Переведите условные сложноподчиненные предложения. Обратите внимание на форму выражения разных типов условия.

I. 1. If you try very hard, you can master any language. 2. If you want to master any language, you must know at least three thousand words. 3. You will improve your pronunciation if you read aloud every day. 4. Time will be saved if one uses a computer. 5. If you learn all the words of the lesson, you will write your test successfully. 6. If you or I add up two numbers of six figures without a calculator, it will take us a lot of time.

II. 1. It would be a good thing if you didn't smoke. 2. If the earth didn't rotate, it wouldn't have the shape of a ball. 3. If I had the time, I should help you to solve the problem. But I must be off. 4. I should translate the article without difficulty if I knew English well. 5. If I were in your place, I should learn to speak English fluently. 6. Were you asked to explain why addition is performed the way it is, you would probably have to think for a while before answering.

III. 1. I decided to stay at home last night. I would have gone out if I hadn't been so tired. 2. Had he not been busy, he wouldn't have missed that conference. 3. Why didn't you phone me yesterday? I would have helped you. 4. If you had attended preliminary courses, you would have passed your examinations more successfully. 5. Had the manager had this information before, he would have acted differently. 6.

The binary system is particularly appropriate to the nature of an electric machine; if it had not existed, computer designers would have had to invent it.

10. Выполните перевод следующих текстов письменно по вариантам.

1. RPG II programming language

RPG II is a business-oriented language. The name stands for report program generator. RPG is considerably different from other programming languages. RPG is, in effect, a large prewritten program. The programmer simply indicates the options within the master program that are to be used and, through a set of indicators, when they are to be used.

RPG was originally referred to as a “quick-and-dirty” programming language. That is, it is quick for the programmer to write and relatively inefficient in its use of main storage and processing speed. The latest version of RPG, called RPG II, greatly improved the language and gave it additional capabilities. RPG has an advantage over COBOL in that it requires less training for a programmer to become proficient in it. For this reason, RPG is commonly used on many smaller computers and in small business.

2. BASIC

BASIC is the acronym for beginner’s all-purpose symbolic instruction code. It was developed in Dartmouth College as an easy-to-learn programming language for students and inexperienced programmers. Its key design goal is simplicity. BASIC has become a very popular language in systems where many users share the use of a computer through terminals and it has become a universal language for personal computers.

The language BASIC is mathematically oriented, that is, its typical use is to solve problems of a mathematical nature. Because BASIC programs are usually executed from a terminal or microcomputer where input is entered through a keyboard and printed output is relatively slow, problems of a business nature requiring large volumes of input-output data are usually not practical.

3. PASCAL

PASCAL was invented in 1970 by Professor Niklaus Wirth of Zurich, Switzerland. It was named after the mathematician Blaise Pascal, who invented one of the earliest practical calculators. PASCAL is a mathematically oriented programming language and, as such, is most commonly used in mathematics, engineering, and computer science departments of colleges and universities. This language is somewhat unusual in that it was designed to be a structured language. This means that the program must be written in logical modules which are in turn called by a main controlling module. Much of PASCAL’S popularity is due to work done at the University of California at San Diego, where PASCAL has been implemented on several different computers including microcomputers.

11. Прочитайте тексты (по вариантам) и составьте рефераты на английском языке.

1. The conversion of symbolic languages

As we see, most of the symbolic languages are oriented toward the particular application areas of business or science (math). The one problem with all symbolic languages is that none of them can be understood by a computer. The symbolic languages may say AP, ADD, or use a “plus” sign to indicate an addition step, but the only thing that means addition to a computer is its binary machine code. We have symbolic programs that are relatively easy for humans to understand, but they cannot be understood by computers. On the other hand, we have machine code that is understood by the computer, but it is difficult for humans to use. The solution is a translator that translates the symbolic program into machine code. The translator allows the human to work with relatively easy-to-understand symbolic languages and it allows the computer to follow instructions in machine code. The translation of symbolic instructions to machine code is accomplished through the use of a program called a language processor. There are three types of language processors. They are called assemblers, compilers, and interpreters. Each translates symbolic instructions to machine code, but each does it differently.

(The translator is a program itself. It is part of a group of programs, called the operating systems that help us to use the computer.)

2. Running the computer program

The operating system is a collection of programs provided by the computer's manufacturer that allows us to schedule jobs for the computer, to translate source programs into object programs, to sort data stored on secondary storage devices, and to copy data from any input device to any output device. These programs are called control programs, language programs, and utility programs.

The control program (often called the supervisor, monitor, or executive) is a main-storage-resident program. Its functions are to schedule jobs, schedule input and output for our programs, and to monitor the execution of our programs.

The language processors are programs that translate source programs into object programs. There are three types of language processors: assemblers, compilers, and interpreters. Each language has its own language processor.

The service programs are programs that are commonly used in all data processing centers. They have functions that are required by everyone using a computer. Examples of service programs include linkage editors to prepare object programs for execution, a librarian to catalog programs into a library area on magnetic disk, utility programs to transfer data from device to device, and sort-merge programs for sorting data on magnetic tape or disk.

3. Testing the computer program

There are two kinds of errors or bugs with which programmers must deal. The first type is the coding error. Such errors are syntax errors that prevent the language processor from successfully translating the source program to object program code. The language processor identifies the nature and the location of the error on the source program listing, so these errors are relatively easy to find and correct. The second type of bug is the logic error. The computer program can be successfully translated, but the program does not produce the desired results. These errors are generally much more difficult to find and to correct than are coding errors. Logic errors can be avoided through careful planning of the program logic, but it is the programmer's responsibility to test thoroughly all of the program's functions, in order to verify that the program performs according to specifications.

There are many tools provided to the programmer to help in debugging the program logic. These tools are called debug packages or tracing routines. They assist the programmer in following the logic by printing out calculation results and field values used in making logic decisions in the program. In a few cases it may be necessary to use a memory dump — a printout of the instructions and data held in the computer's memory — in order to find the cause of logic errors.

Unit 12 MODERN PORTABLE COMPUTERS

1. Read and translate the text.

Text 1. A NOTEBOOK OR A MODERN LAPTOP

A notebook is considered to be a personal computer designed for mobile use that is small and light enough for a person to rest on their lap. A laptop integrates most of the typical components of a desktop computer, including a display, a keyboard, a pointing device (a touchpad, also known as a track pad, and/or a pointing stick), and speakers into a single unit. A laptop is powered by mains electricity via an AC adapter, and can be used away from an outlet using a rechargeable battery. A laptop battery in new condition typically stores enough energy to run the laptop for three to five hours, depending on the computer usage, configuration, and power management settings. The laptop being plugged into the mains, the battery charges, whether or not the computer is running.

Modern laptops weigh 1.4 to 5.4 kg. Most laptops are designed in the flip form factor to protect the screen and the keyboard when closed. Modern tablet laptops have a complex joint between the keyboard housing and the display permitting the display panel to swivel and then lie flat on the keyboard housing.

Portable computers, originally monochrome CRT-based and developing into the modern laptop, were originally used mostly for specialized field applications such as the military, accountants, and sales representatives. Portable computers becoming smaller, lighter, and cheaper, and screens becoming larger and of better quality, laptops found very wide application for all purposes.

History of laptops

As the personal computer became feasible in the early 1970s, the idea of a portable personal computer appeared. A “personal, portable information manipulator” is known to be imagined and described by Alan Kay in 1972. The IBM 5100, the first commercially available portable computer, appeared in September 1975, and was based on the SCAMP project (Special Computer APL Machine Portable) prototype.

8-bit CPU machines became widely accepted, the number of portables having increased rapidly. We know the first laptop to use the flip form factor was demonstrated in the early 1980s. It was the Epson HX-20 which had a LCD screen, a rechargeable battery, and a calculator-size printer in a 1.6 kg chassis.

From 1983 onward, several new input techniques were developed and involved in laptops, including the touchpad (in 1983), the pointing stick (in 1992), and handwriting recognition (in 1987). Some CPUs, such as the 1990 Intel i386SL, were designed to use minimum power to increase battery life of portable computers.

Classification

The general term “laptop” can be used to refer to a number of classes of small portable computers:

Full-size laptop — a laptop which measures at least 11 inches across, which is the minimum specialized field applications; LCD screen; width to allow a full-size keyboard. The first laptops were the size of a standard U.S. “A-size” notebook sheet of paper (8 1/2 x 11 inches), but later “A4-size” laptops were introduced, which were the width of a standard ISO 216 A4 sheet of paper (297 mm), and added a vertical column of keys to the right and wider screens.

Netbook — a smaller, lighter, more portable laptop. It is also usually cheaper than a full-size laptop, but has fewer features and less computing power. Smaller keyboards can be more difficult to operate.

Ultra-thin laptop — a newer class of laptops which are very thin and light.

Tablet PC — these have touch screens. There are “convertible tablets” with a full keyboard where the screen rotates to be used atop the keyboard, and “slate” form-factor machines which are usually touch-screen only.

Rugged laptops — engineered to operate in tough conditions such as mechanical shocks, extreme temperatures, wet and dusty environments.

2. Check your comprehension.

1. What is a notebook? 2. Why is a notebook often called a laptop? 3. What components does a laptop consist of? 4. How is a laptop powered and how long can it work? 5. What were laptops originally used for? 6. Who first described the idea of a portable computer? 7. When did the first portable computers appear? 8. What new input techniques have been developed in laptops since the 1980s? 9. What are the main classes of laptops? 10. What distinguishes different classes of laptops?

3. Translate the technical terms used in text 1.

Desktop computer; a keyboard; a keyboard housing; a touchpad = track pad; a single unit; alternating current adapter; outlet; rechargeable battery; power management settings; modern tablet laptops; a complete joint; cathode-ray tube based computers; specialized field applications; accountants and sales representatives; better quality; a calculator-size printer; several input techniques; handwriting recognition; central processing unit; full-size laptops; tablet personal computers; convertible tablets; touch screen; mechanical shocks; wet and dusty environments.

To run the laptop; to be plugged in the main; to design in a flip form; to protect the screen; to permit the display to swivel; to increase rapidly; to increase the life of a computer; to develop and involve in laptops; to operate in tough conditions; to add a vertical column of keys; to include the pointing stick; to depend on computer usage; to refer to a number of classes.

4. Read text 2 and speak about types of portable computers.

Text 2. CLASSES OF LAPTOPS

Desktop replacement computer

A desktop-replacement computer is a laptop that provides most of the capabilities of a desktop computer, with a similar level of performance. Desk-top replacements seem to be larger and heavier than standard laptops. They contain more powerful components and have a 15" or larger display. They are bulkier and not as portable as other laptops, and their operation time on batteries is typically shorter; they are intended to be used as compact and transportable alternatives to a desktop computer.

Some laptops in this class use a limited range of desktop components to provide better performance for the same price at the expense of battery life, a few of those models having no battery. These, and sometimes desktop-replacement computers in general, are sometimes called desk notes, a portmanteau of "desktop" and "notebook".

In the early 2000s desktops were more powerful, easier to upgrade, and much cheaper than laptops, but in later years laptops have become much cheaper and more powerful. Most peripherals are available in laptop-compatible USB versions which minimize the need for internal add-on cards.

Subnotebook

A subnotebook or ultraportable is a laptop designed and marketed with an emphasis on portability (small size, low weight, and often longer battery life) that retains performance close to that of a standard notebook. Subnotebooks are usually smaller and lighter than standard laptops, weighing between 0.8 and 2 kg; the battery life can exceed 10 hours when a large battery or an additional battery pack is installed.

To achieve the size and weight reductions, ultraportables use 13" and smaller screens (down to 6.4"), have relatively few ports, employ expensive components designed for minimal size and best power efficiency, and utilize advanced materials and construction methods. Most subnotebooks achieve a further portability improvement by omitting an optical / removable media drive. In this case they may be paired with a docking station that contains the drive and optionally more ports or an additional battery.

The term "subnotebook" is reserved to laptops that run general-purpose desktop operating systems.

Netbooks

Netbooks (sometimes also called mininotebooks or ultraportables) are a branch of subnotebooks, a rapidly evolving category of small, lightweight, economical, energy-efficient, and especially suited for wireless communication and Internet access. The origins of the netbook can be traced to the Network Computer (NC) concept of the mid-1990s. In March 1997 Apple Computer introduced the e-mail 300 as a subcompact laptop that was a cross between the Apple Newton PDA and a conventional laptop computer.

Netbooks are intended to rely heavily on the Internet for remote access to web-based applications and are targeted increasingly at cloud computing users who rely on servers and require a less powerful client computer.

Netbooks typically have less powerful hardware than larger laptop computers. Some netbooks do not even have a conventional hard drive. Such netbooks use solid-state storage devices instead, as they require less power, are faster, lighter, and generally more shock-resistant, but with much less storage capacity.

Netbooks in education. Netbooks offer several distinct advantages in educational settings. First, their compact size and weight make for an easy fit in student work areas. Similarly, the small size makes netbooks easier to transport than heavier, larger-sized traditional laptops. Despite the small size, netbooks are fully capable of accomplishing most school-related tasks, including word processing, Power Point presentations, access to the Internet, multimedia playback, and photo management.

Netbooks have the potential to change the way students and teachers interact, and have many practical applications in the classroom setting. One major implication of netbooks in schools is cloud computing. Cloud computing eliminates many of the technology related headaches that we have become accustomed to, including incompatibility between home computers and school computers, "data loss" due to

computer crash, and printer failure. Virtually all netbooks have wireless Internet connections, allowing complete access to free online applications and servers.

It is well-known that students with laptops do more and higher quality writing, have access to more information, which improves data analysis skills, and that student-centered learning is more easily accomplished. Student-centered learning, a growing trend in education recently, increases student motivation, cultivates critical thinking and problem solving, and fosters positive student collaboration.

5. Check your comprehension.

1. What is a desktop replacement computer? 2. Compare a desktop re-placement computer with a standard laptop. 3. How do people sometimes call desktop replacement computers? 4. Describe a subnotebook comparing it with a standard laptop. 5. How do ultraportables achieve improvements in portability? 6. What kind of laptops are netbooks? 7. What are netbooks aimed at? 8. What are the main advantages and disadvantages of netbooks in comparison with larger laptop computers? 9. Where do netbooks find practical application? 10. What do students acquire using netbooks?

6. Find in texts 1 and 2 words close in their meaning to the words given below.

Example: To use — to apply, to employ, to utilize; an aim — a purpose, a target, etc.

To use, to let, to unite, to involve, to energize, to keep, to operate, to insert, to defend, to compute, to supply, to reduce, to perfect, to let, to suggest, to communicate, to finish.

An aim, a screen, a touchpad, a device, a notebook, memory, energy, application, a branch, data, method, an idea, characteristics, abilities, variant, education, opportunity, error.

Movable, little, common, usual, up-to-date, compact, broad, several, mighty, massive, brief, distant, usual, light.

Mainly, usually, quickly, particularly, not long ago.

7. Read text 3 and speak about the types of tablet computers.

Text 3. TABLET PERSONAL COMPUTERS

A tablet PC is a laptop PC equipped with a stylus or a touchscreen. Tablet PCs may be used where notebooks are impractical or unwieldy, or do not provide the needed functionality.

The term tablet PC was made popular in a product announced in 2001 by Microsoft. Tablet PCs are personal computers where the owner is free to install any compatible application or operating system. Other tablet computer devices, such as eBook readers or PDAs, do not provide this option and are generally considered another category.

Tablet PCs typically incorporate small (21—36 cm) LCD screens and are popular in health care, education, hospitality, and field work. Applications for field work are sure to often require a tablet PC that has rugged specifications ensuring long life by resisting heat, humidity, and drop / vibration damage.

Booklets. Booklet PCs are dual screen tablet computers that fold like a book. Typical booklet PCs are equipped with multi-touch screens and pen writing recognition capabilities. They are designed to be used as digital day planners, Internet surfing devices, project planners, music players, and displays for video, live TV, and e-reading.

Slates. Slate computers, which resemble writing slates, are tablet PCs without a dedicated keyboard. For text input, users rely on handwriting recognition via an active digitizer, touching an on-screen keyboard using fingertips or a stylus, or using an external keyboard that can usually be attached via a wireless or USB connection.

Convertibles. Convertible notebooks have a base body with an attached keyboard. They more closely resemble modern laptops, and are usually heavier and larger than slates. Typically, the base of a convertible attaches to the display at a single joint called a swivel hinge or rotating hinge. The joint allows the screen to rotate through 180 and fold down on top of the keyboard to provide a flat writing surface. Convertibles are by far the most popular form factor of tablet PCs, because they still offer the keyboard

and pointing device (usually a track pad) of older notebooks, for users who do not use the touch-screen display as the primary method of input.

Hybrids. Hybrids share the features of the slate and convertible by using a detachable keyboard that operates in a similar fashion to a convertible when attached. Hybrids are not to be confused with slate models with detachable keyboards; detachable keyboards for pure slate models do not rotate to allow the tablet to rest on it like a convertible.

Tablets versus traditional notebooks. The advantages and disadvantages of tablet PCs are highly subjective measures. What appeals to one user may be exactly what disappoints another.

Advantages:

- Usage in environments not conducive to a keyboard and mouse such as lying in bed, standing, or handling with a single hand.
- Lighter weight, lower power models can function similarly to dedicated reading devices.
- Touch environment makes navigation easier than conventional use of keyboard and mouse or touch pad in certain contexts such as image manipulation, or mouse-oriented games.
- Digital painting and image editing is enhanced and more realistic than painting or sketching with a mouse.
- The ability for easier or faster entering of diagrams, mathematical notations, and symbols.
- Allows, with the proper software, universal input, independent from different keyboard localizations.
- Some users find it more natural and fun to use a stylus to click on objects rather than a mouse or touchpad, which are not directly connected to the pointer on screen.

8. Check your comprehension.

1. What is a tablet PC? 2. What are characteristic features of a tablet PC? 3. What types of tablets have you got acquainted with? 4. What is the most popular form of tablet PC? 5. What are booklets equipped with? 6. Where are they used? 7. How do slates manage to operate without keyboards? 8. What features of other tablets do hybrids include? 9. What are the main advantages of tablets over traditional notebooks? 10. Have tablets any disadvantages in comparison with notebooks, to your mind? Name some of them, if any.

9. Translate the phrases paying attention to verbals and the ways of their translation.

The needed functionality; a product announced in 2001; tablets folding like a book; booklets equipped with multi-touched screen; pen writing recognition capabilities; computers resembling writing slates; a dedicated key-board; touching an on-screen keyboard; using fingertips; to ensure long life by resisting heat and vibration damage; an attached keyboard; a joint called a rotating hinge; the screen to rotate through 180; the screen to provide a flat writing surface; hybrids share the features of the slate and convertible by using a detachable keyboard; a keyboard operates in a similar fashion to a convertible when attached; hybrids are not to be confused with slate models; detach-able keyboards do not rotate to allow the tablet to rest on it; dedicated reading devices; mouse-oriented games; digital painting and image editing; the ability for faster entering of diagrams; users find it fun to use a stylus to click on objects; touchpad not directly connected to the pointer on screen.

10. Add nouns (from texts 1, 2, 3) to the given adjectives and put them in comparative and superlative degrees. Translate the newly formed phrases.

Fast, easy, high, light, popular, general, low, typical, active, wide, traditional, large, similar, old, feasible, possible, new, available, usual, complex, bulky, cheap, expensive, difficult, free, extreme, powerful, rapid, economical, remote, full, early, recent, capable, distinct, energy-efficient, modem, few.

Good, bad, little, far, many.

11. Read text 4 and speak about the distinguishing features of laptops and desktop PCs, their advantages and disadvantages.

Text 4. PORTABLE COMPUTERS VERSUS DESKTOPS

I. The basic components of laptops are similar in function to their desktop counterparts, but are miniaturized, adapted to mobile use, and designed for low power consumption. Because of the additional requirements, laptop components are usually of inferior performance compared to similarly priced desktop parts. Furthermore, the design bounds on power, size, and cooling of laptops limit the maximum performance of laptop parts compared to that of desktop components.

The following list summarizes the differences and distinguishing features of laptop components in comparison to desktop personal computer parts: **Motherboard** — Laptop motherboards are highly model specific, and do not conform to a desktop form factor. Unlike a desktop board that usually has several slots for expansion cards (3 to 7 are common), a board for a small, highly integrated laptop may have no expansion slots at all, with all the functionality implemented on the motherboard itself; the only expansion possible in this case is via an external port such as USB. Other boards may have one or more standard, such as Express Card, or proprietary expansion slots. Several other functions (storage controllers, networking, sound card and external ports) are implemented on the motherboard.

Central processing unit (CPU) — Laptop CPUs have advanced power-saving features and produce less heat than desktop processors, but are not as powerful. There is a wide range of CPUs designed for laptops available. Some laptops have removable CPUs, although support by the motherboard may be restricted to the specific models. In other laptops the CPU is soldered on the motherboard and is non-replaceable.

Memory (RAM) — SO-DIMM memory modules that are usually found in laptops are about half the size of desktop DIMMs. They may be accessible from the bottom of the laptop for ease of upgrading, or placed in locations not intended for user replacement such as between the keyboard and the motherboard.

Expansion cards — A PC Card or Express Card bay for expansion cards is often present on laptops to allow adding and removing functionality, even when the laptop is powered on. Some subsystems (such as Ethernet, Wi-Fi, or a cellular modem) can be implemented as replaceable internal expansion cards, usually accessible under an access cover on the bottom of the laptop.

Power supply — Laptops are typically powered by an internal recharge-able battery that is charged using an external power supply. The power supply can charge the battery and power the laptop simultaneously. The battery being fully charged, the laptop continues to run on AC power. The charger adds about 400 grams to the overall “transport weight” of the notebook.

II. Advantages of portable computers

Portability is usually the first feature mentioned in any comparison of laptops versus desktop PCs. Portability means that a laptop can be used in many places — not only at home and at the office, but also during commuting and flights, in coffee shops, in lecture halls and libraries, at clients’ location or at a meeting room, etc. The portability feature offers several distinct advantages:

Productivity — Using a laptop in places where a desktop PC can’t be used, and at times that would otherwise be wasted.

Immediacy — Carrying a laptop means having instant access to various information, personal and work files. Immediacy allows better collaboration between coworkers or students, as a laptop can be flipped open to present a problem or a solution anytime, anywhere.

Up-to-date information — If a person has more than one desktop PC, a problem of synchronization arises: changes made on one computer are not automatically propagated to the others. There are ways to resolve this problem, including physical transfer of updated files using synchronization software over the Internet. However, using a single laptop at both locations avoids the problem entirely, as the files exist in a single location and are always up-to-date.

Size — Laptops are smaller than desktop PCs. This is beneficial when space is at a premium, for example in small apartments and student dorms. When not in use, a laptop can be closed and put away.

Low power consumption — Laptops are several times more power-efficient than desktops. A typical laptop uses 20—90 W, compared to 100— 800 W for desktops. This could be particularly beneficial for businesses which run hundreds of personal computers and homes.

Battery — A charged laptop can continue to be used in case of a power outage and is not affected by short power interruptions and blackouts. A desktop PC needs a UPS to handle short interruptions, blackouts, and spikes; achieving on-battery time of more than 20—30 minutes for a desktop PC requires a large and expensive UPS.

All-in-one — Designed to be portable, laptops have everything integrated in to the chassis. For desktops (excluding all-in-ones) this is divided into the desktop, keyboard, mouse, display, and optional peripherals such as speakers.

III. Disadvantages of portable computers

Compared to desktop PCs, laptops have disadvantages in the following fields:

Performance. The upper limits of performance of laptops remain much lower than the highest-end desktops (especially “workstation class” machines with two processor sockets), and “bleeding-edge” features usually appear first in desktops and only then, as the underlying technology matures, are adapted to laptops.

Laptops processors can be disadvantaged when dealing with higher-end database, mathematics, engineering, financial software, virtualization, etc. Also, the top-of-the-line mobile graphics processors (GPUs) are significantly behind the top-of-the-line desktop GPUs to a greater degree than the processors, which limits the utility of laptops for high-end 3D gaming and scientific visualization applications.

Upgradeability of laptops is very limited compared to desktops, which are thoroughly standardized. In general, hard drives and memory can be upgraded easily. Optical drives and internal expansion cards may be upgraded if they follow an industry standard, but all other internal components, including the motherboard, CPU, and graphics, are not always intended to be upgradeable. The reasons for limited upgradeability are both technical and economic.

Durability. Due to their portability, laptops are subjected to more wear and physical damage than desktops. Components such as screen hinges, latches, power jacks, and power cords deteriorate gradually due to ordinary use. They say that a laptop is three times more likely to break during the first year of use than a desktop.

Battery life of laptops is limited; the capacity drops with time, necessitating an eventual replacement after a few years. The battery is often easily replaceable, and one may replace it on purpose with a higher-end model to achieve better battery life.

12. Check your comprehension.

1. What unites PCs and desktops? 2. What limits the maximum performance of laptop parts? 3. How is functionality implemented on laptop motherboard? 4. What kind of CPU are PCs provided? 5. Compare PCs and desk-tops memory. 6. How are PCs and desktops supplied with power? 7. What are the main advantages of portable computers over desktops? 8. Speak about batteries used in PCs and desktops and power consumption by them. 9. What disadvantages do portable computers have compared to desktops? 10. How can one achieve better battery life?

13. Analyze verbals in the given phrases and translate them.

Laptop components adapted to mobile use and designed for low power consumption; distinguishing features; a PC card is present on laptops to allow adding and removing functionality; laptops powered by an internal battery charged by using an external power supply; laptops can be used in many places; using a laptop at times that would otherwise be wasted; a student doing his homework; a laptop can be flipped open to present a problem; there are ways to resolve the problem, including physical transfer of updated files; when not in use a laptop can be closed and put away; a charged laptop can continue to be used; designed to be portable; compared to desktop PCs, laptops have some disadvantages; laptops processors can be disadvantaged when dealing with higher-end database; other components, including the motherboard, CPU, and graphics, are not always intended to be upgradeable; a laptop is three times more likely to break than a desktop; the capacity drops with time, necessitating an eventual replacement after a few years; one may replace the battery to achieve better battery life.

14. Choose as many derivatives as possible to the following words using suffixes and prefixes. Translate the words.

Example: to connect — to disconnect, connection, connected, connecting, connector, etc.

To consume, to add, to require, to perform, to differ, to process, to produce, to replace, to present, to power, to compare, to signify, to change, to convert, to calculate, to improve, to communicate, to manage, to compute.

Access, science, simple.

15. Find in the texts studied words or groups of words opposite in their meaning to the words given below.

To subtract, to appear, to stand, to prohibit, to find, to open, to improve, to rise, to charge, to downgrade. Expensive, late, slow, difficult, external, big, light, unlike, compatible, low, far, worse, complex, superior, minimum, soft.

Before, over, ahead, less, many.

Unit 13 MOBILE PHONES

1. Read and translate the text.

Text 1. HISTORY OF MOBILE PHONES

A mobile phone (also called mobile, cellular phone, cell phone, or hand phone) is an electronic device used for full duplex two-way radio telecommunications over a cellular network of base stations known as cell sites. Mobile phones are sure to differ from cordless telephones, which only offer telephone service within limited range through a single base station attached to a fixed landline, for example, within a home or an office.

A mobile phone allows its users to make and receive telephone calls to and from the public telephone network which includes other mobiles and fixed line phones across the world. It does this by connecting to a cellular network owned by a mobile network operator. A key feature of the cellular network is that it enables seamless telephone calls even when the user is moving around wide areas via a process known as handoff or handover.

In addition to being a telephone, modern mobile phones also support many additional services and accessories, such as SMS (or text) messages, e-mail, Internet access, gaming, Bluetooth, infrared, camera, MMS messaging, MP3 player, radio, and GPS. Low-end mobile phones are often referred to as feature phones, high-end mobile phones that offer more advanced computing ability being referred to as smartphones.

Radiophones have a long and varied history. It goes back to Reginald Fessenden's invention and shore-to-ship demonstration of radio telephony through the Second World War with military use of radio telephony links and civil services in the 1950s.

In 1960 the world's first partly automatic car phone system, Mobile System A (MTA) was launched in Sweden. MTA phones were composed of vacuum tubes and relays, and had a weight of 40 kg. In 1962 a more modern version called Mobile System B (MTB) was launched. It was a push-button telephone, which used transistors in order to enhance the telephone's calling capacity and improve its operational reliability. In 1971 the MTD version was launched, opening for several different brands of equipment and gaining commercial success.

Martin Cooper, a Motorola researcher is considered to be the inventor of the first practical mobile phone for hand-held use in a non-vehicle setting. Using a modern, though somewhat heavy portable handset, Cooper made the first call on a hand-held mobile phone in April, 1973.

The first commercially automated cellular network (the 1G — first generation) was launched in Japan in 1979. Within five years the network had been expanded to cover the whole population of Japan

and became the first nation-wide 1G network. This was followed by the simultaneous launch of the Nordic Mobile Telephone (NMT) system in Denmark, Finland, Norway, and Sweden. NMT appeared to be the first mobile phone network featuring international roaming. The first network technology on digital 2G (second generation) cellular technology appeared in Finland on the GSM standard. One of the newest 3G technologies to be implemented is mobile telephony communications protocol in the High-Speed Packet Access (HSPA) family. It allows networks based on Universal Mobile Telecommunication System (UMTS) to have higher data transfer speeds and capacity.

2. Check your comprehension.

1. What is a mobile phone? 2. What differs mobile phones from cordless telephones? 3. What is the role of the public telephone network in making calls? 4. What is the main characteristic of the cellular network? 5. What other services, except telephoning, do mobile phones include? 6. Who demonstrated the first hand-held phone? 7. Who invented the first practical mobile phone? 8. What history do radiophones have? 9. Where was the first automated cellular network launched? 10. How were digital cellular technologies developed and perfected?

3. Put the verbs given in brackets in the necessary form.

A CORDLESS TELEPHONE WITH BASE

As it (to know), George Sweigert, an amateur radio operator and inventor from Cleveland, Ohio, (to recognize) as the father of the cordless phone. He (to submit) his “full duplex wireless communication apparatus” and (to award) by the U.S. Patent and Trademark Office a patent for his invention in 1969.

A cordless telephone or portable telephone (to be) a telephone with a wireless handset that (to communicate) via radio waves with a base station connected to a fixed telephone line, usually within a limited range of its base station, which (to have) the handset cradle. The base station (to be) on the subscriber premises, and (to attach) to the telephone network the same way a corded telephone (to do). But unlike a corded telephone, a cordless telephone (to need) mains electricity to power the base station. The cordless handset (to power) by a rechargeable battery, which (to charge) when the handset (to sit) in its cradle.

In the 1980s a number of manufacturers (to introduce) cordless phones for the consumer market. Typically they (to use) a base station that (to connect) to a telephone line and a handset with a microphone, speaker, keypad, and telescoping antenna. The handset (to contain) a rechargeable battery, usually NiCd. The base unit (to power) by household current, typically via a wall wart. The base (to include) a charging cradle, which (to be) generally a form of trickle charger, on which the handset (to rest) when not in use.

2. Make up an essay for text 1.

3. Read text 2 and speak about mobile phones features.

Text 2. MOBILE PHONES FEATURES

All mobile phones are known to have a number of features in common, but manufacturers also try to differentiate their own products by implementing additional functions to make them more attractive to consumers.

The common components found on all phones are:

- a rechargeable battery providing the power source for the phone functions;
- an input mechanism and display to allow the user to interact with the phone. The most common input mechanism is a keypad, touch screen being also found in some high-end smart phones;

- basic mobile phones services to allow users to make calls and send text messages;
- All GSM phones use a SIM card to allow an account to be swapped among devices, some CDMA devices also having a similar card called a R-UIM;
- Individual GSM, iDEN, and some satellite phone devices are uniquely identified by an International Mobile Equipment Identity (IMEI) number.

Low-end mobile phones are often referred to as feature phones and offer basic telephony, as well as functions such as playing music and taking photos. Handsets with more advanced computing ability through the use of native software applications became known as smartphones. The first smartphone was the Nokia 9000 Communicator in 1996, which added PDA functionality to the basic mobile phone at the time. Miniaturization and increased processing power of microchips having enabled ever more features to be added to phones, the concept of the smartphone has evolved, and what was a smartphone five years ago, is a standard phone today.

Several phone series have been introduced, such as the RIM BlackBerry focusing on enterprise / corporate customer e-mail needs; the Sony Ericsson Walkman series of music phones and Cybershot series of cameraphone; etc.

Other features that may be found on mobile phones include GSM navigation, music (MP3) and video (MP4) playback, RDS radio receiver, alarms, memo recording, personal digital assistant functions, ability to watch streaming video, video download, video calling, built-in cameras and camcorders (video recording), with autofocus and flash, ringtones, games, instant messaging, Internet e-mail and browsing, and serving as a wireless modem.

The most commonly used data application on mobile phones is sure to be SMS text messaging. The first SMS text message is supposed to be sent from a computer to a mobile phone in 1992 in the UK, while the first person-to-person SMS from phone to phone was sent in Finland in 1993.

Other non-SMS data services used on mobile phones include mobile music, downloadable logos and pictures, gaming, gambling, adult entertainment, and advertising.

It should be noted that GSM mobile phones require a small microchip called a SIM (Subscriber Identity Module) card to function. The SIM card is approximately the size of a small postage stamp and is usually placed underneath the battery in the rear of the unit. The SIM securely stores the service-subscriber key (IMSI) used to identify a subscriber on mobile telephony devices, such as mobile phones and computers. The SIM card allows users to change phones by simply removing the SIM card from one mobile phone and inserting it into another mobile phone or broadband telephony device.

4. Check your comprehension.

1. How do manufacturers of mobile phones try to do their products more attractive?
2. What components are common for many mobile phones?
3. What is the role of SIM card?
4. What does a battery serve for?
5. What are feature phones?
6. What are smartphones?
7. What enabled more features to the mobile phones?
8. What services can modern mobile phones offer?
9. What are SMS messages and where was the first SMS from phone to phone sent?
10. What is the SIM card and what is it used for?

5. Translate the phrases with verbals and analyze them.

By implementing additional functions; to try to differentiate their own products; components found on all phones; a rechargeable battery providing the power source for the phone functions; an input mechanism and display to allow the user to interact with the phone; services to allow users to make calls and send text messages; a SIM card to allow an account to be swapped among devices; low-end mobile phones being referred to as feature phones; handsets with more advanced computing ability; increased processing power of microchips; features to be added to phones; memo recording; ability to watch streaming video; built-in cameras; instant messaging and browsing and serving as a wireless modem; the most commonly used data application; the SIM card placed underneath the battery; a small microchip called a SIM card; to store the service-subscriber key used to identify a subscriber; to allow users to change phones by removing the SIM card and inserting it into another phone.

6. Make up an essay for text 2.

7. Read text 3 and speak about different types of mobile phones and their functions.

Text 3. TYPES OF MODERN MOBILE PHONES

A smartphone

It is well-known that a smartphone is a mobile phone that offers more advanced computing ability and connectivity than a contemporary basic feature phone. Smartphones and feature phones may be thought of as handheld computers integrated within a mobile telephone. But while being based on a specific platform, a smartphone allows the user to install and run more advanced applications than most feature phones. Smartphones run complete operating system software providing a platform for application developers.

The first smartphone is said to be called Simon. It was designed by IBM and released to the public in 1993. Besides being a mobile phone, it also contained a calendar, address book, world clock, calculator, note pad, e-mail, send and receive fax, and games. It had no physical buttons to dial with. Instead customers used a touch screen to select phone numbers with a finger or create facsimiles and memos with an optional stylus. Text was entered with a unique on-screen “predictive” keyboard. Manufacturers consider Nokia to launch the first color screen communicator model, which was the first true smartphone with an open operating system.

A smart book

A smart book is considered to be a concept of a mobile device that falls between smartphones and netbooks, delivering features usually found in smartphones (always on, all-day battery life, 3G connectivity, GPS) in a slightly larger device with a full keyboard. Smart books tend to be designed to work with online applications.

BlackBerry

BlackBerry is a line of mobile e-mail and smartphone devices developed and designed by Canadian company Research In Motion (RIM) in 1996. BlackBerry functions as a Personal Digital Assistant (PDA) with address book, calendar, and to-do list capabilities. It also functions as a portable media player with support for music and video playback and camera picture and video capabilities. BlackBerry is primarily known for its ability to send and receive Internet e-mail wherever mobile network service coverage is present, or through Wi-Fi connectivity. BlackBerry is mainly a messaging phone with the largest array of messaging features in a smartphone today. This includes auto-text, auto-correct, text prediction, support for many languages, keyboard shortcuts, text emoticons, push e-mail, push Facebook and Myspace notifications, push instant messaging with BlackBerry Messenger, and many other useful features.

The first BlackBerry device was introduced in 1999 as a two-way pager. In 2002 the more commonly known smartphone BlackBerry was released, which supports push e-mail, mobile telephone, text messaging, Internet faxing, Web browsing and other information services. It is an example of a convergent device.

Twitter

Twitter is known to be a social and micro blogging service, owned and operated by Twitter Inc., that enables its users to send and read other user’s messages called tweets. Tweets are text-based posts of up to 140 characters displayed on the author’s profile page. Tweets are publicly visible by default; however senders can restrict message delivery to their friends list. Users may subscribe to other author tweets, this is known as following, and subscribers are known as followers. As of late 2009, users can follow lists of authors instead of following individual authors. All users can send and receive tweets via the Twitter website, compatible external applications, or by Short Message Service (SMS) available in certain countries.

Since its creation in 2006 by Jack Dorsey, Twitter has gained notability and popularity worldwide. It is sometimes described as the “SMS of the Internet.” The use of Twitter’s application programming

interface (API) for sending and receiving SMS from other applications often dominates the direct use of Twitters.

8. Check your comprehension.

1. What are smartphones? 2. Compare smartphones and feature phones; smartphones and netbooks. 3. When did the first smartphone appear? What kind of a model was it? 4. What did the first smartphone contain? 5. What kind of a smartphone is BlackBerry? 6. What are BlackBerry's main functions? 7. Describe the operational system of BlackBerry. 8. What is a BlackBerry PIN and what is it used for? 9. What possibilities does Twitter give to its users? 10. How can users send and receive their tweets?

9. Read text 4 and speak about iPhone models.

Text 4. THE IPHONE DEVICES

The iPod

The iPod is a portable media player (PMP) designed and marketed by Apple and launched in October 2001. As of June 2010, the product lineup includes the hard drive-based iPod Classic, the touchscreen iPod Touch, the video-capable iPod Nano, and the compact iPod Shuffle. iPod Classic models store media on an internal hard drive, while all other models use flash memory to enable their smaller size. As with many other digital music players, iPods can also serve as external data storage devices.

Apple's iTunes software can be used to transfer music to the devices from computers using certain versions of Apple Macintosh and Microsoft Windows operating systems. For users who choose not to use Apple's software or whose computers cannot run iTunes software, several open source alternatives to iTunes are also available. iTunes and its alternatives may also transfer photos, videos, games, contact information, e-mail settings, web bookmarks, and calendars to iPod models supporting those features.

The iPhone

The iPhone is a line of Internet and multimedia-enabled smartphones designed and marketed by Apple Inc. The first iPhone was introduced in 2007.

An iPhone functions as a camera phone, including text messaging and visual voicemail, a portable media player, and an Internet client with e-mail, web browsing, and Wi-Fi connectivity. The user interface is built around the device's multi-touch screen, including a virtual keyboard rather than a physical one. Third-party applications, launched in mid-2008, have diverse functionalities, including games, reference, GPS navigation, social networking, and advertising for television shows, films, and celebrities.

There have been four generations of iPhone hardware, and they have been accompanied by four major releases of iOS. The iPhone 3G brought 3G cellular network capabilities and A-GPS location. The iPhone 3GS brought a compass, faster processor, and higher resolution camera, including video. The iPhone 4 has two cameras for face time video calling and a higher resolution display. It was released in June 2010.

The iPad

The iPad is a tablet computer designed and developed by Apple. It is particularly marketed as a platform for audio and visual media such as books, periodicals, movies, music and games, as well as web content. Its size and weight, about 700 grams, are between those of most contemporary smart-phones and laptop computers. Apple released the iPad in April 2010.

The iPad runs the same operating system as the earlier iPod and iPhone. It can run its own applications as well as ones developed for the iPhone. Like the iPhone and iPod Touch, the iPad is controlled by

a multitouch display sensitive to up to eleven fingers. The iPad uses Wi-Fi or a 3G mobile data connection to browse the Internet, load and stream media, and install software. The device is managed by iTunes on a personal computer via USB cable.

10. Check your comprehension.

1. What is an iPod?
2. What company launched the iPod and when?
3. What types of iPods do you know?
4. What are iTunes used for?
5. When was the first iPhone introduced?
6. What are iPhone functions?
7. What new did each generation of iPhones acquire?
8. What is iPad?
9. Who released the iPad and when?
10. What common features do iPad have with iPod and iPhone?

11.

A. Find in the texts studied words close in meaning to the words given below.

Investigation, producer, detail, energy, number, velocity, display, movement, facilities, storage, wireless, application, radio set, grown-up, device, modernization, key, keyboard, characteristic, idea, post, demands, information, advancement, ability, subscriber.

To introduce, to help, to demand, to act, to remember, to delete, to input, to develop, to rise, to calculate, to supply, to distinguish, to limit, to launch, to choose, to suggest, to let, to assemble, to connect, to discover, to employ, to widen, to vary, to get, to win, to suppose, to phone, to name, to consist, to show.

Mobile, first / early (devices), modern, next, general, fundamental, embedded, dual, immediate, big, special, individual, numerical, tall, broad, up- to-date, pocket (device).

Between, too, across, which, initially, carefully, mostly, while.

B. Find in the texts studied words with opposite meaning to the words given below.

To prohibit, to send, to worsen, to close, to lose, to subtract, to reduce, to remove, to finish, to appear, to stand, to output.

Stationary, different, corded, private, narrow, low-end, short, light, old, low, civil, unlike, individual, large, complex, peaceful, expensive, compatible, difficult.

Few, seldom, fully.

СПИСОК ИСПОЛЬЗУЕМОЙ ЛИТЕРАТУРЫ

1. Английские научно-технические тексты по автоматике, вычислительной технике и электронике / сост. И.М. Гуськова, И.А. Пипко и др. М.: Изд. АН СССР, 1989.
2. Бжиская Ю.В., Краснова Е.В. Английский язык. Информационные системы и технологии. Ростов н/Д.: Феникс, 2008.
3. Зайцева Л.П., Бух М.А. Микроэлектроника: настоящее и будущее: учебное пособие. М.: Высш. шк., 1998.
4. Когаловский М.Р. Перспективные технологии информационных систем. М.: ДМК Пресс: Компания АйТи, 2003.
5. Милютин Э.А., Шитов Ю.И. Английский язык для программистов. Тексты и упражнения. М.: Память, 1994.
6. Письменный А.А. Англо-русский словарь по персональным компьютерам и информатике: в 2 т. Ростов н/Д: Книга, 2002.
7. Радовель В.А. Английский язык для технических вузов: учебное пособие. М.: Издательско-торговая корпорация «Дашков и К0», 2010.
8. Радовель В.А. Элективный курс английского языка «Основы информатики»: учебно-методическое пособие для учащихся X—XI классов средней школы. Ростов н/Д.: Феникс, 2004.
9. Фёдорова Г.Н. Информационные системы. Информатика и вычислительная техника. М.: Академия, 2011.
10. Brown P., Mullen N. English for Computer Science. Oxford University Press, 1987.
11. Gore M.R., Stubbe J.W. Computers and Information Systems. 2nd ed. N.Y; L; Paris ; Tokyo, 1994.
12. Hill D. Vocational English Level 2 (Pre-intermediate) English for IT Coursebook. Longman, 2012.
13. Olejniczak M. Vocational English Level 1 (Elementary) English for IT Coursebook. Longman, 2011.
14. Que's Computer and Internet Dictionary. 6th ed. Bryan Phaffenger and David Wall, 1996.
15. Webster's New World Dictionary, Third College Edition / ed. V. Neuftlot, D.B. Guralnic. N.Y., 1988.
16. Davis W.S., David C.Y. The Information System Consultant's Handbook. Systems Analysis and Design — CRC Press, 1998.

ТЕРМИНОЛОГИЧЕСКИЙ СЛОВАРЬ

А

- abacus — счеты
ability — способность, возможность
abolish — отменять, исключать
absence — отсутствие
accelerate — ускорять(ся)
accept — принимать, допускать
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
accountant — бухгалтер
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
acquisition — приобретение, получение
act — действовать, работать
action — действие, работа, операция
 put into ~ — приводить в действие
activity — деятельность
adapt — адаптировать(ся); настраиваться; приспособливаться)
adapter — адаптер
add — сложение, суммирование; складывать
added — добавочный, дополнительный
adder — сумматор, устройство (блок) суммирования
addition — сложение, суммирование
 in ~ to — в дополнение к; помимо
additional — дополнительный
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); продвижение, успех, прогресс
 in ~ — заранее
 advanced — улучшенный; усовершенствованный; (более) эффективный
 advancement — продвижение; улучшение; усовершенствование
 advantage — преимущество; выгода
 take ~ of smth. — воспользоваться чем-л.
 advent — приход, прибытие
 advice — совет; рекомендация
 advise — советовать; рекомендовать; консультировать
 adviser — консультант; справочник
 affect — влиять; воздействовать
 agree — соответствовать; согласовывать(ся)
 agreement — соглашение
 aid — помощь; содействие
 aids — средства; приспособления
 aim — цель; нацеливать, направлять
 alarm clock — будильник
 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
 almost — почти; едва не
 also — тоже; также; к тому же
 alter — (из)менять(ся)
 alteration — изменение; перемена
 although — хотя; если бы даже; несмотря на то что
 altogether — вполне; в общем; в целом; всего
 amalgamation — смешение, слияние
 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
 database ~ — подход, использованный на использовании базы данных
 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
 approximate — приблизительный; приближенный
 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
 argue — спорить; доказывать
 arrange — размещать; располагать; устанавливать; монтировать
 ~ icons — выстроить значки
 arrangement — размещение; расположение; упорядочение; устройство
 array — матрица; решетка; массив; упорядочивать, размещать в массиве
 arrive — прибывать; поступать; достигать
 assemble — собирать; объединять; монтировать; асSEMBЛИРОВАТЬ
 assembler — ассемблер
 assembly — сборка; монтаж; узел; блок; совокупность; система
 assign — назначать; получать
 assist — помогать; содействовать; поддерживать
 assistance — поддержка; помощь
 associate — соединять; объединять; связывать
 associated — (при)соединенный; объединенный; связанный; соответствующий
 ~ documentation — соответствующая документация
 association — объединение; взаимосвязь; совокупность
 assume — допускать; предполагать
 assumption — предположение; допущение
 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

В

background — фон; предпосылка, основа; подготовка; квалификация; навыки (работы)
bar — стержень; полоса; строка
barely — едва; лишь; только
base — база; основа; основание;
 data ~ — база данных
 information ~ — совокупность информации
 knowledge ~ — база знаний
 user ~ — круг пользователей
based — основанный
basics — основы
batch — пакет; пакетный файл
 ~ processing — пакетная обработка
bay — панель
because — потому что; так как
 ~of — из-за; вследствие
before — перед; перед тем как
between — между
beyond — вне; сверх; выше; за
beneficial — благоприятный; полезный
benefit — выгода; польза; преимущество; помогать; способствовать
bias — смещать; смещение
binary — двоичный
 ~ coded — в двоичном представлении
bit — бит; двоичный разряд
blog — блог, виртуальный дневник
blur — пятно; размытое изображение; расплываться (об изображении)
board — панель; пульт; плата
 chip ~ — плата с микросхемами
 circuit ~ — монтажная плата
 key ~ — клавиатура
 switch ~ — панель переключения
bootstrapping — начальная загрузка
bore — скучное занятие; скучать
boring — скучный
brain — мозг; рассудок; ум
branch — ветвь; раздел; отделение; разветвляться; переходить
break — разрыв; прерывание; пауза; прерывать; нарушать (работу); отказывать (о программе)
 ~ into — внедряться, проникать (в систему)
 ~ down — разбивать(ся), разрушать(ся)
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
 browser — программа просмотра; окно просмотра
 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

С

cache — кэш; файл для хранения (данных); хранить; сохранять
 calculate — вычислять; рассчитывать; подсчитывать
 calculating device — вычислительное устройство
 calculation — вычисление; счет
 calculus — исчисление; математический анализ
 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)
 card — плата; карта; карточка
 expansion ~ — плата расширения
 sound ~ — звуковая плата
 cardfile — картотека

carrier — носитель; держатель; сеть передачи данных
 carry — нести; переносить
 ~ out — выполнять (команду)
 cartridge — кассета; картридж
 cathode-ray tube — электронно-лучевая трубка
 cause — заставлять; вынуждать; быть причиной; причина; основание
 cell — ячейка; элемент
 cellular — сотовый (о связи); сотовый телефон
 century — век, столетие
 Census Bureau — бюро переписи населения
 chain — цепь; цепочка; последовательность
 challenge — трудность; препятствие; представлять трудность
 change — изменение; замена; изменять(ся); сменять(ся)
 character — символ; знак; буква
 ~ tar — таблица символов
 charge — заряд; заряжать; обязанность; поручение
 be in ~ of — отвечать за; быть на попечении; управлять
 chart — диаграмма; график; схема; таблица; строить график; изображать
 bar ~ — столбиковая диаграмма
 dot ~ — точечная диаграмма
 line ~ — график
 pie ~ — круговая/секторная диаграмма
 cheap — дешевый; дешево
 check — контроль; проверка; проверять
 checkout — проверка; наладка; отладка
 chip — кристалл; микросхема
 choose — выбирать
 circuit — цепь; контур; электронная схема
 integrated ~ — интегральная схема
 circuitry — (электронные) схемы
 clear — чистый; стертый; удаленный; очищать; стирать; удалять
 code — код; система команд; кодировать; программировать
 coding — программирование
 column — столбец; колонка; графа
 collaboration — сотрудничество
 combine — сочетать; объединять
 commission — назначать; уполномочивать; давать заказ
 common — обычный; стандартный; типичный
 commonplace — общий
 communicate — сообщать(ся); связывать
 communication — связь; сообщение; взаимодействие
 community — сообщество; семейство; серия
 online ~ — сообщество сетевых пользователей
 comparative — сравнительный
 compare — сравнение; сравнивать; соотноситься
 comparer/comparator — компаратор; устройство сравнения
 comparison — сравнение
 compatibility — совместимость
 compatible — совместимый
 compiler — компилятор
 complete — полный; целый; завершённый; завершать; заканчивать

completely — полностью; целиком
 comprehensive — полный; исчерпывающий; всесторонний; универсальный; комплексный
 compressible — сжимаемый; уплотняемый
 computation — вычисление; расчет
 compute — вычислять; рассчитывать
 computer — компьютер; вычислительная машина
 ~ mail — электронная почта
 advanced ~ — современный компьютер
 all-purpose ~ — универсальный компьютер
 analog ~ — аналоговый компьютер
 digital ~ — цифровой компьютер
 desktop ~ — настольный компьютер
 embedded ~ — встроенный 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
 computer-literate — владеющий компьютерной грамотностью; имеющий навыки работы с компьютером
 concept — понятие; принцип; концепция
 concern — касаться; иметь отношение к; заботиться; касательство; отношение; дело, аспект
 concise — краткий; сжатый
 conclusion — вывод; заключение
 condition — условие; состояние; режим
 confine — ограничивать confirm — подтверждать
 confirmation — подтверждение
 delivery ~ — подтверждение приема
 connect — соединять; подключать; связывать
 connection — подключение; установление связи; соединение; схема
 connector — соединитель; соединительное звено
 consecutive — последовательный
 consider — рассматривать; учитывать; полагать, считать
 considerable — значительный; существенный
 considerably — значительно
 consideration — рассмотрение; учет; соображение;
 constantly — постоянно; часто; то и дело
 constitute — составлять; образовывать; представлять собой
 consume — потреблять; расходовать
 consumer — потребитель; абонент
 consumption — потребление; расход
 power ~ — расход энергии
 contain — содержать; вмещать; включать
 content — содержание; смысл; содержимое; вместимость; удовлетворять; довольствоваться
 continuously — постоянно; непрерывно
 contrast — контраст; противоположность
 as ~ed with — в отличие от
 in ~ — напротив; наоборот

contribute — содействовать; способствовать; вносить вклад
 contribution — вклад; содействие
 control — управление; регулирование; управлять; регулировать
 ~ panel — панель управления
 ~ unit — блок управления
 access ~ — управление доступом
 device ~ — управление устройством
 distance ~ — дистанционное управление
 error ~ — контроль за ошибками
 inventory ~ — инвентаризация; переучет
 convenience — удобство; пригодность
 convenient — удобный; пригодный
 convention — соглашение; правило; pl. условные обозначения
 conversion — преобразование
 convert — преобразовывать
 converter — преобразователь; конвертор
 convey — передавать; сообщать
 conveying — передача (информации)
 cooperation — сотрудничество; совместные действия
 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
 creation — создание; формирование
 current — электрический ток; поток; струя; текущий; находящийся в обращении
 alternating ~ — переменный ток
 direct ~ — постоянный ток
 curriculum — учебная программа
 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
 - 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
- make ~ — принимать 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
- meet the ~s — удовлетворять потребности
- dense — плотный; компактный
- density — плотность
- data ~ — плотность записи данных
 - drive ~ — плотность дисководов
 - packing ~ — плотность упаковки
 - storage ~ — плотность заполнения памяти
- depend — зависеть от (чего-л.)
- dependence — зависимость
- dependent — зависимый; зависящий
- depending — в зависимости (от)

deposit — помещать; размещать
 depository — склад; хранилище
 describe — описывать, изображать
 design — проектирование; конструирование; разработка; построение
 desktop — настольный
 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
 develop — развивать; разрабатывать; усовершенствовать; проявлять(ся)
 development — разработка; развитие; усовершенствование
 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 — умирать
 difficult — трудный; сложный
 difficulty — трудность; сложность; затруднение
 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 — в 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 — направление; 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 — разделяться; распадаться на составные части
 disk — диск
 ~ capacity — емкость диска
 blank ~ — пустой диск
 flexible ~ — гибкий диск
 floppy ~ — гибкий, флоппи-диск
 hard ~ — жесткий диск
 displace — перемещать; смещать
 display — дисплей; устройство (визуального) отображения
 distance — расстояние
 distinction — различие; отличие; распознавание
 distinguish — различать(ся); отличать(ся)
 distortion — искажение
 distribute — распределять; распространять
 distributed — распределенный; рассредоточенный; распространенный
 distribution — распределение; распространение
 distributor — распространитель; распределитель
 diversity — разнообразие; различие
 dot — точка; ставить точку
 doubt — сомнение
 download — загружать; считывать; считывание (файлов) с сервера
 dream — мечта, мечтать
 drive — привод; дисковод; запоминающее устройство
 CD ~ — дисковод для компактных дисков
 disk ~ — дисковод
 floppy ~ — дисковод для гибких дисков
 hard (-disk) ~ — дисковод для жестких дисков
 magnetic-tape ~ — запоминающее устройство на магнитной ленте
 driver — драйвер; двигатель
 print ~ — драйвер печати
 software ~ — программный драйвер
 drum — барабан (графопостроителя)
 due to — благодаря; из-за; вследствие
 dump — разгрузка; дамп; вывод; разгружать; сбрасывать; выводить

duplication — дублирование; копирование
duplicator — копировальное устройство

Е

each — каждый; всякий
with ~ other — друг с другом
easy — легкий; легко
ebb — отлив
edit — редактировать
editor — редактор; программа редактирования
effect — действовать; оказывать воздействие; влияние; эффект
efficiency — эффективность; коэффициент полезного действия
effort — усилия; работа
either — один/любой (из двух); каждый, любой; или
~ ... or — или ... или
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
embedded — встроенный; внедренный; находящийся внутри
embrace — охватывать; содержать
emerge — появляться; возникать
emergency — авария; чрезвычайная ситуация; аварийный
emit — испускать; излучать; выдавать; генерировать (данные)
emphasize — выделять; подчеркивать
employ — использовать, употреблять, применять
enable — разрешать; позволять; делать возможным; допускать
encapsulate — герметизировать; изолировать; помещать (в пакет)
encoder — шифратор; кодирующее устройство; шифровальщик
encompass — охватывать; заключать
engine — механизм; устройство
engineering — конструирование; проектирование; разработка; техника; технология
enough — достаточно; достаточное количество
enquiry — наводить справки; расспрашивать; исследовать
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
 ~ handling — обработка ошибок
 ~ trapping — ловушка для ошибок
 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
 error-free — не содержащий ошибок
 error-prone — подверженный ошибкам
 essence — суть; существо
 essential — существенный; значительный; неотъемлемый; необходимый
 establish — основывать; создавать; учреждать; устанавливать
 etch — гравировать, наносить
 event — событие; случай; исход
 eventually — в конечном счете; в конце концов; со временем
 evolve — развиваться; развертываться
 examination — исследование; рассмотрение; просмотр; проверка
 examine — исследовать; проверять
 example — пример
 for ~ — например
 exceed — превосходить; превышать
 except for — за исключением
 exchange — обмен; замена
 excite — возбуждать; активизировать
 excitement — возбуждение; активизация
 execute — выполнять; исполнять
 execution — выполнение; исполнение
 executive — диспетчер; управляющая программа; операционная система
 exhibition — показ; демонстрация; проявление (свойств); выставка

exit — выход; выходить
expand — расширять(ся); увеличивать; наращивать (возможности)
expansion — расширение; увеличение
experience — опыт; квалификация; испытывать (трудности)
exponentiation — возводить в степень
express — выражать; срочный; быстрый
expression — выражение; представление
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
fail — сбой; отказ; повреждение; выходить из строя; отказывать; не удаваться
failure — отказ; повреждение; дефект; сбой; ошибка; неудача
fall — падать; снижаться; падение; спад
fast — быстрый, скорый
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
 ~ film — художественный фильм
feed — подавать; питать; заправлять (бумагу); вводить (данные)
feedback — обратная связь
feel (felt) — чувствовать
field — поле; область; зона; сфера (деятельности)
figure — цифра; число; вычислять
figure out — вычислять; определять; понимать; постигать
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
finger — палец
firmware — встроенное программное обеспечение
flexibility — гибкость; адаптируемость; настраиваемость; изменимость
flexible — гибкий; адаптируемый; настраиваемый; изменяемый
flip — переключать(ся)
flip-flop — триггер
flipping — переключение; изменение состояния
floppy — гибкий диск; дискета
flow — поток; ход выполнения (программы); последовательность; проходить
flowcharting — построение блок-схемы
follow — следовать за; следовать, вытекать; следить, отслеживать
follower — последователь
following — следование; отслеживание; слежение
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)
foster — воспитывать; поощрять; благоприятствовать
fraction — дробь; доля; часть
frame — блок (данных); структура; система; корпус
framework — структура; система; схема; основа; основания; принципы
fraud — мошенничество; обман
free — свободный; освобождать
frequency — частота
fulfill — выполнять; осуществлять; завершать
fulfillment — выполнение; осуществление; завершение
fundamental — основной; существенный; фундаментальный
furnish — поставлять; снабжать
further — далее, дальше; более удаленный; последующий

G

gadget — приспособление; вспомогательное устройство
gain — достигать; извлекать пользу; выигрывать; выгода; усиление
gather — собирать(ся)
general — общий; универсальный
generate — генерировать; создавать; производить
generation — создание; формирование; образование; поколение
gifted — одаренный; способный; талантливый
give back — возвращать
give out — выдавать; предоставлять
give up — отказывать (об устройстве); не справляться; отказываться
glimpse — взгляд; проблеск; мимолетное впечатление
go missing — выйти из строя; сломаться
go on — продолжать
grade — степень; ранг; класс; сорт; упорядочивать; размещать по рангу
grading — классификация; упорядочивание; выравнивание

grapher — самописец graphic(al) — графический
~ plotting tables — графические планшеты
graphics — графика
gray-scale — шкала полутонов; полутоновый (об изображении)
groundwork — основа; основание
grow — расти; возрастая; увеличиваться; расширяться
growth — рост; возрастание; увеличение; расширение
guard — защита; защищать; предохранять
guidance — управление; наведение (на цель); руководство
guide — руководство; инструкция; справочник
installation ~ — инструкция по установке (системы)
online ~ — электронный справочник
programming ~ — руководство по программированию
reference ~ — справочное руководство
software ~ — руководство по программному обеспечению
troubleshooting ~ — основные принципы поиска неисправностей
user's ~ — руководство для пользователя

Н

habit — навык; привычка; свойство
computing ~s — навыки работы с компьютером
half — половина
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 ~ — вспомогательное аппаратное обеспечение
harm — вред; ущерб; повреждение
harmful — вредный
harmless — безвредный (о вирусе)
heading — заголовок
healthy — исправный; работоспособный (о системе); незапорченный
heat — теплота; нагревать
~ capacity — теплоемкость
specific ~ — удельная теплоемкость
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)
 ~ out — предлагать, выдерживать
hole — отверстие; гнездо; окно
 access ~ — окно доступа
 connector ~ — гнездо разъема
home — начало; исходная позиция
hook — рычаг
hook-up — подключать; подсоединять (устройство)
household — домашнее хозяйство
human-oriented — ориентированный на пользователя
hurt — повреждение; вред; ущерб; повреждать; вредить
hypertext — гипертекст

I

icon — условный символ; пиктограмма; изображать условно
identifier — идентификатор; имя; обозначение
identify — идентифицировать; распознавать; выявлять (ошибку)
ignorance — незнание
ignorant — несведущий; незнающий
image — изображение; образ; копия; формат
 D (dimension) ~ — двухмерное изображение
 D (dimension) ~ — трехмерное изображение
imagine — воображать; представлять
imbed — встраивать; внедрять; включать
immunity — невосприимчивость; нечувствительность
impartial — беспристрастный; справедливый; непредвзятый
implement — выполнять; осуществлять
implementation — реализация; осуществление; разработка; внедрение
implementor — конструктор; разработчик
implication — вовлечение; смысл; значение; (по)следствие; влияние
importance — важность; значимость (результата)
important — важный; значительный
impossible — невозможный; невероятный
imprint — впечатывание; отпечаток; штамп; впечатывать
improper — непригодный; недопустимый; неправильный; неподходящий
improve — улучшать; уточнять (данные)
improvement — улучшение; усовершенствование; уточнение (данных)
inaccurate — неточный; ошибочный
inadequate — несоответствующий; непригодный; неприемлемый
incapable — неспособный
inch — дюйм
include — включать; содержать
incompatible — несовместимый
inconsiderable — незначительный
incorporate — включать; содержать; встраивать; внедрять
increase — увеличивать; возрастать; увеличение; повышение

independent — независимый
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
insert — вставлять; вносить; включать
inside — внутри; в пределах (чего-л.); внутренняя часть
install — устанавливать; монтировать
installation — установка; размещение; монтаж; вставка; настройка
instant — мгновенный; немедленный
instantaneously — мгновенно; немедленно
instead — вместо; взамен
interconnection — внутреннее соединение; взаимосвязь
interface — интерфейс; сопряжение; место стыковки; сопрягать(ся)
 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
intermediate — промежуточный; средний; вспомогательный
internal — внутренний
interpret — интерпретировать; истолковывать
interpreter — интерпретатор; переводчик
interrupt — прерывание; прерываться
intricate — сложный; запутанный
introduce — вводить; вставлять; представлять
invade — вторгаться; проникать
invalid — неверный; недопустимый; недействительный; необоснованный
invalidate — аннулировать; отменять
invalidity — неверность; недопустимость; необоснованность
invasion — вторжение; проникновение
invent — изобретать; делать открытие; придумывать

invention — изобретение
inversion — инверсия; обратное преобразование; перестановка
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; замятие (бумаги)
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 останова (паузы)
reset ~ — кнопка сброса
shift ~ — клавиша переключения регистров
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 — язык
 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
 modeling/simulation ~ — язык моделирования
 programming/development ~ — язык программирования
 lap — пола, фалда; подол; колени
 laptop — наколенный компьютер
 last — последний; длиться, продолжаться
 launch — запускать (программу); вводить в действие
 layer — слой; уровень layout — размещение; распределение
 lead [led] — свинец
 learn online — 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
 life — жизнь; срок службы
 light — легкий
 like — подобно; похожий
 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
 load — загружать; заправлять (ленту)
 loading — загрузка; заправка
 locate — размещать; располагать
 location — местоположение; позиция
 lock — затор; шлюз; плотина
 logic — логика; логическая последовательность; логический блок
 processing ~ — логическая последовательность обработки

program ~ — логическая последовательность выполнения программы
look for — искать
loom — ткацкий станок
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
lower — понижать; уменьшать
 ~ manufacturing — снижение производительности

М

magnetize — намагничивать
mail — (электронная) почта
main — главный; основной
mainframe — большая ЭВМ
mains — сеть электропитания
maintain — поддерживать; сохранять; эксплуатировать
maintenance — эксплуатация; техническое обслуживание
major — главный, основной
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
manifestation — проявление
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 — изготавливать; производить; разрабатывать
manufacturer — изготовитель; производитель; разработчик
mark — признак; метка; знак; помечать; обозначать; выделять
marvel — чудо, диво; замечательная вещь
match — сопоставлять; сравнивать; согласовывать; соответствовать
mathematician — математик
mean — значить; подразумевать
meaning — значение; смысл
means — средства; способ
 by ~ of — с помощью; посредством
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
meter — измерительный прибор; датчик; счетчик
metering — измерение
microwave oven — микроволновая печь
miss — промахнуться; упустить; пропустить
mistake — ошибка; ошибаться
mobile — переносной; портативный; подвижный; мобильный
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
monitor — монитор; дисплей; наблюдать; контролировать; следить
monitoring — мониторинг; наблюдение; контроль
mostly — главным образом; большей частью; преимущественно
motherboard — материнская плата
mouse — мышь
movable — перемещаемый; подвижный; съемный
move — двигать; перемещать; передвигать; переходить; перенос; переход
movement — движение; перемещение
multimedia — мультимедийные средства; мультимедийный
multiplayer — для нескольких игроков, коллективный
multiple — множественный; многокомпонентный; составной
multiplication — умножение; усиление
multiply — умножать; усиливать; увеличивать
mutual — взаимный; общий; совместный

N

namely — а именно; то есть
nearly — почти; приблизительно; близко
necessary — необходимый; нужный; нужно
need — потребность; необходимость; требовать(ся); быть необходимым
network — сеть; схема; контур

~ drive — сетевой накопитель
never — никогда
noisy — шумный; с помехами
noncomparable — несравнимый
noncompatible — несовместимый
noncomputable — невычисляемый
noncontrollable — неуправляемый
notation — запись; представление; обозначение
 binary ~ — двоичная система
notebook — блокнотный компьютер; ноутбук
notepad — блокнот
number — число; количество; цифра
numeric(al) — числовой; цифровой
numerous — многочисленный

О

objective — цель; целевая функция; требование
observation — наблюдение; отслеживание
observe — наблюдать; следить; соблюдать (правила)
obtain — получать; достигать
occur — происходить; случаться
on-board — расположенный на плате; встроенный; бортовой
ongoing — продолжающийся; постоянный; непрерывный
online — 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
opinion — мнение opportunity — возможность
option — выбор; вариант; средство; возможность
optionally — необязательно; по усмотрению; при желании
order — команда; порядок; последовательность; приводить в порядок; приказывать
 ~ of execution — последовательность выполнения
 ~ of use — очередность использования
 put in ~ — приводить в порядок
other — другой; иной; остальные
outlet — выход; вывод; розетка
 network ~ — сетевой вывод
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
outside — внешний; наружная сторона; снаружи; вне; за пределами
over — над; сверх; через; чрезмерный; верхний
over and over — снова и снова; много раз
overlap — перекрывать(ся); накладывать(ся); совмещаться

Р

package — пакет; блок; модуль
application ~ — прикладной пакет
data ~ — пакет данных
packaged software — готовое программное обеспечение
partial — частичный; неполный; частный (о значении)
particularly — очень; в особенности; особенно; подробно
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
permitted — допустимый
pervade — распространять; охватывать
phenomenon (pl. phenomena) — явление
photocell — фотоэлемент
piece — кусочек; кристалл
pick — выбирать; извлекать
plotter — графопостроитель
plug — штепсель; вилка; штекер; подключать; подсоединять
point — точка; место; узел; суть; указывать; отмечать
~ out — указывать; отмечать
in ~ of — в отношении (чего-л.)
pointer — указатель; стрелка
pointing — указание (положения); задание координат; указывающий
~ device — устройство управления курсором
~ stick — ручка управления курсором
possibility — возможность; вероятность
possible — возможный; вероятный
poster — объявление; плакат; афиша
potent — могущественный; мощный; убедительный
power — мощность; энергия; питание; снабжать энергией

~ saving — энергосберегающий
 ~ supply — источник питания
 predefined symbols — заранее заданные символы
 predicate — утверждать; основываться
 predict — предсказывать; прогнозировать
 predominant — преобладающий
 predominate — преобладать; доминировать
 prepare — подготавливать; составлять
 pressure — давление
 prevent — предотвращать; предохранять; препятствовать
 prevention — предотвращение; предупреждение
 previously — заранее; предварительно
 primary — первичный; исходный; основной; главный
 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
 proceed — продолжать(ся); возобновлять; действовать
 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
 offline ~ — несетевая программа
 online ~ — 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
 proliferation — быстрое увеличение; разрастание; распространение
 prompt — подсказка; запрос
 proof-read — считывать с целью проверки (правильности записи)
 proof-reader — корректор
 properly — правильно; как следует
 property — свойство; качество; pl. параметры; характеристики
 propose — предлагать; предполагать
 proposition — предложение; утверждение
 proprietary — особый; особенный; нестандартный; (за)патентованный
 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
 purpose — цель; (пред)назначение
 push — нажимать; толкать
 push-button — кнопка

Q

qualitative — качественный
quality — качество; свойство; характеристика
 image ~ — качество изображения
 running ~ — рабочая характеристика
quantitative — количественный
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
rapid — быстрый
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
reception — прием; получение
recharge — перезарядка; перезаряжать
recognition — распознавание; идентификация
record — запись; регистрация; записывать; регистрировать
recorder — устройство/программа регистрации; самописец
 data ~ — устройство регистрации данных
 tape ~ — запись на (магнитную) ленту
rectangular — прямоугольный
reduce — уменьшать; сокращать; понижать; сжимать
reduction — уменьшение; сокращение; понижение; сжатие (данных)
reel — катушка; бобина

refer — ссылаться; относить (к чему-л.)
 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
 related — смежный; взаимный; относящийся (к чему-л.)
 relation — отношение; соотношение; зависимость; связь
 relationship — зависимость; связь; соответствие
 relative — относительный relatively — относительно
 relay — реле; (ре)трансляция; передавать; транслировать
 reliability — надежность
 reliable — надежный
 reload — перезагружать; повторная загрузка
 rely — основывать(ся); полагать(ся)
 remain — оставаться
 remaining — остальной; оставшийся; остающийся
 remarkable — замечательный; удивительный; выдающийся
 remember — помнить
 remote — дистанционный
 ~ control program — программа дистанционного управления
 ~ management — дистанционное управление
 remove — удалять; устранять; убирать;
 rename — переименовывать
 repair — исправлять; устранять (дефект); восстанавливать (данные)
 replace — заменять; замещать
 replacement — замена; замещение; смена; подстановка
 represent — представлять
 representation — представление
 pictorial/picture ~ — графическое представление
 representative — представитель
 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

restate — пересматривать; переосмысливать

restore — восстанавливать; возвращать (в прежнее состояние)

restrict — ограничивать

retain — сохранять; удерживать

retrieve — отыскивать; извлекать, выбирать (данные); восстанавливать (файл)

retry — выполнять повторно; повторять

return — возврат; обратный ход; возвращать(ся)

reusable — многократно используемый

reuse — повторно использовать; многократное использование

reverse — возвращать; двигать в обратном направлении; перематывать назад; обратный ход

reversibility — обратимость; возможность изменить направление на противоположное

reversible — обратимый; реверсивный

reversion — возвращение; возврат

revise — исправлять; изменять; переосмысливать

revision — пересмотр; корректировка; изменение

ribbon — лента

right — право; полномочие; правый; правильный
~ away — немедленно; сразу же
~ now — в данный момент

rise — рост; увеличение; повышаться; увеличиваться

roller — ролик; валик

rope — веревка; трос

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

sale — продажа, сбыт
 same — тот (же) самый
 all the ~ — все-таки; тем не менее; все равно
 save — сохранять; сберегать
 satellite — спутник
 scale — шкала; масштаб
 scaling — масштабирование
 scan — просмотр; сканирование; развертка; просматривать
 scanner — сканер; устройство оптического считывания
 bar-code ~ — устройство считывания штрихкода
 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
 security — безопасность; сохранность
 seek — искать; поиск
 select — выбирать; выделять (на экране)
 selection — выбор; выделение
 color ~ — выбор цвета
 directory ~ — выбор каталога
 drive ~ — выбор дисковод/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
in ~ — последовательно; по порядку
increasing ~ — возрастающая последовательность
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
networking ~ — сетевое обслуживание
reference ~ — информационное программное средство
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
setting — установка; режим; настройка
power ~s — параметры (режима) энергопотребления
shape — форма; придавать форму
share — совместно использовать; делиться (информацией); часть; доля
sharing — совместное использование; коллективный доступ; разделение
sharpen — заострять; повышать резкость (изображения)
shift — сдвигать; перемещать; сдвиг; смещение; смена регистра
shortcoming — недостаток; изъян; дефект
sign — знак; символ
significance — значимость; важность; значительность; значение; смысл
significant — важный; значительный
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
simultaneously — одновременно; параллельно
since — с; с тех пор (как); так как
single — один; единственный; отдельный; однократный
size — размер
skin — кожа; оболочка; наружный слой

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
 slow — медленный, тихий, неторопливый
 small-dimensioned — малогабаритный
 society — общество
 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
 solar — солнечный
 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
 ~ vehicle — космический летательный аппарат
 spaceship — космический корабль
 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
 spend — проводить; тратить
 spray — распылять; разбрызгивать
 spread — разброс (значений); протяженность; продолжительность
 ~ out — расширять(ся); распространять(ся)
 network ~ — протяженность сети
 spring — пружина; рессора; прыгать; появляться
 stand for — обозначать
 stand-alone — автономный
 start — запуск; начало; запускать
 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
 ~ down — понижать, уменьшать
 ~ out — выходить (из окна, цикла)
 ~ up — повышать; увеличивать
 conversion ~ — этап преобразования данных
 one ~ at a time — поэтапно; постепенно
 program ~ — шаг программы
 programming ~ — этап программирования
 step by step — пошаговый; поэтапный
 still — все еще; по-прежнему; тем не менее
 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)
 offline ~ — автономное запоминающее устройство; автономное хранение
 online ~ — оперативно доступная память; неавтономное хранение
 sequential-access ~ — запоминающее устройство с последовательным доступом
 variable ~ — память для хранения переменных
 store — хранить; запоминать; заносить в память / размещать в памяти
 string — строка; последовательность
 ~ of characters — последовательность символов
 subscribe — подписываться (на услуги компьютерной сети)
 subscriber — подписчик; абонент
 subsequent — последующий; дальнейший
 subsequently — в дальнейшем; затем; впоследствии
 substitute — заменять; замещать
 substitution — замена; подстановка
 subtract — вычитать
 subtraction — вычитание
 success — успех
 successful — успешный
 succession — последовательность
 successively — последовательно
 successor — следующий член (последовательности); очередная версия; последователь
 such as — такой как

suddenly — вдруг, внезапно
 suggested — предлагаемый; рекомендуемый
 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
 technical ~ — служба технической поддержки; служба консультаций
 surround — окружать
 surrounding — окружающий, соседний; окружение; среда
 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
 swivel — поворачивать(ся); поворот
 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

Т

table — таблица
 tabulate — табулировать; заносить в таблицу
 tabulation — занесение в таблицу
 tag — метка; ярлык; этикетка; наклейка; признак
 take — брать; выбирать (команду); принимать (вид, значение)
 ~ advantage of — воспользоваться
 ~ care — принимать меры; проследить
 ~ into account/consideration — учитывать; принимать во внимание

~ notes — записывать; регистрировать
 ~ part — принимать участие
 ~ place — происходить; состояться
 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 расчетов
 programming ~ — методика программирования
 software ~ — метод программного решения
 technology — технология; техника; методика; методы; способы
 communications ~ — технология организации связи
 template — шаблон; маска; образец; форма
 temporarily — временно
 terminal — терминал; зажим; вывод; конец
 ~ adapter — терминальный адаптер
 ~ mode — терминальный режим
 alphanumeric ~ — текстовый терминал
 character ~ — текстовый терминал
 point-of-sale ~ — кассовый терминал
 remote ~ — удаленный терминал
 security ~ — защищенный терминал
 therefore — следовательно; поэтому
 thorough — тщательный; подробный
 thoroughly — тщательно; как следует
 through — через; сквозь; в течение; по причине
 throughout — повсюду; во всех отношениях
 tide — прилив; поток; течение
 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
 tough — жесткий; плотный; крепкий; сильный; выносливый
 tracing — слежение; поиск; выявление; определение; трассировка
 fault ~ — поиск неисправностей
 track — след; траектория; путь; следовать; прокладывать путь
 trackball — трекбол
 traffic — движение; транспорт
 ~ light — светофор
 transaction — транзакция; группа операций
 transfer — передача; пересылка; переход; передавать; пересыпать; 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
 trigger — пусковая кнопка
 trouble — неисправность; pl. нарушения; неполадки; трудности; затруднения
 troubleshoot — искать неисправности; диагностировать; отыскивать ошибки
 tube — (электронно-лучевая) трубка
 vacuum ~ — электронная лампа
 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
 tweet — щебетать; чирикать
 twitter — щебет; чириканье
 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
 unbelievable — невероятный; неправдоподобный
 unchanged — неизменный; неизмененный
 uncontrollable — неуправляемый; нерегулируемый; неконтролируемый
 underline — подчеркивать
 understand — понимать; подразумевать
 undertake — предпринимать
 undo — отменять; отмена
 unexpected — неожиданный; непредвиденный; внезапный unfavorable — неблагоприятный
 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 - — исчислительное 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
universe — Вселенная; космос
unless — если не
unload — выгружать; удалять из памяти
unplug — вынимать (разъем из гнезда); отсоединять; отключать
unplugging — отсоединение; отключение
unsuitable — неподходящий; непригодный
until — пока; до тех пор как
up-to-date — современный
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
~to — привыкать, иметь обыкновение
useful — полезный; пригодный
useless — бесполезный
user — пользователь; абонент
advanced/expert - — квалифицированный пользователь
utility — полезность; пригодность; (сервисная) программа; вспомогательное средство
up-to-date — самая 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
various — различный; разнообразный; разный
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
versus — по сравнению с; в сопоставлении с; в противоположность (чему-л.)
view — вид; представление; просмотр; просматривать
viewpoint — точка зрения
viewport — окно просмотра/вывода
virtual — виртуальный; нереальный; несуществующий
vocal cords — голосовые связки
voice — голос
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; требовать(ся)
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
weave — ткать, плести
web — (информационная) сеть
~ site — сайт Всемирной информационной сети
information ~ — информационная сеть (сайтов на серверах сети Интернет)
World-Wide ~ — Всемирная информационная сеть
weight — вес
well — хорошо
as ~ as — а также
whereas — тогда как; принимая во внимание; поскольку
wherever — где бы ни; куда бы ни
why — почему; на каком основании
wide area network — глобальная сеть
width — ширина; разрядность (шины, памяти)
win — победить; выиграть
withdraw — удалять; убирать; вынимать
withdrawal — удаление; выемка; изъятие
witness — свидетель; очевидец; доказательство; свидетельство; быть свидетелем чего-л.; обращать особое внимание
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); урожай
crop ~ — урожай зерновых

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

СОДЕРЖАНИЕ		Стр.
ВВЕДЕНИЕ		3
Unit 1. EDUCATION IN MODERN SOCIETY. HIGHER EDUCATION		4
Unit 2. INFORMATION-DEPENDENT SOCIETY		8
Unit 3. DEVELOPMENT OF MICROELECTRONICS		12
Unit 4. DATA PROCESSING CONCEPTS		16
Unit 5. COMPUTER SYSTEMS: AN OVERVIEW		20
Unit 6. FUNCTIONAL ORGANIZATION OF THE COMPUTER		24
Unit 7. STORAGE		27
Unit 8. CENTRAL PROCESSING UNIT		33
Unit 9. INPUT-OUTPUT UNITS		38
Unit 10. PERSONAL COMPUTERS		45
Unit 11. COMPUTER PROGRAMMING		51
Unit 12. MODERN PORTABLE COMPUTERS		56
Unit 13. MOBILE PHONES		63
СПИСОК ИСПОЛЬЗУЕМОЙ ЛИТЕРАТУРЫ		69
ТЕРМИНОЛОГИЧЕСКИЙ СЛОВАРЬ		70

Учебное издание

Медведева Светлана Александровна

Голуб Лариса Николаевна

«АНГЛИЙСКИЙ ЯЗЫК ДЛЯ СТУДЕНТОВ
НАПРАВЛЕНИЯ ПОДГОТОВКИ
09.04.03 ПРИКЛАДНАЯ ИНФОРМАТИКА
(УРОВЕНЬ МАГИСТРАТУРЫ)»

Учебное пособие предназначено
для аудиторной и самостоятельной работы

Редактор Павлютина И.П.

Подписано к печати 4.04. 2018 года. Формат 60x84 1 /16.
Бумага офсетная. Усл. п. л. 6,39. Тираж 100 экз. Изд. 5684.

Издательство Брянского государственного аграрного университета
243365 Брянская обл., Выгоничский район, с. Кокино, Брянский ГАУ