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**МЕТОДИЧНІ ВКАЗІВКИ
З АНГЛІЙСЬКОЇ МОВИ ДЛЯ СТУДЕНТІВ 2-ГО КУРСУ
НАПРЯМУ ПІДГОТОВКИ 6.030502
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Методичні вказівки з англійської мови для студентів 2-го курсу напряму підготовки 6.030502 «Економічна кібернетика» (денної та заочної форми навчання). Частина I / укладачі: Т. А. Мараховська, М. В. Борисова. – Електрон. дані. – Горлівка: ДВНЗ «ДонНТУ» АДІ, 2012. – 1 електрон. опт. диск (CD-R); 12 см. – Систем. вимоги: Pentium; 32 MB RAM; WINDOWS 98/2000/NT/XP; MS Word 2000. – Назва з титул. екрану.

Методичні вказівки складаються з 7 тем. Подаються тематично підібрані тексти та система мовних вправ англійською мовою. Вказівки сприяють розвитку непідготовленої мови за допомогою серії комунікативних вправ та розвитку мовних навичок.

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ПЕРЕДМОВА

Методичний посібник призначено для студентів 2 курсу спеціальності «Економічна кібернетика» денної та заочної форм навчання.

Мета вказівок – розвиток комунікативних вмінь та навичок різних видів мовленнєвої діяльності, а також навичок анотування та реферування літератури за спеціальністю.

Усім текстам, що вміщені в методичному посібнику, передують передтекстові вправи, що спрямовані на запам'ятовування складних для вимови слів, розрізнення значень інтернаціональних та багатозначних слів і термінів; після кожного тексту подається велика кількість вправ на вдосконалення володіння термінологічною лексикою студентами: розрізнення синонімів, антонімів, переклад слів, словосполучень та речень іноземною та українською мовами тощо.

Тематика текстів, комунікативна спрямованість вправ сприяють активізації учбової діяльності студентів та досягненню цілей навчання іноземній мові в технічному вузі.

При відборі текстів автори прагнули того, щоб кожний текст мав загальнонауковий характер (був зрозумілий і корисний студентам) та був насичений лексикою, що пов'язана з науковою роботою. Активний лексичний і граматичний мінімум визначається темами вказівок.

UNIT 1 COMPUTERS AROUND US

PRE-TEXT EXERCISES

I. Memorize the pronunciation of the following words:

1. Remarkable	визначний.
2. Arithmetic	арифметичний.
3. Addition	додавання.
4. Subtraction	віднімання.
5. Division	ділення.
6. Multiplication	множення.
7. Exponentiation	уведення до ступеня.
8. Circuit	схема, ланцюг.
9. Facility	засіб обслуговування, можливість.
10. Stove	пічка.
11. Automatic appliances	автоматичні пристрої.
12. Financial	фінансовий.
13. Insurance	страхування.
14. Via	за допомогою.
15. Retrieval	пошуковий.
16. To query	робити запит.
17. Appropriate	слухний.
18. Facsimiles	факс.

II. Read international words and give their Ukrainian equivalents:

arithmetic, computer, problem, logical, transportation, horizontal, automation, program, climate, control, electronics, system traditional, complex, instruction, information.

III. While translating the text keep in mind the different meanings of the word “*smart*”, be ready to make your own sentences with them:

<i>Іменник</i> –	1) жагучий, сильний біль; 2) горе, нещастя, страждання; 3) витонченість; вишуканість; елегантність; зграбність; 4) розум; проникливість, кмітливість, вміння.
<i>Прикметник</i> –	1) сильний, різкий, інтенсивний, гострий (про біль); 2) живий, енергичний, швидкий, хитрий; 3) акуратний; підтягнутий, модний, елегантний; 4) значний, доволі великий; 5) з програмним управлінням (про прилад).
<i>Прислівник</i> –	1) витончено; 2) швидко.
<i>Дієслово</i> –	1) відчувати жагучий біль, хворіти; 2) страждати, сумувати, завдавати страждання.

IV. Word-combinations to remember:

1. To become tired or bored – втомитися або засумувати.
2. Word processing – послівна обробка, обробка текстів.
3. Data processing – обробка даних.
4. Data banks – банк даних, інформаційний банк, сховище даних.
5. To experience the speed and efficiency of automation – відчувати на собі швидкість та ефективність автоматизації.
6. Filling systems – системи заповнення даних.
7. Intelligent terminal – інтелектуальний термінал, термінал із розвиненою логікою.
8. Remote terminal – дистанційний термінал.
9. Central processor – центральний процесор.
10. Mass storage systems – запам'ятовуючі пристрої великої ємності.

COMPUTERS AROUND US

Computers are thought to have many remarkable powers. Computers have circuits for performing arithmetic operations, such as addition, subtraction, division, multiplication and exponentiation. Computers have means of communicating within the user. Computers have circuits, which can make decisions. Computers can solve a series of problems and make hundreds, even thousands, of logical decisions without becoming tired or bored. It can find the solution to almost any problem. Computers take over more and more operations in transportation facilities such as airports, under and above-ground railways and seaports. Sky buses, horizontal elevators and computerized ticket and baggage service will be familiar sights in future complexes. The home also can display the effects of automation, with programmable stoves, automatic appliances and climate-control systems. Word processing is another field that experiences the speed and efficiency of automation.

Newspapers now have or are planning to have electronic editing systems. Office functions incorporate a variety of uncomplicated electronics. Videodiscs, remote terminals, mass storage systems and «smart» type-writers help office worker.

Special data banks begin to replace traditional filling systems; financial institutions, insurance companies, social service agencies continue to trend toward gathering and assimilating information via real time storage and retrieval systems.

Remote intelligent terminals, part of today's distributive networks, will give individuals at distant locations the ability to solve more complex problems without having to query a busy central processor. Many such links are available today and more and more people will be using them.

Though the computer has all these remarkable powers it should be remembered that it has no originality; it works according to the instructions given to it, a computer cannot do anything unless a person tells it what to do and gives it the appropriate information.

TEXT-BASED ASSIGNMENTS

I. Try to identify the part of speech of the following words according to the word-building elements:

replace, variety, traditional, user, insurance, retrieval, storage, ability, originality, available.

II. Find the correct word:

1. Рішення – a) decision; b) assimilation; c) location; d) operation
2. Знаходити – a) to distribute; b) to solve; c) to display; d) to find
3. Пам'ятати – a) to find; b) to remember; c) to decide; d) to communicate.
4. Виконувати – a) to plan; b) to distribute; c) to perform; d) to begin.
5. Продовжувати – a) to start; b) to display; c) to continue; d) to finish.
6. Галузь – a) ticket; b) field; c) system; d) port.
7. Відповідний – a) remarkable; b) appropriate; c) complicated; d) editing.
8. Пристрій – a) stove; b) sight; c) appliance; d) circuit.
9. Застосування – a) institution; b) location; c) application; d) solution.
10. Ділення – a) addition; b) subtraction; c) division; d) multiplication.

III. Translate into Ukrainian:

remarkable power, arithmetic operation, means of communication, to make a decision, logical decision, to find the solution, to solve a problem, effects of automation, automatic appliances, word processing, storage system, filling system, databanks, insurance company, assimilating information.

IV. Translate word-combinations into English:

визначні можливості, виконувати арифметичні операції, засоби комунікації, знайти розв'язок проблеми, компютеризована служба замовлення білетів та розміщення багажу, швидкість та ефективність автоматизації, спеціальні бази даних, далекі місцевості, збирання та асвоєння інформації, робити запит до центрального процесора, працювати відповідно до інструкцій, давати слушну інформацію.

V. Find the synonyms to the following words:

- | A. | B. |
|-------------------|------------------|
| 1. Remarkable | a) clear up |
| 2. Continue | b) acquainted |
| 3. Link | c) prominent |
| 4. Solve | d) connection |
| 5. Familiar | e) go on |
| 6. Similar | f) adequate |
| 7. Appropriate | g) corresponding |
| 8. To incorporate | h) to start |
| 9. Though | i) to unite |
| 10. To begin | j) although |

VI. Complete the following sentences:

1. Computers are thought to have many
2. Computers have circuits which
3. Computers can solve a series of
4. Computers take over more and more operations in transportation facilities such as
5. Word processing is another field that
6. Special data banks begin to replace

VII. Underline the predicate. Define the Tense form of the following sentences. Put general questions to them.

1. Computers are thought to have many remarkable powers.
2. Word processing is another field.
3. Newspapers are planning to have electronic editing systems.
4. Computerized ticket service will be familiar sight.
5. Remote intelligent terminals will give the ability to solve complex problems.
6. More and more people will be using them.

VIII. Answer the following questions:

1. What operations can the computer perform?
2. What do computers have for performing arithmetic operations?
3. What can computers solve?
4. What spheres can the computers be used in?
5. What kind of appliances do the modern office workers use in their offices?
6. What is word processing?
7. What do special data banks begin to replace?
8. What do remote intelligent terminals give individuals?
9. How does a computer work?

IX. Translate the following sentences into English:

1. Вважають, що комп'ютери мають визначні можливості.
2. Комп'ютери можуть виконувати операції додавання, віднімання, множення, ділення, введення до ступеня.
3. Комп'ютери можуть вирішувати серії проблем та приймати сотні й тисячі логічних рішень, не втомлюючись.
4. Повітряні автобуси, горизонтальні вантажопідійомники та комп'ютеризовані служби замовлення білетів та розміщення багажу будуть звичайним явищем у майбутніх житлових комплексах.
5. Газети вже використовують або планують використовувати електронні редакційні системи.
6. Відеодиски, дистанційні термінали, запам'ятовуючі пристрої великої ємності, автоматизовані друкарські машинки допомагають офісному працівникові.

7. Спеціальні бази даних починають замінювати традиційні системи заповнення даних.

8. Фінансові заклади, страхові компанії мають тенденцію до збирання та засвоєння інформації за допомогою пошукових систем та систем зберігання інформації в реальному часі.

9. Комп'ютер працює відповідно до інструкцій, які йому надаються.

X. Read the following text, try to catch the plot of it, be ready to do the exercises after it:

DAVID THE TEENAGE TYCOON

Teenager David Bolton has just put £9,000 in the bank after only six months of part-time work as a computer consultant. The electronics expert from Croydon, South London, is fast establishing a reputation as one of the country's top troubleshooters – the person to call if no one else can cope.

For David, 15, his first steps to fame and fortune began when he was only nine, when his parents bought him a computer, a ZX-90. «I soon learned to program it. I needed something bigger, so I had to save for ages to buy a good computer». It was only about a year ago, however, that he decided to get serious about computing. He went to night school to learn how to write business programs, and did a correspondence course with an American college.

He got in touch with a computer seller, Eltec, who were so impressed they gave him computers and software worth more than £3,000. In return, he has to send them a monthly report saying what he has done and what his plans are. He helps companies by suggesting what computers they should buy, and by writing individual programs for them.

He can work more quickly than many older professionals. In one case, he went to a company where a professional programmer worked for six months and couldn't find the problem. David finished the job in five days.

It is because of work of this standard that in the short period he has been in business David has made about £9,000. With it he has bought more equipment.

How did he do it? «You have to be ambitious, and you have to really want to get to the top. Believe in yourself, and tell yourself that you are the best».

Тусоон – промисловий, фінансовий магнат;

part-time work – робота з частковою зайнятістю;

to establish one's reputation – зміцнити свою репутацію;

top – найкращий;

to cope with smth – впоратися з чимось;

to save – зберігати, економити;

for ages – дуже довго, «цілу вічність»;

to get serious about smth – серйозно займатися чимось;

night school – вечірня школа;

to do a correspondence course – пройти курс заочного навчання;
to get in touch with smb – налагодити контакт із кимось;
to suggest – пропонувати, радити;
to get to the top – досягти вершин;
ambitious – амбітний.

A) Answer the questions:

- What is special about David?
- How did he become interested in computers?
- Was it easy to learn? What did he have to do?
- What does he have to do in his job?
- Why is he successful?
- What advice does he give to others?

B) Here are the answers to some questions. Work out the questions:

- Nine thousand pounds.
- AZX-90.
- Because he wanted to buy a good computer.
- By suggesting which computers they should buy and by writing programs for them.
- More equipment.

UNIT 2 WHAT IS A COMPUTER?

PRE-TEXT EXERCISES

I. Memorize the pronunciation of the following words:

- | | |
|--------------------|----------------------|
| 1. Spectacular | захоплюючий. |
| 2. Sequence | послідовність. |
| 3. Consequence | наслідок. |
| 4. Reliability | надійність. |
| 5. Supplement | додаток. |
| 6. Processing | обробка даних. |
| 7. To define | визначати. |
| 8. To accept | приймати. |
| 9. To provide | забезпечувати. |
| 10. Remarkable | визначний. |
| 11. Capability | здатність. |
| 12. Circuit | схема, ланцюг. |
| 13. Multiplication | множення. |
| 14. Exponentiation | уведення до ступеня. |
| 15. Punched cards | перфокарти. |
| 16. Device | пристрій. |

II. Translate the following international words:

a computer, a machine, operation, information, a program, mathematical, logical, a problem, a method, a printer, a display.

III. Word-combinations to remember:

1. Spectacular development – захоплююча подія.
2. Long sequence – послідовний ряд.
3. Reasoning operation – логічна операція.
4. Vast reliability – велика надійність.
5. As a consequence – внаслідок.
6. At the service of – до послуг.
7. Thinking and memory – мислення й пам'ять.
8. To accept information – сприймати інформацію.
9. To perform operations – виконувати дії.
10. To provide information – забезпечувати інформацією.
11. To supply results – постачати результати.
12. To solve problems – розв'язувати проблеми.
13. Remarkable powers – чудові можливості.
14. Basic capabilities – основні можливості.
15. Common methods – загальні методи.
16. To read information – зчитувати інформацію.
17. To make decisions – вирішувати.
18. A card reader – картридер (пристрій для зчитування даних із перфокарт).

WHAT IS A COMPUTER?

One of the most spectacular developments of this century is the computer, a machine, which performs long sequences of calculating and reasoning operations at great speed and with vast reliability. As a consequence, there is now at the service of man a power of over 200 billion calculating operations per second, supplementing the thinking and the memory of man. The basic job of computers is the 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, is kept inside the computer in a place called memory.

Computers are thought to have many remarkable powers. However, most computers, whether large or small, have three basic capabilities.

First, computers have circuits for performing arithmetic operations, such as: addition, subtraction, division, multiplication and exponentiation. Second, computers have means of communicating with the user.

Some of the most common methods of inputting information are to use punched cards, magnetic tape, disks and terminals. The computer's input device (which might be a card reader, a tape drive or disk drive, depending on the medium used in inputting information) reads the information into the computer. For outputting information two common devices are used: a printer which prints the new information on paper, and a CRT (cathode-ray tube) display screen which shows the results on a TV-like screen. Third, computers have circuits, which can make decisions. The computer can decide three things, namely: Is one number less than another? Are two numbers equal? And, is one number greater than another?

TEXT-BASED ASSIGNMENTS

I. Try to identify the part of speech of the following words according to the word-building elements:

reliability, mathematical, remarkable, user, to use, punched, TV-like, namely.

II. Find out synonyms:

- | | |
|------------------|---------------------|
| 1. Spectacular | a) mechanism |
| 2. To calculate | b) power |
| 3. To supplement | c) to get |
| 4. Basic | d) to do |
| 5. To accept | e) to add |
| 6. To perform | f) main |
| 7. Capability | g) to do arithmetic |
| 8. Device | h) wonderful |

- | | |
|----------------|-----------------|
| 9. Capability | i) to supply |
| 10. To perform | j) possibility |
| 11. To provide | k) to carry out |

III. Insert the prepositions:

one ... the most spectacular developments, to perform operations ... great speed, to accept information ... the form of instructions, operations ... the information, circuits ... performing arithmetic operations, depending ... the medium, to print the new information ... paper, to show the results ... a TV-like screen.

IV. Write down the plural form:

century, method, capability, character, service, reliability, datum.

REMEMBER! English nouns **information** (*інформація, повідомлення, відомості*), **advice** (*порада, поради*), **progress** (*успіх, успіхи*), **knowledge** (*знання – одиниця й множина*) have no plural form.

V. Give Ukrainian equivalents:

data, per second, accept information, basic capabilities, performing arithmetic operations, outputting information, inputting information, a card reader, a tape drive, a TV-like screen, punched cards, common devices, a cathode-ray tube display screen, input device, circuits.

VI. Use the following words in your own sentences:

- to provide the information;
- to show the results;
- to make decisions;
- to solve the problem.

VII. Which statement best expresses the main idea of the text:

1. Computers have many remarkable powers.
2. The program tells computer what to do.
3. Instructions and data must be given to the computer to act on.
4. Computers are machines capable for performing long sequences of calculating and reasoning operations at great speed with vast reliability.

VIII. Find the passages in the text where the following ideas are expressed:

1. The basic job of computers is the processing of information.
2. Computers accept information in the form of instructions called a program.
3. The program tells computer what to do.
4. Computers have three basic capabilities.
5. Programs may be very fast.

IX. Correct statements if it is necessary:

1. A computer can store or handle any data even if it hasn't received information to do so.
2. All computers accept and process information in the form of instructions and characters.
3. The information necessary for solving problems is found in the memory of the computer.
4. Not all computers can perform arithmetic operations, make decisions, and communicate in some way with the user.
5. Computers can still be useful machines even if they can't communicate with the user.
6. There are many different devices used for feeding information into computer.
7. There aren't as many different types of devices used for giving results as there are for accepting information.
8. Computers can make any type of decision they are asked to.
9. Computers can replace a human being in any kind of job.
10. A program is a form of instruction.

X. In the following sentences the definitions have been mixed up. Write out the definitions correctly.

1. Silicon is the information that is inputted with the program and which mathematical and logical operations are performed.
2. Program is a non-metallic element with semiconductor characteristics.
3. Data is a list of instructions, which are used to the computer to solve a problem.
4. A card reader is a device used for outputting information.
5. A display screen is a machine, which performs calculating and reasoning operations at great speed and with vast reliability.
6. A computer is a device used for inputting information.

XI. Answer the following questions:

1. What machine can perform calculations and logical operations at great speed and with vast reliability?
2. What is the basic job of computers?
3. How can the computer be defined?
4. What is called a program?
5. What is memory of a computer?
6. How many basic capabilities does computer have?
7. What arithmetic operations can computers perform?
8. Have a computer means of communicating with the user?
9. What are the most common methods of inputting information?
10. What device reads the information into the computer?
11. What devices are used for outputting information?
12. What does a computer have for making decisions?

XII. Translate the sentences into English:

1. Комп'ютер – це одне з чудових винаходів ХХ століття.
2. Комп'ютери виконують обчислення та логічні операції з високою швидкістю та надійністю.
3. Основна робота комп'ютерів – це обробка інформації.
4. Комп'ютер отримує інформацію у формі інструкцій, які називаються програмою, та знаків, що називаються даними.
5. Місце, де в комп'ютері зберігаються дані та програми, називається пам'яттю.
6. Для виконання обчислюваних операцій комп'ютер має схеми.
7. Комп'ютер має засоби комунікації з користувачем.
8. Для введення інформації комп'ютери можуть мати перфокарти, магнітну стрічку, диски та термінали.
9. Інформація зчитується ввідним пристроєм комп'ютера
10. Для отримання інформації використовують принтери або CRT дисплей.

XIII. Show your awareness in latest inventions in the sphere of electronics. Complete the sentences with the terms *a laptop (or notebook), E-mail, a mobile phone, a modem, a scanner, a printer, a monitor, a fax machine, a calculator, a pager.*

1. A machine used for sending, receiving and then printing letters or messages by means of telephone line is called _____.
2. _____ is a piece of electronic equipment that allows information from one computer to be sent along telephone wires to another computer.
3. _____ means the part of the computer that looks like a television and shows information.
4. _____ is a small computer the size of a book that you can carry with you and use in any place.
5. _____ is small machine that you carry in the pocket that makes short high noises to tell you that you must telephone someone.
6. A system that allows people to send messages to each other by computer is called _____.
7. _____ is a piece of computer equipment that copies an image from paper onto the monitor.
8. A small electronic machine that can do calculations such as adding and multiplying is called _____.
9. _____ is a machine which is connected to a computer and makes a printed record of computer information.

UNIT 3 FUNDAMENTAL COMPONENTS OF A COMPUTER

PRE-TEXT EXERCISES

I. Memorize the pronunciation of the following words:

1. Extraordinarily	надзвичайно.
2. Comparison	порівняння.
3. Processing	обробка даних.
4. Regardless	незважаючи на.
5. Tower	башта.
6. To freight	вантажити.
7. To occur	з'являтися, переходити на думку.
8. Garment	одяг.
9. Hardware	апаратне забезпечення.
10. Internal	внутрішній.
11. To store	зберігати.
12. Execution	виконання.
13. To attach	приєднувати.
14. To support	підтримувати.

II. Translate the following international words:

computer, machine, conceptually, manipulate, information, characteristic, design, form, result, system, telegraph, operation, aspect, processor, peripheral.

III. While translating the text keep in mind the different meanings of the words:

to occur	а) мати місце, траплятися; б) спадати на думку; в) зустрічатися, показатися.
to handle	а) торкатися, брати руками; б) обходитися з ким (чим)-небудь; в) керувати.
to add	а) складати; б) додавати, приєднувати.
to store	а) записати, відкладати; б) зберігати на складі.

IV. Word-combinations to remember:

1. To handle information – оброблювати інформацію.
2. To manipulate information – управляти (керувати) інформацією.
3. To do calculations – робити обчислення.
4. To add information – додавати інформацію.
5. To make comparisons – робити порівняння.

6. Regardless of make – незалежно від моделі.
7. To return result – видати результат.
8. Control tower – башта пункту управління (керування).
9. A track – доріжка.
10. A switch – ключ.
11. A freight car – вантажівка.
12. Manipulation operations – операції управління (керування).
13. A piece of cut cloth – відріз тканини.
14. A finished garment – готовий одяг.
15. Actual execution – дійсне виконання.
16. To own and run – володіти та керувати.
17. To become portable – ставати портативними (мобільними).
18. To store data – зберігати дані.

FUNDAMENTAL COMPONENTS OF A COMPUTER

Computers are extraordinarily simple machines conceptually. Handling or manipulating the information that has been given to the computer in such ways as doing calculations, adding information or making comparisons is called processing. All computers have several characteristics in common, regardless of make or design. Information, in the form of instructions and data, is given to the machine, after which the machine acts on it, and a result is then returned. A common kind of general purpose digital computer can be thought of as very like a railroad system with stations, a control tower, tracks, switches, telegraph lines, and freight cars. The freight cars are loaded with information and they travel through the system almost at the speed of light. The information presented to the machine is the input; the internal manipulative operations – the processing; and the result – the output.

These three concepts of input, processing and output occur in almost every aspect of human life whether at work or at play. For example, in clothing manufacturing, the input is the pieces of cut cloth, the processing is the finished garment. The centerpiece is called either the processor, or, usually, the central processing unit (CPU).

The term «computer» includes those parts of hardware in which calculations and other data manipulations are performed, and the high-speed internal memory in which data and calculations are stored during actual execution of programs. Attached to the CPU are the various peripheral devices such as card readers and key-boards. When data programs need to be saved for long periods of time, they are stored on various secondary memory devices or storage devices such as magnetic tapes or magnetic discs.

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

TEXT-BASED ASSIGNMENTS

I. Try to identify the part of speech of the following words according to the word-building elements:

manipulative, extraordinarily, regardless, conceptually, manipulative, internal, equipment, portable, usually, processor, peripheral.

II. Find out synonyms:

- | | |
|--------------------|-----------------------|
| 1. Extraordinarily | a) mechanism |
| 2. Regardless | b) to keep |
| 3. To act | c) cargo |
| 4. Freight | d) computer equipment |
| 5. To handle | e) to manipulate |
| 6. Hardware | f) connected with |
| 7. To store | g) in spite of |
| 8. Attached to | h) additional |
| 9. Peripheral | i) to operate |
| 10. Device | j) extremely |

III. Give Ukrainian equivalents:

extraordinarily simple machines, adding information, making comparisons, in common, general purpose digital computer, to be thought of as, a control tower, at the speed of light, an aspect of human life, parts of hardware, data manipulations, the high-speed internal memory, peripheral devices, storage devices, secondary memory devices, to be expensive to own and run, to keep the equipment operating.

IV. Translate the following word-combinations into English:

надзвичайно прості машини, робити обчислення, обробка даних, мати декілька спільних характеристик, незалежно від моделі та дизайну, цифровий комп'ютер для загальних цілей, швидкість світла, внутрішні операції управління; поняття введення, обробки даних і виведення; різноманітні периферійні пристрої, приєднувати до процесора, тримати обладнання в робочому стані.

V. Which statements best express the main idea of the text?

1. Computers have changed the world in which we live.
2. All computers have an input, a processor, an output and a storage device.
3. Computers have decreased man's workload.
4. All computers have the same basic hardware components.
5. The information presented to the machine is the input.

VI. Find the passages in the text where the following ideas are expressed:

1. All computers are basically the same.
2. Then arithmetic and / or decision-making operations are performed.
3. All the equipment used in a computer system is the hardware.

4. Computers are electronic machines used for processing data.
5. If programs or data need to be kept for a long time, they are stored on tapes or disks.
6. First the computer accepts data.
7. Finally, new information is presented to the user.

VII. Complete the following statements:

1. Computers are extraordinarily
2. All computers have several characteristics in common. . . .
3. Information, in the form of instructions and data, is given to the machine, after which
4. A common kind of general purpose digital computer can be thought of
5. These three concepts of input, processing and output occur in
6. The centerpiece is called. . . .
7. The term «computer» includes. . . .
8. When data programs need to be saved for long periods of time. . . .
9. In the late 1950s and early 1960s when electrical computers of the kind in the use today were being developed
10. Computing power has become

VIII. Correct the statements if necessary using the phrases of agreement or disagreement:

AGREEMENT

- Surely!
- Certainly!
- Of course!
- Right you are!

DISAGREEMENT

- It's absurd!
- It's nonsense!
- On the contrary!
- Just the other way about!

1. Computers are difficult machines conceptually.
2. Processing is manipulation of the information.
3. The information presented to the machine is the output.
4. The information can be stored only on magnetic tapes.
5. Modern computers are portable, compact and cheap.

IX. Answer the following questions:

1. Are computers simple or difficult machines?
2. What is processing?
3. How is the information given to the machine called?
4. What system can a common kind of general purpose digital computer be compared with?
5. What three concepts occur in almost every aspect of human life?
6. How is the centerpiece called?
7. What parts does the term «computer» include?

8. What peripheral devices are attached to the CPU?
9. Where can you store the data programs?
10. How can you characterize the modern computers?

X. Translate into English:

1. Комп'ютери концептуально доволі прості машини.
2. Комп'ютери використовуються для розрахунків, додавання інформації або здійснення порівнянь.
3. Маніпуляції інформацією називаються обробкою даних.
4. Незважаючи на дизайн, усі комп'ютери мають загальні характеристики.
5. Комп'ютери працюють згідно з інструкціями, які зберігаються в пам'яті.
6. Комп'ютерна система подібна до залізнодорожньої.
7. Інформація, що надається комп'ютеру, – це введення, внутрішня операція – обробка, а результати – виведення.
8. Комп'ютерне забезпечення – це частини комп'ютера, у яких здійснюються розрахунки й обробка даних.
9. Дані зберігаються у високошвидкісній пам'яті під час виконання програм.
10. Аби зберігати дані довгий проміжок часу, їх розміщують на дисках.

UNIT 4 COMPUTERS: THE SOFTWARE AND THE HARDWARE

PRE-TEXT EXERCISES

I. Memorize the pronunciation of the following words:

1. Enterprise	підприємство.
2. Scientific	науковий.
3. Hardware	апаратне забезпечення.
4. Machinery	машинне обладнання.
5. Subtle	вишуканий.
6. Keyboard	клавіатура.
7. Software	програмне забезпечення.
8. Essential	необхідний.
9. To manipulate	здійснювати керівництво.
10. Compatible with smth	сумісний з чимось.
11. Processor	процесор.
12. Digital	цифровий, числовий.
13. Analogue	аналоговий, моделюючий пристрій.
14. To require	вимагати.
15. Instruction manual	технологічна інструкція.

II. Translate the following international words:

extraordinary, technological, computer, business, electronic, modern, factor, program, logical, material, category, coordinator, component, type, effective.

III. While translating the text keep in mind the different meanings of the words:

number	а) число, сума, цифра; б) кількість; в) номер, екземпляр;
critical	а) розбірливий, вимогливий; б) критичний; в) переломний, вирішальний; г) важливий, необхідний;
actual	а) фактичний, реальний, дійсний; б) поточний, чинний; в) актуальний;
to perform	а) виконувати, здійснювати; б) грати роль; в) виступати;
power	а) сила, могутність; б) здатність можливість; в) енергія, продуктивність;

- to meet
- г) влада, держава;
 - д) право;
 - а) зустрічати;
 - б) збиратися;
 - в) знайомитися;
 - г) задовольняти;
 - д) підходити;

IV. Words to remember:

1. Decade – проміжок часу в 10 років (пор. в укр. мові – проміжок часу в 10 діб).
2. A household word – повсякденне слово.
3. An integral part – невід’ємна частина.
4. To expand – поширювати.
5. Application – застосування, використання.
6. Applied thoughts – прикладні думки.
7. To work out – виробляти.
8. Systems software – системне програмне забезпечення.
9. Application software – прикладне програмне забезпечення.
10. A thought-out software – ретельно розроблене програмне забезпечення.
11. To have smth in common – мати щось спільне.

V. It is useful to know that the word «ware» is translated as «вироби»:

e.g. chinaware – порцелян.

Remember computer words having the part «ware»:

- hardware – апаратне забезпечення;
- software – програмне забезпечення;
- freeware – програмне забезпечення, яке розповсюджується вільно й безкоштовно;
- shareware – умовно безкоштовне програмне забезпечення;
- bannerware – безкоштовне програмне забезпечення з розміщеною рекламою;
- charityware = careware – благодійне умовно безкоштовне програмне забезпечення;
- annoyware – набридлива умовно безкоштовна програма;
- fatware – ресурсомістке програмне забезпечення.

COMPUTERS: THE SOFTWARE AND THE HARDWARE

Because of extraordinary technological development during the past decades, the term computer is becoming a household word. Computer application has expanded to such breadth that computer is now an integral part of nearly every type of business and industrial enterprises.

The number of electronic computers used in any given field of human activity is sometimes believed to indicate the degree of its modernity. For example the more computers a scientific institute uses the more modern it is believed to be.

It is not always born in mind, however, that computers alone represent only what is called the hardware – the machinery together with its subtle technical and logical design (a screen, a keyboard and a boxlike case with the «brains» of the system, a printer and, perhaps, a pointing device called a mouse). By itself, the hardware is like a cassette player without tapes. In order that the hardware may be used effectively, another essential factor is needed: the so-called software or applied thoughts, which usually include one or more computer disks and a printed instruction manual.

The preparation of computer programs, the working out of the logical aspects of material to be manipulated in a computer, takes up as much, if not more, time as the actual production of the hardware and is by no means easier.

Software plays a critical role in computer-based information systems because hardware would be useless without it. Software comprises the instructions that tell the hardware what to do. If possible, you should first select the software that meets your information needs, and then choose compatible hardware. Software can be divided into two major categories – systems software and applications software. Applications software is a collection of related programs designed to perform a specific task – to solve a particular problem for the user. Systems software starts up (boots) the computer and functions as the principal coordinator of all the hardware components and applications software programs.

The price of a computer depends mainly on the hardware's brain power – the type of processor and the size of its memory. How much power do you need? That depends on the software you'll use. In general, words and numbers demand less from a computer than pictures and sound.

There are two basic types of electronic computers: digital and analogue. Each type has its uses in various fields. However, they have one thing in common: for their effective operation they require very thought-out software.

TEXT-BASED ASSIGNMENTS

I. Try to identify the part of speech of the following words according to the word-building elements:

technological, development, application, breadth, modernity, boxlike, effectively, preparation, useless, compatible, electronic, operation, mainly.

II. Translate words with the same root:

industry – industrial – industrialist – industrially – industrious;

modern – modernism – modernist – modernity – modernize;

to produce – producer – product – production – productive – productivity;

to use – used – useful – useless – user;

to collect – collection – collective – collector.

III. What parts of the given words indicate: a) the doer of the action; b) the process; c) the result of the process:

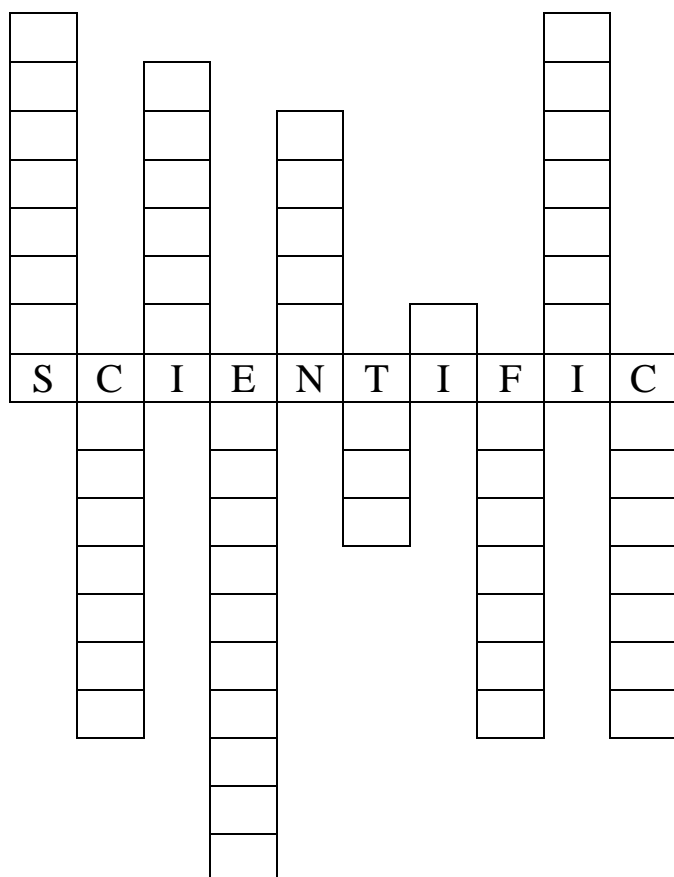
computer – computation;
 processor – processing;
 programmer – programming – program;
 calculator – calculating – calculation.

IV. Translate word-combinations according to the model N+N keeping in mind that the first noun is the main one and the second noun is used attributively:

Computer application
 Cassette player
 Computer disks
 Instruction manual
 Computer programs
 Information systems
 Information needs
 Hardware components
 Application software programs

V. Choose the right English equivalent:

- | | | | |
|-----------------|-------------------|----------------|-----------------|
| 1. Надзвичайний | a) extraordinary; | b) usually; | c) essentially; |
| 2. Підприємство | a) institute; | b) enterprise; | c) machinery; |
| 3. Ступінь | a) degree; | b) agree; | c) sorry; |
| 4. Необхідний | a) effective; | b) actual; | c) essential; |
| 5. Обирати | a) manipulate; | b) collect; | c) select; |
| 6. Сумісний | a) compatible; | b) memory; | c) mouse; |
| 7. Вимагати | a) to require; | b) to choose; | c) to operate. |

VI. Solve the crossword:

- S – програмне забезпечення
 C – комп'ютер
 I – позначати
 E – ефективно
 N – кількість
 T – тип
 I – у(в)
 F – функція
 I – невід'ємний, суттєвий
 C – зменшувати, ущільнювати

VII. Give Ukrainian equivalents:

to be an integral part, to indicate the degree of modernity, to be born in mind, a boxlike case, a pointing device, to work out the logical aspects, by no means, to select the software, to meet information needs, to choose compatible hardware, related programs, to start up a computer, hardware's brain power, to have something in common.

VIII. Correct statements if it is necessary:

1. The term computer is becoming an unknown word.
2. The number of electronic computers is believed to indicate the degree of business modernity.
3. Hardware means the same as software.
4. Mouse is a boxlike case with the brains of the system.
5. Hardware is widely used without software.
6. Software can be divided into two major categories: systems software and application software.
7. Words and numbers demand less from a computer than pictures and sound.
8. There are two basic types of electronic computers: digital and analogue.

IX. Answer the following questions:

1. Has computer application expanded during the past decades?
2. What does a computer alone represent?

3. What is the hardware?
4. What is the software?
5. Is the preparation of computer programs easier than the actual production of the hardware?
6. Does software play a critical role in computer based information system?
7. What categories can software be divided into?
8. What does the price of a computer depend on?
9. What is the thing digital and analogue electronic computers have in common?

X. Translate the sentences into English:

1. Через надзвичайний технологічний розвиток комп'ютери зараз дуже поширені.
2. Вважається, що кількість комп'ютерів, які використовуються в різних сферах людської діяльності, позначають рівень їх модернізації.
3. Комп'ютери, як такі, являють собою те, що називається апаратним забезпеченням.
4. Щоб ефективно використовувати апаратне забезпечення, необхідним є відповідне програмне забезпечення.
5. Якщо можливо, Ви повинні спочатку обирати програмне забезпечення, яке задовольняє Вашій інформаційній потребі, а вже потім покупати апаратуру.
6. Для ефективної роботи всі комп'ютери вимагають ретельно розробленого програмного забезпечення.

XI. Discussion. You are going to buy some software package. Prepare the dialogue between you and a seller; be ready to ask the seller the following questions:

1. How much does it cost?
2. What specific problems does it solve?
3. What are its key features?
4. What kind of hardware, operating system, and internal storage is required?
5. What kind of documentation and self-paced training, if any, is available?
6. If problems arise, what kind of field or store support and telephone support is available?
7. What kind of warranty is offered, if there is any?
8. Can you give me the names of users with needs like mine who are using this software?

XII. Read the text in Ukrainian. Write a short summary of the following text in English:

Апаратне й програмне забезпечення

Апаратне забезпечення чи просто апаратура – термін, що закріплений за електронними й механічними пристроями комп'ютера. Усі основні пристрої

комп'ютера – його центральний процесор, арифметично-логічний пристрій, пристрій уведення й виведення, запам'ятовуючий пристрій – усе це відноситься до апаратного забезпечення.

До нього ж можна віднести також клавіатуру, за допомогою якої оператор уводить програму в ЕОМ, дисплей для відображення інформації у вигляді букв, цифр і різних знаків на екрані електронно-променевої трубки (екрана телевізора), різні друкувальні пристрої, інтерфейс-пристрій, що керує потоком інформації та форматом між електронною обчислювальною машиною й зовнішніми пристроями.

До програмного (чи математичного) забезпечення відносяться власне програми. Змінюючи програми, можна змусити ЕОМ виконувати різні функції. Наприклад, за допомогою однієї програми ЕОМ може працювати зі студентами в діалоговому режимі, при якому вона задає студенту питання, на які він повинен дати правильні відповіді. У випадку помилкових відповідей комп'ютер дає консультацію й просить студента відповісти ще раз і т. д. Змінюючи програми, можна використовувати комп'ютер для реєстрації ділових паперів, виписки рахунків на оплату. Широке поширення, особливо в домашніх побутових комп'ютерах, одержали програми для телевізійних ігор, що дозволяють використовувати їх для дозвілля й розваги. Уводячи ту чи іншу програму, можна грати з комп'ютером у шахи чи шашки. І все це при тому самому комп'ютері. Програмному забезпеченню в даний час надається дуже велике значення, видаються цілі збірники програм, програми захищаються на рівні з літературними творами спеціальними органами охорони авторських прав. Без програмного забезпечення комп'ютер мертвий.

UNIT 5 THE FUTURE OF COMPUTERS

PRE-TEXT EXERCISES

I. Memorize the pronunciation of the following words:

1. Scalar	скалярний.
2. Emphasis	акцент.
3. Arithmetic	арифметичний.
4. Simultaneously	одночасово.
5. To approach	наближувати.
6. Value	цінність.
7. Cathode-ray	катодний промінь.
8. Series	ряд, послідовність.
9. To straighten	випрямляти.
10. Version	версія.
11. Variety	різноманітність.
12. Appropriate	слухний.
13. To circle	брати в коло.
14. Device	прилад, пристрій.

II. Translate the following international words:

computer, processor, parallel, information, problem, graphics, version.

III. While translating the text keep in mind the different meanings of the words:

architecture –	а) архітектура; б) архітектурний стиль; в) побудова, структура;
branch –	а) гілка дерева; б) галузь, підрозділ; в) відділ, філіал;
to design –	а) задумати, розробляти; б) збиратися щось зробити; в) проектувати, конструювати, робити ескізи;
means –	а) засіб; б) достаток, заможність;
to introduce –	а) розміщувати; б) впроваджувати; в) знайомити;
to accomplish –	а) здійснювати; б) доводити до кінця; в) досягати досконалості.

IV. Words to remember:

1. Cost-effective computers – рентабельні, прибуткові комп'ютери.
2. A major drag – основні гальма, основна причина затримки.
3. The time lag – проміжок часу.
4. The step-by-step program – покадрова, потактова програма.
5. A means around the roadblock – один із засобів оминати цю перешкоду.
6. Incredibly rapid – надзвичайно швидко.
7. A corresponding increase – відповідне зростання.
8. Pictorially – графічно.
9. A light pen – світлове перо.
10. To flash a series of options – серія варіантів вибору.
11. Trial-and-error situation – ситуація підбору (метод спроб і помилок).
12. A draftsman – кресляр.
13. Front view – фронтальна (головна) проекція.
14. Rear view – задній вид.
15. Cross section – поперечний розріз.
16. To request a blow-up – робити запит на показ збільшеного зображення.
17. In effect – у дійсності, насправді.

V. Mind the translation of the following phrasal verbs:

- to jam smth in – заштовхувати, загромаджувати, вносити до пам'яті;
 to pull smth out – витягувати;
 to break smth down – розбивати;
 to straighten out smth – випрямляти;
 to link smth up – пов'язувати.

THE FUTURE OF COMPUTERS

During the past decade the development work for extremely powerful and cost-effective computers has concentrated on new architectures. In place of «scalar» processors, the emphasis has moved towards «vector» and «parallel» processors, commonly referred to as «supercomputers». These machines are now in a very widespread use in many branches of science.

Computers must still be programmed for every action they take which is a great limitation. How quickly the programmer can tell it what to do becomes a major drag on computer speeds. The time lag can be shortened by linking up different computers and designing more efficient devices to jam information in and pull it out of the machine, but the basic limitation of the step-by-step program remains.

A means around this roadblock is called parallel processing. Instead of solving a problem by following step-by-step instructions of the program the

arithmetic and memory units will break the main problem down into a number of smaller problems that will be solved simultaneously. Parallel processing was introduced into the fourth generation computer called ILLIAC IV named for the University of Illinois, where it was designed.

The incredibly rapid speeds we are approaching will be of little value without a corresponding increase in the speed with which we can get at the computer-generated information. One new approach, called graphics, uses the cathode-ray tube – the picture tube of your TV set – to display the information pictorially. A light pen – actually an electronic pointer – can be touched to the screen, and conversation between man and machine can be accomplished. For example, the computer can flash a series of options on its screen. The scientist selects the one he wants by touching it with a light pen. The great advantage of these so-called graphic computers is in solving design problems and in coping with any trial-and-error situation.

The graphic computer offers the most flexible means of communication between man and machine yet developed. For example, the designer can draw a car roof on the screen with his light pen. The computer will do the mathematics required to straighten out the lines and, in effect, present a draftsman's version of the designer's idea. The computer will then offer a variety of options to the designer – «front view», «rear view», «cross section», and so on. All the designer needs to do is to touch his light pen to the appropriate choice, and the computer does the rest. Similarly, the designer can circle any part of the drawing on the screen with his pen and request a blow-up – a large-scale drawing of just that part he has circled.

TEXT-BASED ASSIGNMENTS

I. Find out synonyms:

- | | |
|-----------------------------|-------------------------|
| 1. Cost-effective | a) adaptable |
| 2. Flexible | b) likewise |
| 3. Powerful | c) profitable |
| 4. To cope with the problem | d) to suggest |
| 5. Screen | e) strong, impressive |
| 6. To offer | f) display |
| 7. Similarly | g) to solve the problem |
| 8. To require | h) in place of |
| 9. To break down | i) to reduce |
| 10. To shorten | j) to ruin |
| 11. Instead of | k) to demand |

II. Find out antonyms:

- | | |
|-------------|-------------|
| 1. Powerful | a) bigger |
| 2. Quickly | b) rear |
| 3. Shorten | c) decrease |

- | | |
|--------------|-----------------|
| 4. To jam in | d) lengthen |
| 5. Smaller | e) disadvantage |
| 6. Rapid | f) to pull out |
| 7. Increase | g) old |
| 8. New | h) slowly |
| 9. Advantage | i) powerless |
| 10. Front | j) slow |

III. Interpret the meaning of the following correlated words and use them in sentences of your own:

to develop – developer – development – developmental;
 to program – a program – programming – programmer;
 short – shortage – to shorten;
 to instruct – instruction – instructional – instructor;
 science – scientific – scientist.

IV. Give the right English equivalent:

- | | | | |
|--------------------------|--------------------|----------------|---------------|
| 1. Рентабельний | a) cost-effective; | b) rich; | c) expensive; |
| 2. Широко розповсюджений | a) widespread; | b) well-known; | |
| | c) well-bred; | | |
| 3. Галузь | a) branch; | b) bench; | c) brand; |
| 4. Швидкість | a) read; | b) speed; | c) skill; |
| 5. Пам'ять | a) armory; | b) brain; | c) memory; |
| 6. Залишатись | a) domain; | b) remain; | c) repair; |
| 7. Вирішувати | a) solve; | b) do; | c) break; |
| 8. Піст | a) fall; | b) start; | c) increase; |
| 9. Коло | a) circle; | b) triangle; | c) quarter. |

V. Translate into Ukrainian:

extremely powerful computers, to move the emphasis, to be in widespread use, more efficient devices, to solve simultaneously, incredibly rapid speeds, to display the information pictorially, to flash a series of options, to solve design problems, to present a draftsman's version, to do the rest, to request a blow-up.

VI. Complete the following statements:

1. During the past decade...
2. How quickly the programmer can tell a computer what to do...
3. Parallel processing was introduced...
4. One new approach, called graphics, uses...
5. The great advantage of graphic computers is...
6. All the designer needs to do is...
7. The computer will do mathematics required to...

VII. Write true (T) or false (F) for the sentences below according to the information given. Correct the statements if necessary using the phrases of agreement or disagreement:

AGREEMENT:

That's quite right!

I agree with you.

Your statement is correct.

I share your point of view.

DISAGREEMENT:

Certainly not!

I disagree with you.

Your statement is not correct!

I do not share your point of view.

1. During the past decade the development work for extremely powerful and cost-effective computers has concentrated on old architectures.

2. In place of «scalar» processors, the emphasis has moved towards «vector» and «parallel» processors, commonly referred to as «microcomputers».

3. Computers must still be programmed for every action they take which is a great limitation.

4. A means around this roadblock is called scalar processing.

5. Parallel processing was introduced into the fourth generation computer called ILLIAC IV named for the University of Illinois, where it was designed.

VIII. Answer the following questions:

1. What has the development work for extremely powerful computers concentrated on during the past decade?

2. What machines are now in a very widespread use?

3. How must computers still be programmed?

4. What will break the main problem down into a number of smaller problems?

5. What was the fourth generation computer named for?

6. What is the essence of a new approach to a computer?

7. What is the advantage of graphic computers?

8. In what way does the graphic computer work?

IX. Translate the sentences into English:

1. За останні 10 років робота з розвитку дуже потужних комп'ютерів була зосереджена на нових структурах.

2. Від того, наскільки швидко програміст може дати інструкції комп'ютеру, залежить його швидкість.

3. Один із засобів оминати перешкоду постійної часової затримки – паралельна обробка даних.

4. Занадто великі швидкості, що на нас чекають, не будуть мати великого значення без відповідного збільшення в швидкості, з якою ми можемо отримати згенеровану комп'ютером інформацію.

5. Можна доторкнутися світловим пером до комп'ютера й розмова між людиною та машиною відбудеться.

6. Графічний комп'ютер пропонує більш гнучкі засоби комунікації між людиною та машиною.

7. Розробник може намалювати дах автомобіля на дисплеї за допомогою світлового пера.

8. Комп'ютер зробить усі математичні розрахунки, які необхідні для випрямлення ліній, та згодом представить креслярську версію ідеї розробника.

X. Give subtitles to each paragraph of the text.

UNIT 6 COMPUTER INTERPRETERS

PRE-TEXT EXERCISES

I. Memorize the pronunciation of the following words:

- | | |
|----------------|---------------------|
| 1. Fascinating | чарівний. |
| 2. Vital | життєво необхідний. |
| 3. Research | дослідження. |
| 4. Error | помилка. |

II. Read international words and give their Ukrainian equivalents:

translation, technical, engineer, progress, program, electronic, operator, adequate.

III. While translating the text keep in mind the different meanings of the words:

- | | |
|------------|--|
| to occur | а) зустрічатися, траплятися;
б) відбуватися, мати місце;
в) залягати (про місцезнаходження); |
| to perform | а) виконувати;
б) виробляти; |
| check | а) контроль, перевірка;
б) відмітка, галочка;
в) контролювати, відмічати; |
| spirit | а) дух;
б) спиртний напій, горілка; |
| flesh | а) плоть;
б) м'ясо; |
| willing | а) бажаючий;
б) сильний; |
| weak | а) слабкий, хворий;
б) гнілий, неповноцінний. |

IV. Word-combinations to remember:

1. Fascinating jobs – чарівна, приємна робота.
2. Important development – важливий розвиток.
3. Huge electronic memory – величезна електронна пам'ять.
4. Common phrases – звичайні, загальні фрази.
5. To require better machines – вимагати кращі комп'ютери.
6. To make a check on the translation – перевіряти переклад.
7. Without realizing – не усвідомлюючи.
8. In most cases – у більшості випадків.
9. In just the same way – так само як.
10. To keep up-to-date – бути сучасним.

11. To arrange alphabetically – розміщувати за алфавітом.
12. Every single meaning – кожне значення.
13. To occur at any rate – мати місце в будь-якому випадку.
14. The spirit is willing but the flesh is weak – дух бажає, проте плоть слабка.
15. A complete set of ready-made instructions – повний набір готових інструкцій.

COMPUTER INTERPRETERS

One of newest and fascinating jobs of the computer is language translation. This is an important development because there so many books that must be translated. Possibly more important are technical magazines that come from all over the world. Scientists and engineers must have translations of these if they are to keep up-to-date. Communication is vital to scientific progress. Already simply translations are being performed. More complex programs are being developed. To the scientist, this can mean months or years of research time saved.

Stored in the computer, in a huge electronic memory, will be a «dictionary». It would have thousand of words arranged alphabetically, common phrases or words commonly used together. Most, certainly, it will have part of speech a word is.

Language translation is no simple thing and requires extremely clever programming. It is possible that really adequate translations will require better machines that we have now.

Some computers could be built to understand the spoken word and to read printed material, it could be a very efficient translator and not very efficient. The words of the language to be translated must be put into the computer – every single word, and every single meaning of every word. Even then, because there are so many different ways in which words are used, it is almost impossible to give a computer a really complete program. Errors in translation are still likely to occur at any rate.

A classic example of a translation error by a computer is the story told by a computer man. «The spirit is willing but the flesh is weak» was led into a computer for translation into Russian. The computer made the translation by translating it back into Russian. Then the computer operators made a check on the translation by translating it back into English. It came out like this: «The vodka is strong, but the meat is rotten». See the errors the machine made?

It used words that are some – what similar but far from meaning the same thing. The computer confused «vodka», with «spirit», «strong» with «willing», «meat» with «flesh», «rotten» with «weak». And if a human being had not come along and corrected the program of the computer, it would have kept making the same mistake over and over again without realizing it.

A computer is given a complete set of ready-made instructions on how to do a

given job. With these instructions, the computer can do that given job quite well better than a human being, in most cases. But that's all it can do.

Maybe in future it would learn the two languages in the same way that a human being would. It would make mistakes, of course – human beings do, don't they?

TEXT-BASED ASSIGNMENTS

I. Read the words, say what parts of speech they belong to:

operator, scientific, meaning, impossible, efficient, translator, translation, interpreter, alphabetically.

II. Transform the following words according to models and translate them:

а) модель 1: основа дієслова + *tion (-ion)* = іменник:
to translate (перекладати) – translation (переклад).

To instruct, to inform, to communicate, to operate, to locate

б) модель 2: прикметник + *ly* = прислівник:
quick (швидкий) – quickly (швидко).

Extreme, common, easy, real.

III. Find the synonyms to the following words:

- | | |
|--------------------|------------------|
| 1. Fascinating | a) perfect |
| 2. Up-to-date | b) effective |
| 3. Efficient | c) modern |
| 4. Complete | d) delightful |
| 5. To occur | e) to examine |
| 6. Possibly | f) to take place |
| 7. To make a check | g) probably |

IV. Translate into Ukrainian:

fascinating job, a part of speech, language translation, to be vital to scientific progress, a huge electronic memory, spoken word, to require extremely clever programming, to make a check, ready-made instruction, given job, in most cases.

V. Write true (T) or false (F) for the sentences below according to the information given. Correct the statements if necessary using the phrases of agreement or disagreement:

1. Language translation is simple thing and doesn't require extremely clever programming.

2. The words of the language to be translated must be put into the computer.

3. There are many different ways in which words are used, it is almost impossible to give a computer a really complete program.

4. Errors are impossible in the computer translation.
5. A computer isn't given a complete set of ready-made instructions on how to do a given job.

VI. Answer the questions:

1. What is one of the newest fascinating jobs of the computer?
2. What is being developed and performed?
3. What is language translation?
4. How could some computers be built?
5. Is it possible to give a computer a really complete programme?
6. What kind of job can a computer do?

VII. Translate the following sentences into English:

1. Одна із можливостей сучасних комп'ютерів – робити переклад з однієї мови на іншу.
2. Особливо важливі переклади для вчених, які хочуть бути сучасними, не відставати.
3. Комп'ютерний переклад допомагає значно зекономити час.
4. Слова, усі їх значення, різні варіанти вживання зберігаються в електронній пам'яті комп'ютера.
5. Але комп'ютер не здатний робити досконалий переклад у багатьох випадках.
6. Сьогодні програмісти працюють над більш складними програмами комп'ютерного перекладу.
7. Комп'ютери сьогодні здатні перекладати й усний, і надрукований матеріал.
8. Для того, щоб комп'ютер виконав роботу, йому дається набір інструкцій.

VIII. Read and translate the text without dictionary and say whether the author is optimistic or skeptical about it? Find the facts to prove your idea.

COMPUTERS – TRANSLATORS

Foreign language translation may prove to be just a bit more than computer can handle. From the tower of Babel on there have been countless examples of man's inability to understand man. What hope is there then for a machine to understand man, or even another machine? Machines translators would be enormous boon (благо), especially for science and technology. A machine translator would obviously be a great aid.

In the 80s a machine was developed that can optically scan the written characters and print out the translation. It has a program that translates Chinese into English and English into Chinese. At a press demonstration the programmer asked

for a phrase to translate and reporter said: «Out of sight, out of mind». The phrase was dutifully fed into the computer, which replied, by printing out a string of Chinese characters. «There», said the programmer «that means «Out of sight, out of mind». The reporter was skeptical. «I don't know Chinese and I don't know what that means «Out of sight, out of mind». «Well», replied an engineer, «it is really quite simple. We'll ask the other program to translate the Chinese into English». And so once again a string of characters, this time Chinese, was fed into the computer. The translation was typed out almost immediately and it read: «invisible idiot».

IX. Enjoy one more example of computers' abilities to speak.

In order to make communication between man and machine as painless and easy as possible, the computer is been thought not only to speak but also to listen.

The Auto-notices Corporation has built a system completed with audio analyses and all of the complex electronics needed to give a computer «ears» that will actually hear the words spoken into a microphone. The vocabulary is still limited. During a demonstration, the engineer spoke slowly and distinctly a handful of the computer's words, and the letter dutifully typed them back. But on one word is failed. While counting «one, two, three», the computer typed back «one, two, four». Whereupon the demonstrator snapped «idiot», and the computer, in a veritable machine version of British aplomb, calmly replied, «Not in vocabulary».

X. Say a few words about:

1. Language translation done by a computer.
2. Your opinion on language translation.
3. What is positive and negative in language translation?

UNIT 7 COMPUTERS CONCERN YOU

PRE-TEXT EXERCISES

I. Memorize the pronunciation of the following words:

- | | |
|--------------------|--------------------------------|
| 1. Charles Babbage | Чарльз Бебідж. |
| 2. Calculating | рахувальний. |
| 3. Descendant | нащадок. |
| 4. Efficient | підготовлений, кваліфікований. |
| 5. To store | зберігати. |
| 6. To inquire | дізнаватися. |
| 7. Chief | головний. |
| 8. To concern | мати стосунок до чогось. |
| 9. Treatment | лікування. |
| 10. To associate | асоціювати. |
| 11. Scholar | науковець. |
| 12. Explosion | вибух. |

II. Translate the following international words:

professor, mathematics, to control, computer, music, television, barrier, symptom, doctor, million, system, second, expert, information.

III. While translating the text keep in mind the different meanings of the words:

- | | |
|-----------|---|
| article – | а) стаття;
б) предмет, річ;
в) артикль; |
| subject – | а) тема, предмет для розмови;
б) дисципліна, предмет;
в) сфера професійних інтересів; |
| reason – | а) розум, інтелект;
б) причина, привід;
в) мотив; |
| to find – | а) знаходити, зустрічати;
б) опинитися;
в) виносити рішення;
г) почуватися. |

IV. Words to remember:

1. A human being – людина.
2. To do sums – розв'язувати арифметичні задачі.
3. To pay wages – платити зарплатню.
4. To reserve seats – бронювати місце.

5. To extend – розширяти.
6. To keep up with smth – триматися нарівні з кимось, не відставати.
7. Various illnesses – різноманітні хвороби.
8. A code number – кодовий номер.
9. To reduce smth in size – зменшувати в розмірі.
10. To deal with smth – мати справу з чимось.

COMPUTERS CONCERN YOU

When Charles Babbage, a professor of Mathematics at Cambridge University, invented the first calculating machine in 1812, he could not imagine the situation we find ourselves in today. Nearly everything we do in the world is helped, or even controlled by computers, the complicated descendants of his simple machine. Computers are used more and more often in the world today, for the simple reason that they are far more efficient than human beings are. They have much better memories and they can store much information. No man alive can do 500000 sums in one second, but a computer can. In fact, computers can do many of the things we do, but faster and better. They can pay wages, reserve seats on planes, control machines at factories, work out tomorrow's weather, and even play chess, write poetry, or compose music. Just as television has extended human sight across the barriers of time and distance, so the computers extend the power of the human mind across the existing barriers. Let's look now at some of their ways in which computers concern people in their daily lives and work.

Computers are one of great importance in modern hospital. The chief use of computers is the storing and sorting the medical knowledge that has been inquired in the last 50 years. No doctor can possibly keep up with all discoveries. The only solution of the problem is to store medical knowledge in a computer. Today there are medical computer centers where all existing knowledge of symptoms of various illnesses and of their treatment is stored.

Many people associate computers with the world of science and math, but they are also a great help to scholars in other subjects: in history, literature and so on. It's now possible for a scholar to find a book or article he needs very quickly, which, when a million or more new books are published each year, is quite an advantage. There's a system, controlled by computer, of giving books a code number, reducing them in size. You tell the computer which subject you're interested in and it finds the file you need in seconds. It's rather like going to an expert who has read all the works on your subject and can remember where to find the correct information, which few human experts can! There are also systems being developed to translate articles from foreign magazines by computer, and to make up many lists of information that are needed in a modern library. So computers can help us to deal with the knowledge explosion in many ways.

TEXT-BASED ASSIGNMENTS

I. Find out synonyms:

- | | |
|-----------------|---------------|
| 1) complicated | a) quick |
| 2) efficient | b) compound |
| 3) human beings | c) people |
| 4) fast | d) big |
| 5) great | e) competent |
| 6) extend | f) to reduce |
| 7) help | g) to keep |
| 8) control | h) to enlarge |
| 9) to store | i) assist |
| 10) to lessen | j) check |

II. Find out antonyms:

- | | |
|----------------|-----------------|
| 1) complicated | a) to increase |
| 2) efficient | b) out-of-date |
| 3) better | c) simple |
| 4) fast | d) many |
| 5) great | e) disadvantage |
| 6) advantage | f) worse |
| 7) possible | g) slow |
| 8) few | h) impossible |
| 9) to reduce | i) little |
| 10) modern | j) incompetent |

III. Pay attention to the translation of the «pseudo friends of the translator»: hospital, magazine, human.

IV. Don't forget that the words denoting sciences have the ending -s, but are used as singular nouns:

e.g. Mathematics is a very important subject.

V. Use the following words in your own statements: physics, cybernetics, acoustics, graphics, statistics, ethics, linguistics, phonetic.

VI. Translate the words; state their part of speech according to the word-building elements:

situation, information, possibly, solution, treatment, quickly, explosion.

VII. Decide in what words suffix -er form the degree of comparison of adjectives:

computer, better, weather, barrier, store, center, number, rather, teacher, summer, driver, easier, bigger, faster, under.

VIII. Remember: the verbs «to do» and «to make» are synonyms, but they are used in different word-combinations:

<i>To make</i>	<i>To do</i>
to make tea, coffee	to do one's lessons
to make a sound	to do one's duty
to make laws	to do one's hair
to make a business	to do good, evil, right, wrong
to make plans	That will do
to make a decision	He works as much as you do (= work)
to make a fortune	Well done!
to make a living	Nothing doing
to make an excursion (an expedition, a journey, a passage, a progress, a tour, a trip, a voyage)	
to make a discovery	
to make a start	

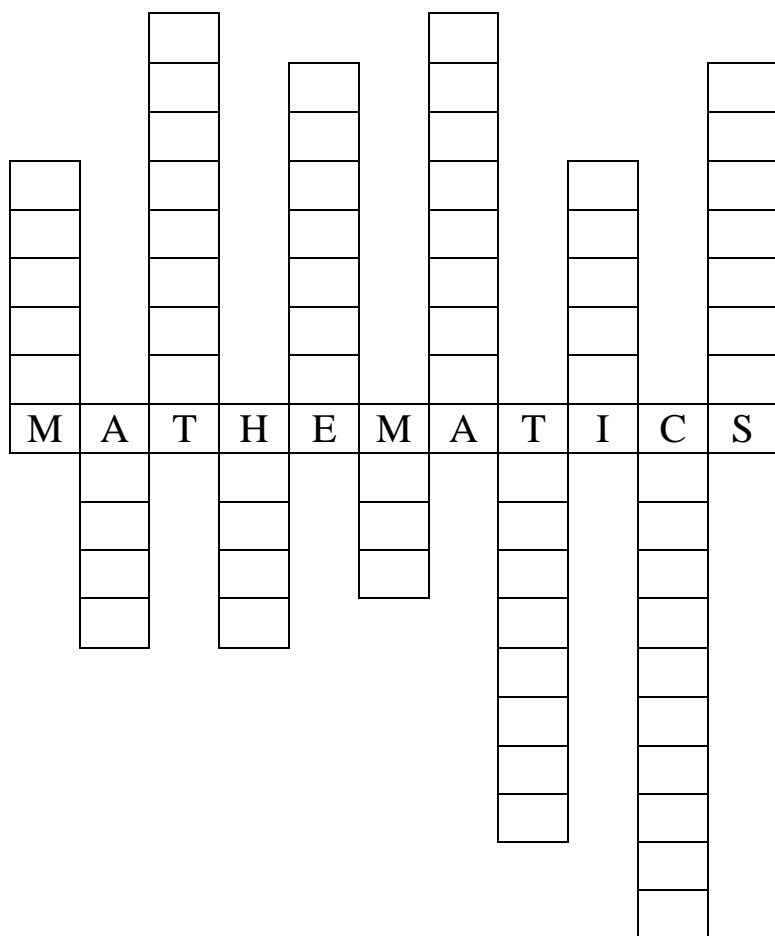
Translate these word-combinations and use them in the sentences of your own.

IX. Find the right English variant:

- | | | | |
|----------------|---------------|-----------------|-----------------|
| 1. Винаходити | a) to invent; | b) to develop; | c) to store. |
| 2. Ускладнений | a) simple; | b) complicated; | c) different. |
| 3. Відкриття | a) discovery; | b) invention; | c) development. |
| 4. Можливо | a) lovable; | b) simple; | c) possible. |
| 5. Стаття | a) article; | b) book; | c) magazine. |
| 6. Учений | a) school; | b) scholar; | c) scholarship. |
| 7. Іноземний | a) overseas; | b) foreign; | c) modern. |

X. Translate the following word-combinations into Ukrainian:

to invent the calculating machine, to be far more efficient, to compose music, to work out the weather, to extend human sight, the chief use, to keep up with the discoveries, the world of science and math, to be quite an advantage, to make up many lists of information, to deal with the knowledge explosion.

XI. Solve the crossword:

М – пам'ять
А – живий
Т – лікування
Н – людський
Е – існуючий
М – розум
А – асоціювати
Т – перекладати
І – винаходити
С – рахувальний
S – рішення, розв'язок

XII. Correct the statements if necessary using the phrases of agreement or disagreement:**AGREEMENT:**

You are quite right.

I agree with you.

Your statement is correct.

I share your point of view.

DISAGREEMENT:

You are wrong.

I disagree with you.

Your statement is not correct.

I do not share your point of view.

1. Charles Babbage invented the first calculating machine in 1830.
2. Computers are of no particular use in the world today.
3. Computers have much better memories than human beings.
4. The computers extend the power of human mind across the existing barriers.
5. All the doctors of our country keep up with all the discoveries in the sphere of medicine.
6. It's now impossible for a scholar to find a book or article he needs very quickly.
7. It takes a computer a very long time to find a file a scholar needs.
8. Computers can help us to deal with the knowledge explosion in many ways.

XIII. Answer the following questions using the phrases given below:

As far as I know
As far as I can judge
In my opinion
To my mind
For all I know
It is evident that

1. When did Charles Babbage invent the first calculating machine?
2. How often do we use computers today?
3. Why do we use computers so often?
4. What can computers do?
5. What is the chief use of computers in modern hospital?
6. What information is stored in the memory of computers in medical centers?
7. In what way computers help scholars?
8. What computer systems are being developed to help scholars to deal with the knowledge explosion?

XIV. Translate the given sentences:

1. Практично все, що ми робимо сьогодні в світі, ми робимо за допомогою комп'ютерів.
2. Комп'ютери мають значно кращу пам'ять, аніж будь-яка людина.
3. Комп'ютери збільшили можливості людського мозку.
4. Єдине вирішення проблеми збереження всієї набутої за останні 50 років інформації – це збереження її в пам'яті комп'ютера.
5. У багатьох людей комп'ютери асоціюються зі світом науки та математики.
6. Ви називаєте комп'ютеру предмет, яким ви цікавитесь, і він за лічені секунди знаходить файл, що вам потрібен.
7. Отже, комп'ютери багатьма шляхами допомагають мати справу з вибухом знань.

XV. Fill in the table going by the information from the text:

<i>Users of a computer</i>	<i>Ways of using a computer</i>
Doctors	
Scholars	

XVI. Prepare the retelling of the text according to the following plan:

1. The invention of the first calculation machine.
2. Modern usage of computers.
3. Computers in medical sphere.
4. Computers in the world of science.

XVII. Are you a «computer nerd» or a «technophobe»? Match a word in the box with a definition to find out what you know:

A modem	a person who doesn't like modern machines, especially computers
A computer nerd	a computer system which allows millions of computer users around the world to exchange information
A disk	a piece of electronic equipment that allows information to be sent along telephone wires from one computer to another
A mouse	a friend who you only ever communicate with through computers
The Internet	a small object which you move with your hands to give instructions to a computer
Cyberspace	a flat piece of plastic you use for storing computer information
A technophobe	the imaginary place where electronic messages, information pictures, etc. exist when they are sent from one computer to another
A cyberbuddy	someone whose life is dominated by computers

XVIII. Discussion. Divide into two teams and discuss the advantages and disadvantages of computers. Try to prove your opinions giving extensive answers. Here are some tips (підказки) for you:

The advantages of computers:

1. Computers let you access a lot of information.
2. Computers let you communicate very quickly by e-mail or using the Internet.
3. Children enjoy using computers and multimedia, interactive software and virtual reality all make learning more exciting, etc.

The disadvantages of computers:

1. Many people do not like using computers, and would prefer to deal with a person instead.
2. Computers can get viruses.
3. Computers quickly become obsolete (застарілий), so they soon need to be replaced, etc.

SUPPLEMENT

TEXTS

TEXT 1 WILL THE DESK COMPUTERS THINK INSTEAD OF US?

One of the main characteristics of the present-day global «computerization» in the West is the boom in domestic computers. The desk computer is expected to function as your personal librarian, carry out simple optimization computations, control your budget or diet, play several hundred games, etc. Further development of the computer is believed to lead to a situation in which most of the knowledge accepted by mankind will be stored in computers and made accessible to anyone with a home computer.

Communication between man and computer will not replace man's creative abilities but will expand them. It is natural that the development of minicomputers with extensive memories and possibilities will lead to a new higher level in information culture. The creation of the domestic computer industry will allow a lot of problems in culture and education to be solved. Among other things, we shall be able to organize the educational process in the country's colleges and universities and also in the system of school education on a new basis.

Working out computerized models of materials studied by schoolchildren or students will allow us to see the results of this instruction on a display screen, make understanding of the material very simple and make the development of a creative approach to the studying of knowledge and its application easier.

As for the information in various traditional branches of knowledge, the application of electronics will allow side by side with the traditional printed material to have the contents of books, magazines and articles fed into the computer memory, where this will be analyzed, arranged in a certain order, stored and produced on request as a printed computer program.

Knowledge is the most valuable wealth of our times. And minicomputers will help to make it accessible to everyone.

TEXT 2 HOW THE FIRST COMPUTER WAS DEVELOPED

The first suggestion that the machine for mathematical computation could be built was made more than a hundred years ago by the mathematician Charles Babbage. We now realize that he understood clearly all the fundamental principles of modern computers.

Babbage was born in Devonshire, England, in 1792. He did not receive a good education, but he taught himself mathematics so well that when he went to Cambridge, he found that he knew more algebra than his tutor. At that time mathematics in Cambridge was still under the influence of Newton and quite unaffected by the contemporary developments on the continent.

Charles Babbage was outstanding among his contemporaries because he

insisted on the practical application of science and mathematics. For example, he wrote widely on the economic advantages of machine tools. In 1812 he was sitting in his room looking at a table of logarithms which he knew to be full of mistakes, when an idea occurred to him of computing all tabular function by machinery. Babbage constructed a small working model which he demonstrated in 1822. The Royal Society supported the project, and Babbage was promised a subsidy. In 1833 he began to think of building a machine which was in fact the first universal digital computer, as the expression is understood today.

Babbage devoted the rest of his life to an attempt to develop it. He had to finance all of the work himself and he was only able to finish part of the machine though he prepared thousands of detailed drawings from which it could be made. Babbage wrote more than 20 books and papers, but he was misunderstood by his contemporaries and died a disappointed man in 1871. He tried to solve by himself and with his own resources a series of problems which in the end required the united efforts of two generations of engineers. After his death his son continued his work and built part of an arithmetic unit, which printed out its results directly on paper.

TEXT 3 BUYING A COMPUTER

Twenty years ago only highly trained specialists used computers. Today it's not unusual to find one under the Christmas tree with a 6-year-old's name on it. This year over a third of American households were computer- equipped and that number rises every year.

If you don't have a computer, should you add one to your gift list? Maybe. You don't need a computer any more than you need an answering machine or a VCR. You can still write a letter with a pen or a typewriter. You can also pay bills, prepare tax returns or plan a well-balanced diet without a computer. But these tasks – and many others – can be done far more efficiently with a computer. And if you have kids, let's face it: computer literacy gives them a significant edge both in school and in the job market.

If you've already decided to buy a computer, what kind should you get? Again, there are no simple answers. But if you understand what's involved, you can make a decision that's right for your family.

Before you shop, it's wise to gain familiarity with computers and software. Ask a friend to demonstrate the programs he (she) uses; check out the computers at local stores. Then consider these questions: What do you plan to do with it? If your family is like most, you probably expect to do word processing and financial record-keeping. If you have kids, add educational activities and games to the list. Even models under \$1,000 can perform those basic tasks. But software features involving complex pictures or sound may demand a setup that costs \$1,500 or more.

Perhaps you'd like to try an online service, like Prodigy, CompuServe or America Online. They offer electronic mail (E-mail), games, shopping, news, encyclopedias and electronic editions of magazines. Extra power isn't necessary to

go online, but you'll need a modem that connects your computer to others via telephone wires. Expect to pay \$50 to \$350 for the modem and software; online services cost about \$35 to join, plus \$5 to \$15 per month for basic use.

The hot news in computers is multimedia software that's capable of blending text, moving pictures and sound. With a multimedia encyclopedia you don't just read about lions, you see them bounding through the jungle and hear them roar. If you want multimedia capability, you'll need a CD-ROM (Compact disk – Read Only Memory) drive, plus additional equipment for sound and extra power and memory. A computer equipped for multimedia software costs \$1,500 to \$3,000 and up.

Can you get a basic computer and add multimedia capability later? In theory, yes. But it's often difficult to blend older components with new ones. Also, high costs for labor and parts often make it cheaper to buy a new computer than to upgrade an old one.

Would you rather type instructions or point to pictures? Command or menu-driven programs rely on words. For example, you might type «Delete» to erase a file. Another approach, called a graphical user interface (GUI), is based on icons, or pictures on the screen. Instead of typing «Delete» you'd use a mouse to point to a trash basket.

GUIs are popular because they make software easy to learn and fun to use, but they require extra memory and processing power. If you're willing to type commands, you can get satisfactory performance on a cheaper machine.

Macintoshes and IBM-compatibles dominate the computer world. Conventional wisdom has been that IBM-compatibles (made by Radio Shack, Compaq, Packard-Bell and others, as well as by IBM) offer the best value, while the Mac (made only by Apple) is more friendly. The gap has narrowed – Apple has slashed prices and better software has made IBM-compatibles easier to use.

Consider a Mac if you dread dealing with computers. Macs are simple to use and all the software works the same way. Once you learn how to print with one program, you know how to print with any other Mac program. IBM-compatibles have a system called Windows, which also uses icons and a mouse, but it doesn't function as seamlessly.

If you're looking for options, however, IBM and its clones have a clear advantage: nearly all business computers (except those for graphic design and music) and more than 75 percent of home computers are IBM-compatibles. Consequently, much more software is produced for IBM-compatibles.

You may have to consider compatibility, too. If, you want to use your employer's program on your home computer, make sure you know what kind of equipment it requires. (Check the manual or the box the software came in.) White Mac – and clone-users can work together, special software or equipment, plus extra effort, may be needed.

A desktop computer occupies two or three times the space of a typewriter and its at least twice as heavy. Laptops compress a keyboard, screen and processor into

a package the size and weight of a big-city telephone directory. This can be valuable if you have a small workspace or need to move your computer frequently. But laptop screens are not as easy to read and the keyboard is limited. Finally, portability comes at a price: laptops cost from 15 to 75 percent more than equivalent desktops. And if your child drops a laptop, repairing it could be almost as costly as buying a new one.

Computers are sold by discount stores, by specialty chains, and by individual computer stores. Mail-order prices tend to be lowest, but shopping locally allows you to ask questions and compare systems. If you want to keep it simple, consider ready-to-go models, like Apple's Performa or Compaq's IBM-compatible Presarios. These packages – which cost \$1,000 to \$2,000 and up – come with word-processing and check-writing programs, games and other popular software. Both companies offer toll-free telephone assistance – a big plus for novices.

See that the monitor is easy to read and doesn't flicker. Assess the feel and layout of the keyboard. Make sure the components don't emit annoying hum.

If you're not familiar with the wonders they can perform, you may be impressed by a sluggish one.

The sticker price doesn't always include a monitor, keyboard or other essentials.

Request a discount on a printer or modem, or ask for extras like a free mouse or software package.

Not only the length, but whether service is provided on-site. Otherwise you may have to take the computer to a repair facility. Also inquire about free classes, telephone support and other services.

Set up the computer promptly after you buy and try the software. You want to discover any problems before the warranty runs out.

TEXT 4 INTELLIGENT MACHINES

The evolution of artificial intelligence is now proceeding so rapidly that by the end of the century cheap computers no larger than portable type-writers will exist that will be able to solve almost any problem faster and more efficiently than we can.

«Intelligence» in a machine, as in a human, is best defined as the ability to solve complex problems swiftly.

This may involve medical diagnosis and prescriptions, resolving legal matters or playing war-games: in other words advising governments whether or not to go to war.

While computers have already enhanced the deadliness of weapons, the prospect for the future is that they will play the more beneficial role of preventing wars. If asked to assess the chances of victory, the computer will analyze facts quite differently from the life-long military expert with his enthusiasm and ambitions.

When the same statistics are fed into the emotionless machine each to be weighed with cold objectivity and then assessed against each other, the answer, far

more often than in human decision-making, will be: «if you start this war you will lose».

The computer coolly appraises the chances of success before the conflict begins, may well advise that the fight is unwinnable – or that the chances of victory are unacceptably low – and needless disaster can be avoided.

At what point today we decide that their mental capacity is approaching the human level? This question will be answered by an ingenious trick known as the Turing Test.

We most easily assess people's intelligence by communicating with them. The late British mathematician, Alan Turing, proposed a simple test. A person would sit alone in a room talking by teleprinter with two other beings elsewhere, one of them human and the other a computer. When after substantial conversation he no longer knew which was which, the computer would have passed the Turing Test, and arguably would have attained human intelligence.

No machine today comes near to passing the Turing Test. These are early days, however, and we may suspect that the rise of machine's IQ will be swift.

What will happen when this moment arrives? The most likely outcome is a world-wide slave empire, in which we are the masters and the computers virtually run the planet for us. But what if there arises a «Spartacus computer», a series of rebel machines with the ambition to reverse these roles?

Prof. Isaac Asimov may have solved the problem with a masterpiece of mathematical logic; he proposes that all intelligent machines should have the following three «Laws» programmed into them as instincts:

1. A robot may not injure a human being, or through inaction allow a human being to come to harm.
2. A robot must obey the orders given it by human beings, except when such orders would conflict with the First Law.
3. A robot must protect its own existence so long as such protection does not conflict with the First and Second Laws.

It sounds foolproof, but will it work? Pessimists will still pay attention to the ominous words of Arthur C. Clarke: «The first invention of a super-intelligent machine will be the last invention mankind will be allowed to make».

TEXT 5 RAILWAY COMPUTER SYSTEM

Railways use large computer systems to control ticket reservations and to give immediate information on the status of trains. The computer system is connected by private telephone lines to terminals in major train stations and ticket reservations for customers are made through there. The passenger's name, type of accommodation and the train schedule is put into computer's memory.

On a typical day, a railway's computer system gets thousand of telephone calls about reservations, space on other railways, and requests for arrivals and departures.

A big advantage of the railway computer ticket reservation system is its rapidity because a cancelled booking can be sold. Here in the system just a three seconds later. Railway computer systems are used not for reservations alone. They are used for variety of other jobs including schedule, planning, freight and cargo loading, meal planning, personnel availability, accounting and stock control.

It is the incredible speed of computers along with their memory capacity that make them so useful and valuable. Computers can solve problems in a fraction of the time it takes man. For this reason businesses use them to keep their accounts, and airlines tramlines and business use them to keep track of ticket sales. As for memory, modern computers can store information with high accuracy and reliability. A computer can put data into its «memory» and retrieve it again in a few millionths of a second. It also has a storage capacity for as many as a million items.

TEXT 6 APPLE LAUNCHES A NEW PRODUCT

As the spokesman for the company put it, «Newton» is the father of a whole family of information accumulation and transmission devices, the production of which is based on the unique elements software and base. The basis of the electronic part is ARM 610. The «Newton Mail» software package is also on offer.

In essence «Newton» is not a computer, but an electronic notebook and fax machine all in one. What is more, the new machine is sophisticated and quick enough to preserve information into it, and even to classify data and transmit numbers fed into its memory in advance to addresses, telephones and fax machines automatically.

«Newton» fits easily into a pocket or folder. The devise may be operated with an electronic «pen», with which the user writes information required or the idea that struck him on the display. If the information is meant for specific person, it is sufficient to key in just his name and «Newton» will then locate his address in the memory and transmit information along the telephone or fax number. In addition, «Newton» can easily be connected to the telephone network, personal computer and any other means of communication.

An important peculiarity of «Newton» is that it only reacts when its owner keys in the information. Such «recognition» of keying is possible thanks to the programmes which the US firm specially ordered from Russia's programmers. In the USA «Newton» is already on sale, with a price of 700 to 900 dollars depending on its possibilities. The first «international» samples of «Newton», on which one can work in English and in other languages, had already appeared by early September.

TEXT 7 COMPUTER AS TOOLS FOR MARKETING

Since 1975 the personal computer (PC) has changed the world of business. In the past, the slide ruler (логіфмічна лінійка), adding machine, the telegraph, the telephone, the hand calculator and the airplane each greatly affected the way business is done. Today the computer has begin to greatly affect the marketing field.

Computer programs are now available for collecting assessing and analyzing data and even projecting or predicting the future based upon current trends. Some programs have been developed that can simulate potential market conditions so that marketers can pretest strategies. These were mostly experimental but within a very short time they became as commonly available as PC's are today.

With the use of telephone modems, connected to PC's and computer printers and data base marketers today can assess information about any market, segment of market, even specific buyer anywhere in the world right from their own office.

Computer software is now available to write data collecting questionnaires (анкети), job interview forms, analyze advertising media effectiveness, sales and marketing management, create graphs and charts for analysis of market trends.

TEXT 8 THE DEVELOPMENT OF COMPUTERS IN THE FORMER USSR

The government and the authorities had paid serious attention to the development of the computer industry right after the Second World War. The leading bodies considered this task to be one of the principal for the national economy.

Up to the beginning of the 1950s there were only small productive capacities which specialized in the producing accounting and account-perforating (punching) machines. The electronic numerical computer engineering was only arising and the productive capacities for it were close to the naught.

The first serious steps in the development of production base were made initially in the late 1950s when the work on creating the first industry samples of the electronic counting machines was finished and there were created M-20, «Ural-1», «Minsk-1», which together with their semi-conductor successors (M-220, «Ural-11-14», «Minsk-22» and «Minsk-32») created in the 1960s were the main ones in the USSR until the computers of the third generation were put into the serial production, that is until the early 1970s.

In the 1960s the science-research and assembling base was enlarged. As the result of this measures, all researches connected with creating and putting into the serial production of semi-conductor electronic computing machines were almost finished. That allowed stopping the production of the first generation machines beginning from the 1964.

Next decades the whole branch of the computer engineering had been created. The important steps were undertaken to widen the productive capacities for the 3^d generation machines.

TEXT 9 THE COMPARISON OF THE COMPUTER DEVELOPMENT IN THE USA AND UKRAINE

The great accumulated experience in creating computers, the profound comparison of our domestic achievements with the new examples of foreign computer technique prompted the scientists that it is possible to create the

computing means of new generation meeting the world standards. Of that opinion were many outstanding Ukrainian scientists of the 70s or the Years of «Might-Have-Been Hopes» – Lebedev, Dorodnitsin, Glushkov and others. They proceeded from quite a favorable situation in the country.

The computerization of national economy was considered as one of the most essential tasks. The decision to create the united system of computers – the machines of new generation on integrals.

The USA were the first to create the families of computers. In 1963–1964 the IBM Company worked out the IBM-360 system. It comprised the models with different capacities for which a wide range of software was created.

A decision concerning the third generation of computers (their structure and architecture) was to be made in the USSR in the late 60s.

But instead of making the decision based on the scientific grounds concerning the future of the united system of computers the Ministry of Electronic Industry issued the administrative order to copy the IBM-360 system. The leaders of the Ministry did not take into consideration the opinion of the leading scientists of the country.

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

At the time when the computer science was just uprising this two countries were one of the most noticeably influential. There were a lot of talented scientists and inventors in both of them. But the situation in Ukraine (which at that time was one of 15 Republics of the former USSR) was complicated, on one hand, with the consequences of the Second World War and, on the other hand, at a certain period Cybernetics and Computer Science was not acknowledged. Of course, later it went to the past, but nevertheless it played a negative role on the Ukrainian computer development.

It also should be noticed that in America they paid more attention to the development of computers for civil and later personal use. But in Ukraine the attention was mainly focused on the military and industrial needs.

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

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

Another interesting aspect of the Ukrainian computer development was the process of the 70s when the «sovietising» of the IBM-360 system became the first

step on the way of weakening of positions, achieved by the Soviet machinery construction of the first two decades of its development. The next step that led to the further lag was the mindless copying of the next American elaborations in the field of microprocessor technique by the Ministry of Computer Industry.

Having analyzed the development of computer science in two countries we have found some similar and some distinctive features in the arising of computers.

First of all, we would like to say that at the first stages the two countries rubbed shoulders with each other. But then, at a certain stage the USSR was sadly mistaken having copied the IBM-360 out of date technology. Estimating the discussion of possible ways of the computer technique development in the former USSR in late 1960s - early 1970s from the today point of view it can be noticed that we have chosen a worse if not the worst one. The only progressive way was to base on our domestic researches and to collaborate with the west-European companies in working out the new generation of machines. Thus we would reach the world level of production, and we would have a real base for the further development together with leading European companies.

Unfortunately the last twenty years may be called the years of «unrealized possibilities». Today it is still possible to change the situation, but tomorrow it will be too late.

Will the new times come? Will there be a new renaissance of science, engineering and national economy as it was in the post-war period? Only one thing remains for us – that is to wait, to hope and to do our best to reach the final goal.

TEXT 10 HOW A COMPUTER WORKS

When you use a keyboard to give input to a computer, the CPU receives it as a series of bits, or on/off instructions for its electrical circuits. Each character or space in the input requires one byte, which is eight bits.

- Many people use computers without writing their own programs. Instead, they use the computers' built-in programs along with packaged software.
- A computer's operating system consists of prewritten instructions that make it possible for the computer to run application software and accept input from you.
- To store information on disks, a computer uses the 1's and 0's of the binary system to represent the opposing forces of a magnetic field.
- Even among floppy disks of the same size, some can hold more information than others. A disk operating system formats a disk by dividing it into tracks and sectors.
- A program is made up of numbered program lines, each containing one or more instructions. A computer carries out the instructions in the numerical order of the line numbers.
- You can make a change in a program line by retyping it. You can remove the line by typing its number and pressing the *RETURN* key. You can add a line to a program by giving the new line a number between the numbers of the lines above and below it.

- In *BASIC* a *PRINT* statement tells the computer to display information on the screen. The information may be letters, numbers, or symbols that you have typed between quotation marks, or it may be the results of an arithmetic problem.
- The system command *RUN* tells a computer to carry out the instructions in a program. A *LIST* command tells the computer to list the program lines in its memory. A *NEW* command clears the computer's memory.
- A *REM* statement, which is used to include comments in a program, does not affect the running of the program. An *END* statement tells the computer that it has reached the end of a program.

TEXT 11 THE PARTS OF A COMPUTER

A computer receives, stores, compares, changes, and manipulates data.

A computer program is a set of instructions that tells a computer what to do. A program is also known as software.

There are three basic steps in handling data: *input* – entering data and instructions that enable the computer to do a specific job; *processing* – sorting data and doing calculations; and *output* sending the results of processing to a storage or display device.

Software is the set of instructions that tells the computer what to do. Hardware is the physical parts of a computer, including peripherals.

A computer receives your input through the keyboard, disk drive, and other parts that you use to give it data or instruction.

Processing includes sorting, calculating, and other steps involved in following your instructions.

The information that results from the processing is called output. The computer displays output on its screen and can print the output or store it on tapes or disks.

The central processing unit, or CPU, is the computer's «brain». It has a control unit and an arithmetic / logic unit. The control unit determines whether the arithmetic / logic unit will add, subtract, or compare the numbers it was given.

A single silicon chip can be the entire CPU of a microcomputer. A chip contains thousands of tiny, interconnected electrical circuits.

A computer's ROM (read-only memory) is not affected when you turn off the computer. ROM includes built-in instructions that tell the machine what to do when you turn it on and how to perform calculation. RAM (random access memory) is a temporary memory that holds your input while you are working with it.

TEXT 12 ANALOGUE AND DIGITAL COMPUTERS

The computer is a universal information processing machine. The installation of computers in certain organizations has already greatly increased the efficiency of these organizations. Computers are a million times faster than humans in performing computing operations.

Analogue and digital computers are now widely used in many fields. The two types of computers differ in fundamental concept. The analogue machine may be regarded as a model of a physical or mathematical problem. The values of the variables are represented in the machine by physical quantity and the result is obtained by the measurement of another quantity.

Analogue computers are usually designed for one application, although some machines can be adapted to a range of problems by changing interconnections between their various units. The analogue machine, although limited by the accuracy, can deal with continuous variables.

Analogue computation is applied to solving the behaviour of a system. Some kind of analogue computation enables the engineer to obtain approximate solutions to his problems with a speed and ease.

The accuracy of operation of an analogue computer is much below that of a digital computer, but there are several compensating advantages.

Apart from cases that include simulation with actual components, any mechanical, electrical, biological or even economic system dynamics involving motion or variation in time may be studied.

TEXT 13 LANGUAGES OF A COMPUTER

There are many different computer languages: BASIC, Pascal, Logo, FORTRAN, COBOL, and others. For every computer to understand one of these languages, it needs a translator for that language.

Why are there different computer languages? The reason for this is that different languages work well for different kinds of tasks.

A machine language is the natural instruction set of a computer which bears little resemblance to the algebraic form in which mathematical expressions are normally written. This language makes the operation of the computer possible. It is known as the binary number system and was originally used to represent and handle numbers only. Nowadays it is used to handle letters and symbols as well.

Binary (*bi* means *two*) system uses only two symbols, 1 and 0 rather than the ten decimal numbers (0-9), and the twenty-six-letters, we normally use.

The decimal numbers are compared with the corresponding binary symbols. The symbol 1 in the binary system can be used to represent one, two, four, eight, or sixteen depending on its position or place in a special chart.

The binary system is not so practical for ordinary numerical problems as the decimal system because more digits are required to express numbers. But this system suits modern computers because some of them can store more than one and a half million decimal digits and operate with a lightening speed.

Before feeding information into the computer special machines, which look and operate like ordinary type-writers, can change or translate the entire contents of a problem into a binary notation into cards or tape.

The answer from the computers output is also received on cards or tape and fed through another translator that will deliver the desired information to the programmer in decimal numbers and English letters.