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COMPUTERS AND DATA PROCESSING

Навчальний посібник

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За редакцією проф. Кудряшової В.О.

Навчальний посібник призначено для студентів 1-го курсу інституту поштового зв’язку (спеціальність – комп’ютерні технології). Посібник складається з трьох частин. При складанні посібника були використані аутентичні тексти з даної спеціальності, взяті з сучасних британських і американських джерел. Мета посібника – поглиблене вивчення термінологічних складових текстового матеріалу, що сприятиме формуванню специфічної професіональної комунікації.

СХВАЛЕНО
на кафедрі іноземних мов
академії зв’язку.
Протокол № 10
від 28 квітня 2004 р.

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PART I

UNIT I.

1. Read and translate the text. Use a dictionary to check new words.

COMMUNICATIONS

What is communication? The dictionary defines it: “giving or exchanging information or news by speaking or writing. “ In today’s world, long distance communication is easy. We can call people on the telephone, send them telegrams, faxes, electronic messages or write them letters. We receive news and information on radio or television every day. Our modern inventions allow us to communicate with people in every part of our planet.

In early times, how did people communicate over long distances? How did they tell other people about a storm that was coming or an enemy who was planning to attack?

At first, people probably used their feet. When the people of one village wanted to send a message to someone who was far away, they gave the news to a runner. This messenger ran to the nearest village and gave the message to another runner. Then the second runner took it to a third runner, and so on. This was a very slow method of communication, and the message didn’t always reach its destination. The messenger had to run through forests and fields, cross rivers, and climb mountains. Sometimes they met wild animals and never arrived at the next village. And the messages frequently became mixed up, because each person who received the information change it a little.

People used other methods of communication, too. Cyrus the Great, who founded the Persian Empire, built a series of towers. A man with a very strong voice stood on each tower. When the king wanted to send a message, he gave it to the man on the first tower, who shouted it to the second tower, who relayed it to the man on the third tower. These messengers usually used megaphones, which made their voices louder.

The use of the fire and smoke was another primitive way of communication. People used blankets or leafy branches to control the puffs of smoke that came from a fire. The number and size of the puffs make a kind of code. This method wasn’t very efficient on rainy days or at night, and little wind could mix up the message very badly.

A few old methods of communication are still in use today. One of these methods is the use of drums. Some drums are made of hollow logs and animal skins. When the drummer hits the drum, it makes a noise that sounds a little

like human speech. Drumbeats travel quickly, but they can travel only a little way.

In 1790, a man in France invented the semaphore, which was a tall pole with “arms” at the top. Ropes moved the arms up and down to form letters of an alphabet. Semaphore operators were able to relay messages very quickly. A kind of semaphore is still in use on railroads. But efficient long-distance communication had to wait for the discovery of electricity.

2. Ask 10 questions to the text in writing to reflect its contents.

3. Make 5 your own sentences with new words and expressions. Memorize them.

2. Read and translate the text. Use a dictionary to help you

THE EFFECTS OF TELEVISION

Good and bad

Television has changed our lives in many ways. It has brought many positive things but also many negative things. Work in a small group or with your neighbour. Think hard! Add as many points as you can to the two lists.

The effects of television

Positive	**Negative**
You can learn a lot	*It takes a lot of your time*

Television research

Read about some of the research into the effects of television. Does the article mention any of your points?

THE MAGIC BOX

Television has changed our lives in many ways. Many people now spend more time watching television than doing anything else. Researchers in the USA have estimated that when most students leave school they have spent 11,000 hours in the classroom and 22, 000 hours watching television. But what effect does this have?

Benefits of television

- Television helps us to learn more about the world and to know and see many new things. Television can often present information to us in a more effective way than books can. It can also make things more memorable.
- It entertains us. It is an enjoyable way to relax. For millions of people around the world, television is a source of companionship and helps them to cope with everyday life.

- It has increased the popularity of sports and arts.
- It has made us aware of our global responsibilities. In 1985, for example, 1.5 billion people in 147 countries watched a TV pop concert and helped to collect more than $100 million for people in Africa.

Dangers

- Television can make us passive. We don't have to think and our brain becomes lazy.
- It encourages us to buy things that we don't need, and can make us unhappy with our own lives.
- It takes time away from activities such as reading, conversation, and games.
- It gives a false picture of society. A study in 1994 showed that people who watched a lot of television are more afraid of crime. They also think that there is a lot more crime than there really is.
- Some critics say that television makes people violent. A ten-year-study in the United States showed that children who watch violent television programmes are more likely to be violent themselves.

What can we do about positive and negative points listed in the text?

UNIT II.

1. **Read the fact and memorize the new words and expressions**

THE DEVELOPMENT OF THE COMPUTER

1. mechanical calculating machine	механическая счетная машина
2. digital computer	цифровой компьютер
3. analog computer	аналоговый компьютер
4. analytical engine	аналитическая машина
5. sequence of instructions	последовательность инструкций (команд)
6. logical statement	логическое утверждение
7. in a way similar to	способом, подобным чему-либо
8. differential analyzer	дифференциальный анализатор
9. to make an important contribution to	внести важный вклад в
10. solid state device	твердотельное устройство
11. integrated circuit	интегральная схема
12. high speed mainframe	быстродействующая (универсальная) вычислительная машина
13. tremendous memory capacities	огромные емкости памяти

14. auxiliary storage equipment	вспомогательное запоминающее оборудование (устройство)
15. bubble	цилиндрический магнитный домен (ЦМД)
16. magnetic bubble unit	устройство на цилиндрических магнитных доменах (ЦМД)
17. semiconductor like chip	кристалл полупроводникового типа
18. a very large-scale integrated circuit (VLCI)	сверхбольшая интегральная схема (СБИС)
19. to devise hardware and software	изобретать аппаратные и программные средства (обеспечение)

The inventions and ideas of many mathematicians and scientists **led to the development of the computer.**

The first **mechanical calculating machines** were invented during 1600s.

During the 1830s, an English mathematician named Charles Babbage developed the idea of **a mechanical digital computer.**

The machine performed complicated calculations according to **a sequence of instructions.**

In the mid 1800s an English logician and mathematician George Boole devised a system of formulating **logical statements** that could be written **in a way similar to** ordinary algebra.

In 1930 the first reliable **analog computer** was built. This machine, called a **differential analyzer**, solved *differential equations.*

The development of **the integrated circuit** enabled engineers to design both minicomputers and **high-speed mainframes** with **tremendous memory capacity**.

Researchers are seeking ways to improve memories and **auxiliary storage** equipment. They expect to produce **an efficient magnetic bubble unit.**

A magnetic bubble unit is a semiconductor like chip that stores data in tiny, cylindrically shaped areas called bubbles.

Scientists are working on a very large-scale **integrated circuit (**VLSI) that will contain hundreds of thousands of transistors and other parts.

Projects are also being undertaken **to devise hardware and software** that would enable a computer to understand ordinary speech.

2. Read about the history of computers. Find the answers to the questions. Put them down.

1. When was the first electronic computer produced?
2. How did the Internet begin?
3. Which was the first computer to use a graphic interface?
4. What is the World Wide Web? Why was it produced?

THE HISTORY OF A COMPUTER

1883 Charles Babbage, in England, developed the principles of what later became the electronic computer.

1946 ENIAC, the first electronic computer, was produced in the USA. It weighed 30 tons, and was 5.5 metres high and 24 metres long.

1960s It became possible to make electronic machines much smaller by using transistors and integrated circuits.

1969 The United States Defense Department established ARPAnet. This was the beginning of the Internet. The Internet allows messages to be sent from one computer to another.

1977 The Apple Computer Company produced the Apple II and millions of people bought their first computer.

1981 IBM produced the personal computer. IBM 'clones' made computers much cheaper.

1984 Apple produced the Macintosh computer with an easy-to-use graphic interface.

1990 The World Wide Web was developed for scientists to exchange information. The WWW is a system which allows computers to communicate with each other, and exchange graphics and sounds as well as text, through the Internet.

1991 CD ROMs first appeared.

1993 The Internet became available to anybody who had a computer, a modem and a telephone.

UNIT III.

1. Read and translate the text. Check up the meaning of the underlined words and expressions. Make up a short oral summary

COMPUTER DIFFERENCES

Purpose differences

A computer can be built to count numbers or to measure physical relationships. **A digital computer** is one that directly counts the numbers (or digits) that represent numerals, letters, or other special symbols. In contrast to a digital machine, an analog computer is the one that measures physical values such as temperature or pressure. For example, a service station gasoline pump contains an analog processor that converts fuel flow measurements into quantity and price values. Desirable features of analog and digital machines are sometimes combined to create a hybrid computing system. In a hospital intensive-care unit, for example, analog devices measure a patient's heart function, temperature, and other vital signs. These measurements are then converted into numbers and sup-

plied to a digital component that monitors the patient's vital signs and signals a nurse station if abnormal readings are detected.

Analog and hybrid processors are special-purpose machines, and they perform important tasks. But most computers in use today are digital devices. Digital computers can also be designed to perform one specific function. In a special function digital computer, the instructions are wired into or permanently stored in the machine. The processors installed in automobiles to control fuel, ignition, instrument and breaking systems are examples of such computers. Unlike their special-purpose cousins, general-purpose digital computers can store different programs and can thus be used in countless applications. By using different instructions, such a machine can process a payroll one minute and draw a chart the next.

Size differences

Modern computer systems vary in physical size from those that fill rooms to those with CPUs that can rest on the nail of your little finger. Generally, the larger the system, the greater are its processing speed, storage capacity, cost and ability to handle large numbers of powerful input and output devices. While the smallest processors are typically used by one person at a time, larger systems can simultaneously serve the needs of many users. For example, a large computer at an insurance company can process hundreds of customer policies at the same time that it's accepting medical claims from scores of online workstations located in hospitals and doctors' offices.

Systems on the low end of the size scale are called microcomputers or minicomputers. **Microcomputers** are the smallest units. They may be the tiny special-purpose device dedicated to carrying out a single task such as controlling an automobile's ignition system. Or they may be more visible and familiar personal computers, ranging from notebook size to desktop size, that we can use in countless ways. Microcomputers can perform the same operations and use the same type of instructions as much larger computers. Minicomputers are also small general-purpose systems, but unlike most micros they typically serve multiple users. They're usually more powerful and more expensive than micros, but the performance of some newer micros surpasses the capabilities of some older minis. In physical size, minicomputers vary from desktop models to units the size of small file cabinets.

Mainframe computers are systems that offer faster processing speeds and greater storage capacity than a typical mini. Finally come the **supercomputers**, designed to process complex scientific jobs. These are the largest, fastest and most expensive systems in the world.

2. Ask 10 questions to the text in writing

UNIT IY.

1. Read and translate the text. Make up your own list of terms. Memorize them

FILE PROTECTION

The MS-DOS operating system is a powerful and useful tool for processing personal and business information. As with any computer, this information must be protected, since errors may occur and information may be misused. So if you are doing work that cannot be replaced or that requires a lot of security, you should protect your programs.

You can take simple but effective measures like putting your disks away when you're not using them, or covering the write-protect notch on your program disks. Another way to protect your programs is by installing your equipment in a secure office or work area. Also, if your disks contain valuable information, you should make backup copies of them on a regular basis.

2. Read and translate the text. Make up your own list of terms. Memorize them

HOW MS-DOS KEEPS TRACK OF YOUR FILES

As you learned in the MS-DOS User's Guide, MS-DOS stores files in directories. In addition to directories, it uses an area on a disk called the File Allocation Table. When you format a disk with the format command, MS-DOS copies this table onto the disk and creates an empty directory, called the root directory. On each of your disks, the directories store the files, and the File Allocation Table keeps track of their locutions. The table also allocates the free space on your disks so that you have enough room to create new files.

These two system areas, the directories and the File Allocation Table, enable MS-DOS to recognize and organize the files on your disks. To check these areas on a disk for consistency and errors, you should use the MS-DOS **chkdsk** command.

For example, to check the disk in drive A, type the **chkdsk** command, followed by **a**:

In response, MS-DOS displays a status report and any errors it has found, such as files that show a nonzero size in the directory but that really have no data in them.

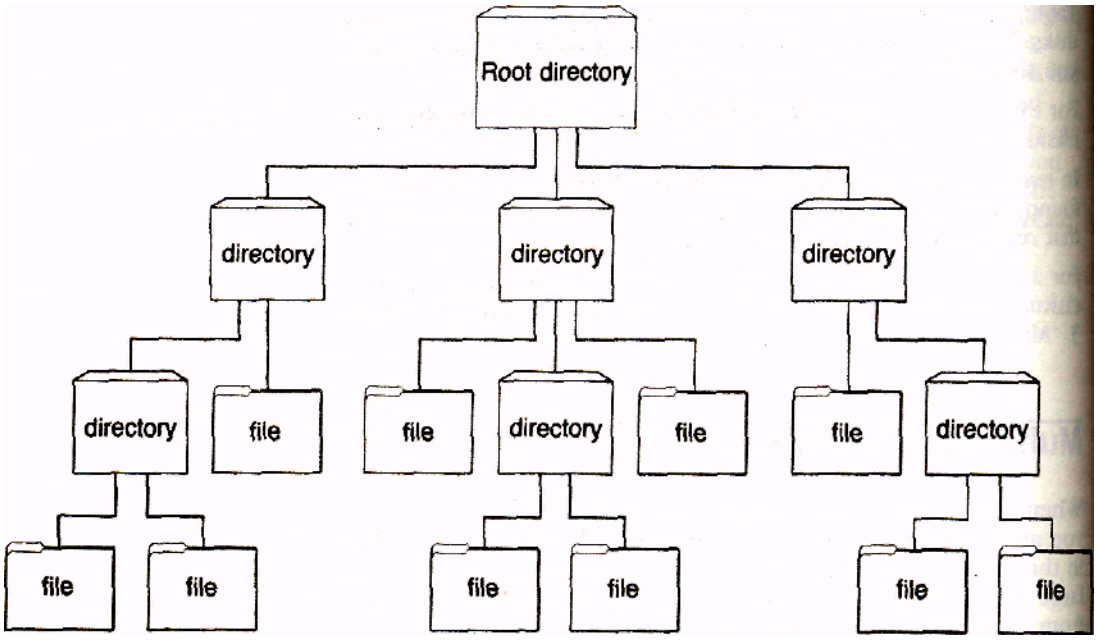
When there is more than one user on your computer, or when you are working on several different projects, the number of files in the directory can

become large and unwieldy. To deal with this large number of files, you may want to keep your files separate from a coworker's, or organize your programs into convenient categories.

In an office, you can separate and organize files that belong to different people or that relate to specific projects by putting them in different file cabinets. For example, you might put your accounting programs in one file cabinet and your letters in another. You can do the same thing with MS-DOS by putting your files into different directories.

Directories let you group your files in convenient categories. These directories, in turn, may contain other directories (referred to as subdirectories). This organized file structure is called a multilevel or hierarchical directory system.

Note The maximum number of files or directories that the root directory may contain varies, depending on the type of disk and disk drive you are using. Usually, the maximum number is 112 for a double-sided, double-density, 5.25-inch floppy disk The maximum number of entries in the root directory of a 1.44 megabyte, 3.5-inch floppy disk is 224. This maximum capacity for a root directory may vary depending upon how the disk is formatted. The number of subdirectories on a disk is not restricted.



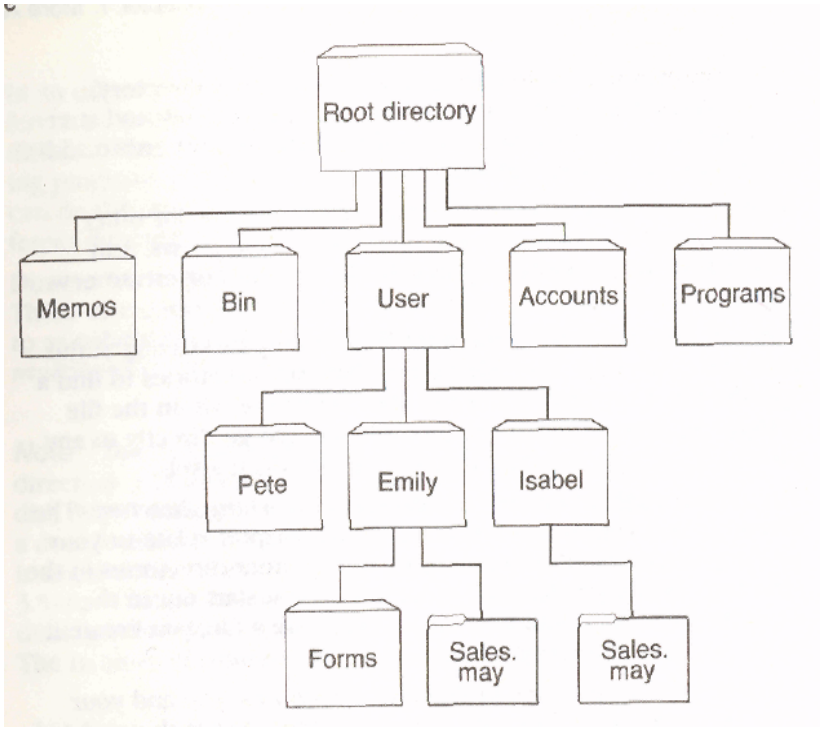
The first level in a multilevel directory is the root directory, which is created automatically when you format a disk and start putting files on it. Within the root directory, you can create additional directories and subdirectories.

As you create new directories for groups of files, or for other people using the computer, the directory system grows. And within each new directory, you can add new files or create new subdirectories.

You can move around in the multilevel system by starting at the root and "traveling" through intermediate subdirectories to find a specific file. Conversely, you can start anywhere within the file system and travel toward the root. Or you can go directly to any directory without traveling through intermediate levels.

The directory that you are in is called the working directory. The filenames and commands discussed in this chapter relate to your working directory and do not apply to any other directories in the structure. When you start your computer, you start out in the working directory. Similarly, when you create a file, you create it in the working directory.

Because you can put files in different directories, you and your coworkers can have files with the same names, but with unrelated content. The following figure illustrates a typical multilevel directory structure.



In this example, five subdirectories of the root directory have been created.

These subdirectories are:

A directory of external commands, named bin.

A user directory containing separate subdirectories for all users of the system.

A directory containing accounting information, named accounts.

A directory of programs, named programs.

A directory of text files, named memos.

As you can see, Pete, Emily, and Isabel each have their own directories, which are subdirectories of the user directory. Emily has a subdirectory named forms, and both Emily and Isabel have *sales.may* files in their directories, even though Isabel's *sales.may* file is unrelated to Emily's.

This organization of files and directories is not important if you work only with files in your own directory. However, if you work with someone else, or on several projects at once, the multilevel directory system becomes handy. For example, you could get a list of the files in Emily's forms directory by typing the following command:

dir \user\emily\forms

Notice that a backslash (\ ) separates directories from other directories and files. In the previous example, the first backslash includes the root directory. The use of the backslash alone indicates the root directory. For example, the following command displays a list of the files in the root directory:

**dir **

To find out what files Isabel has in her directory, you would type the following command:

dir\user\isabel

This command tells MS-DOS to travel from the root directory to the user directory to the Isabel directory, and then to display all filenames in the *isabel* directory.

UNIT Y.

1. Read and translate the text

PATHS AND PATHNAMES

When you use multilevel directories, you must tell MS-DOS where the files are located in the directory system. Both Isabel and Emily, for example, have files named **sales.may**, so each would have to tell MS-DOS in which directory her file resides when she wants to use it. This is done by giving MS-DOS a pathname to the file.

A pathname is a sequence of directory names followed by a filename. Each directory name is separated from the previous one by a backslash (\ ). A path differs from a pathname in that it does not include a filename.

The general format of a pathname is as follows:

[\directory name] [\directory name...]\filename

A pathname may contain any number of directory names up to a total length of 63 characters. If a pathname begins with a backslash, MS-DOS searches for the file beginning at the root of the directory system. Otherwise, it begins at the working directory and searches along the path from there. Here are two examples: The pathname of Emily's sales, may file is

\user\emily\sales.may

The pathname of Isabel's **sales.may** file is **\user\isabel\sales.may**

When you are in your working directory, you may use a filename and its corresponding pathname interchangeably. Some sample names are:

\ The root directory.

\programs

A directory under the root directory that contains program files.

\user\isabel\forms\1040

A typical full pathname. This one is for a file named 1040 in the forms directory, which belongs to Isabel.

sales. may A file in the working directory.

A parent directory is any directory that contains subdirectories. MS-DOS provides special shorthand notations for the working directory and the parent of the working directory, and automatically creates these two entries whenever you create a directory:

MS-DOS uses the shorthand name "." to indicate the name of the working directory in all multilevel directory listings.

These two dots are the shorthand name ".." for the working directory's parent directory (one level up). If you type the dir command followed by two dots, MS-DOS lists the files in the parent directory of your working directory. If you type the following command, MS-DOS lists the files in the parent's parent directory:

dir . .\ . .

If you are using multilevel directories, you will find it easier to search for files on your disks if you use two special characters, called wildcards. The wildcard characters are the asterisk (*) and the question mark (?). They are useful in MS-DOS command lines because they give you flexibility when you are specifying paths and files.

2. Read and translate the text

THE WILDCARDS

A question mark (?) in a filename or filename extension means that any character can occupy that position. The following command, for example, lists all filenames on the default drive that begin with the characters memo, that have any character in the next position, that end with the characters aug, and that have an extension of .txt:

dir memo?aug.txt

Here are some examples of files that might be listed by the preceding command:

MEM02AUG.TXT
MEM03AUG.TXT
MEMOBAUG.TXT

THE * WILDCARD

An asterisk (*) used in a filename or filename extension means that any character can occupy that position or any of the remaining positions in the filename or extension. For example, the following command lists all the directory entries on the default drive with filenames that begin with the characters memo and that have an extension of .txt:

dir memo*.txt

Here are some examples of files that might be listed by this db-command:

MEM02AUG.TXT
MEMQ9AUG.TXT
MEMQBAUG.TXT
MEMDJULY.TXT
MEMOJUNE.TXT

MS-DOS ignores any filename characters that follow the asterisk wildcard, up to the period that separates the filename from its extension. For example, the command *dir *l.mem* would list *all* the files in the directory with the extension .mem, not just those files whose names end with the number /.

Important The wildcard abbreviation *.* refers to all files in the directory. This feature can be both powerful and destructive when used with MS-DOS commands. For example, the del command followed by the wildcard ab-

breviation V deletes all files on the default drive, regardless of filename or extension.

Examples:

Suppose you want to find a certain accounting file but can't remember its exact name. What you can do is list the directory entries for all files named *accounts* in the default directory of drive A (regardless of their filename extensions). To do this quickly, you could just type the following command:

dir accounts.*

Similarly, to list the directory entries for all files with . *txt* extensions or in a directory called *reports* (regardless of their filenames) on the disk in drive B, type the following command:

dir b:\reports*.txt

This command is useful if your text files have . *txt* extensions. For example, by using the **dir** command with wildcard characters, you could get a listing of all your text files – even if you don't remember their filenames.

UNIT YI.

1. Read and translate the text

USING DIRECTORIES

The following sections describe how to display, change, and delete any directory. You will also learn how to create directories and subdirectories.

How to Create a Directory

To create a subdirectory in your working directory, use the **mkdir** (make directory) command. For example, to create a new directory named *user* under your working directory, simply type the following command:

mkdir user

After MS-DOS runs this command, a new directory will exist under your working directory. You can also make directories anywhere in the directory structure by specifying **mkdir** followed by a path. MS-DOS automatically creates the "." and ".." entries in the new directory.

To create files in the new directory, you can use the Video File Editor, Edit. The Video File Editor (Edit) describes how to use Edit to create and save files. See the Video File Editor Pocket Guide for more information.

How to Change Your Working Directory

With MS-DOS, it is easy to change from your working directory to a different directory; you simply type the **chdir** (change directory) command followed by a path. For example, to change the working directory to \ *user*, you simply type the following:

chdir\user

You can also specify any path after the command so that you can travel around the directory structure. The following command, for example, puts you in the parent directory of your working directory:

chdir . .

How to Display Your Working Directory

All commands are executed while you are in your working directory. You can find out the name of the directory you are in by typing the MS-DOS **chdir** command with no path. For example, if your working directory is *user**pete*, when you type **chdir** and press the ENTER key, you will see the following:

A:\USER\PETE

This message **shows your *working drive,*** A, plus **your** working **directory,** *tiser**pete.*

Shortcut You can also *type* the letters **cd** for the chdir command to save time. For example, the following commands are the same:

cd \user\pete chdir \user\pete

If you want to see the contents of the *user**pete* directory, you can use the MS-DOS dir command. The subdirectory might look like this:

```
Volume in drive A has no ID
Directory of A:\USER\PETE

                <Dir>          08-09-87        10:09a
                <Dir>          08-09-87        10:Q9a
TEXT            <Dir>          08-09-87        10:09a
FILE1           TXT   5243     08-04-87         9:30a
        4 File(a)          836320   bytes free
```

Notice that MS-DOS lists both files *and* directories in this output. As you can see from the display, Pete has a subdirectory named *text;* the "." refers to the working directory *user**pete;* the ".." is short for the parent directory \ *user,* and *filel. txt* is a file in the *user**pete* directory. All these directories and files are on the disk in drive A.

Note Because files and directories are listed together, you cannot give a subdirectory the same name as a file in that directory. For instance, if you already have a path *user**pete, where pete* is a subdirectory, you cannot create a file named *pete* in the \ *user* directory.

2. Read and translate the text

HOW TO DELETE A DIRECTORY

If you create a directory and decide later that you don't want it any more, you can delete it with the MS-DOS **rmdir** (remove directory) command.

The rmdir command lets you delete any directory by specifying its path, but the directory must be *empty* except for the "." and ".." entries. This prevents you from accidentally deleting files and directories.

To remove all the files in a directory (except for the "." and ".." entries), type del followed by the path of the directory. For example, to delete all files in the *user**emily* directory, type the following command:

del \user\emily

MS-DOS prompts you with the following message: Are you sure (Y/N) ?

If you really want to delete all the files in the directory, type *Y* (for Yes). If not, type *N* (for No) to stop the command.

Now you can use **the rmdir** command to delete the *user**emily* directory by typing the following command:

rmdir \user\emily

Shortcut To save time, you can also use the letters **rd** for the **rmdir** command.

HOW TO RENAME A DIRECTORY

There is no command to rename a directory in MS-DOS. You can, however, rename a directory that has no subdirectories. Suppose, for example, you

want to rename the *user**pete* directory and call it *user**emily*. To do this you would follow these steps (remember to press the ENTER key after each step):

GO To create the new directory, type mkdir \user\emily
GO Then to copy the files from the old directory to the new directory, type
copy \user\pete*.* \user\emily
Now to delete the contents of the old directory, type del \user\pete*.*
(Type Fin response to the prompt "Are you sure?")
Finally, to remove the old directory, type rmdir \user\pete

In this chapter, you've learned more about files and directories, about wildcards and how to use them, and about some basic MS-DOS commands that help you work with files and directories. In the next unit, you'll learn about the two kinds of commands, and about using redirection symbols.

UNIT YII.
1.Read and translate the text.

TYPES OF MS-DOS COMMANDS

In this text, you will learn about

- Internal and external MS-DOS commands
- Redirecting input and output
- Command grouping symbols

There are two types of MS-DOS commands:

Internal commands
External commands

Internal commands are the simplest, most commonly used commands. When you list the directory on your MS-DOS disk, you cannot see these commands because they are part of a file named *command.com.* When you type internal commands, MS-DOS performs them immediately. This is because they were loaded into your computer's memory when you started MS-DOS. Following is a list of the MS-DOS internal commands:

break	**exit**	**ren (rename)**
call	**for**	**rmdir (rd)**
chcp	**goto**	**set**
chdir (cd)	**if**	**shift**
els	**mkdir (md)**	**time**
copy	**path**	**type**

ctty	**pause**	**ver**
date	**prompt**	**verify**
del (erase)	**rem**	**vol**
dir		
echo		

Some internal commands can use paths and pathnames. Specifically, four commands – **copy, dir, del,** and **type –** have greater flexibility when you specify a pathname after the command. However, you never specify a path or pathname before any internal command. The formats of these commands are as follows:

» *copy pathname pathname*

If the *second pathname* is a directory *(a. path),* MS-DOS copies all the files you specify in the *fast pathname* into that directory, as in the following example:

copy \user\pete*.* sales
• *del pathname*

If the pathname is a directory *(a path),* all the files in that directory are deleted. If you try to delete a path, MS-DOS displays the prompt "Are you sure (Y/N)?". Type *Y* (for Yes) to complete the command, or TV (for No) to stop the command. Example:

del\user\pete
• *dixpath*

The following command displays the directory for a specific *path:*

di r \user\pete
• *type pathname*

You must specify *pathname (or filename)* for this command. MS-DOS then displays this file on your screen in response to the **type** command. Example:

type \user\emily\report.nov

Any filename with an extension of.com, *.exe,* or *.bat* is considered an *external* command. For example, files such as *format com* and *diskcopy. com* are external commands. And because all external commands are also files, you can create new commands and add them to MS-DOS. Programs that you create with most languages (including assembly language) will be *.exe* (executable) files.

Notice, however, that when you use an external command, you do not need to type its filename extension.

Note If you have more than one external command with the same name, MS-DOS will run only one of them, according to the following order of precedence: *.com, .exe, .bat.*

To illustrate this precedence, suppose your disk contains the files *format.com 2nd format, bat.* If you were to type the external command **format,** MS-DOS would always run the program *format com* first, and not run *the format, bat* file at all.

The following external commands are "MS-DOS Commands":

append	**fdisk**	**print**
assign	**find**	**recover**
atttib	**format**	**replace**
backup	**graftabl**	**restore**
chkdsk	**graphics**	**select**
command	**join**	**share**
comp	**keyb**	**sort**
diskcomp	**label**	**subst**
diskcopy	**mem**	**sys**
exe2bin	**mode**	**tree**
fastopen	**more**	**xcopy**
fc	**nlsfunc**	

Before MS-DOS can run external commands, it must read them into memory from the disk. When you give an external command, MS-DOS immediately checks your working directory to find that command. If it isn't there, you must tell MS-DOS which directory the external command is in. You do this with the **path** command.

When you are working with more than one directory, you may find it more convenient to put all the MS-DOS external commands in one directory. Then, when it needs them, MS-DOS can quickly find the external commands at one location.

Suppose, for example, that you are in a working directory named *\user\prog* and that the MS-DOS external commands are in *\bin.* To find the **format** command, you must tell MS-DOS to choose the *\bin* path, as in the following command, which tells MS-DOS to search in your working directory *and* in the *\bin* directory for all commands:

path \bin

You need only specify this path once during each computer session. Also, if you want to know what the current path is, you can ’ simply type the **path** command by itself. In response, MS-DOS then displays the working path on the screen.

You can automatically set your path when you start MS-DOS by including the path command in a file called *autoexec.bat.* For more information on the *autoexec.bat* file, refer to "Batch Processing."

2. Read and translate the text

REDIRECTING COMMAND INPUT AND OUTPUT

Usually, MS-DOS receives input from the keyboard and sends its output to the screen. You can, however, redirect this flow of command input and output. For instance, you may want input to come from a file instead of from the keyboard, and you may want output from a command to go to a file or line printer instead of to the screen. With redirection symbols, you can also create *pipes* that let the output from one command become the input for another command.

How to Redirect Your Output

By default, most commands send output to your screen. If you want to change this and send the output to a file, you just use a greater-than sign (>) in your command. For example, the following command displays *on the screen* a directory listing of the disk in the default drive:

di**r**

The **dir** command can send this output to a file named *contents* if you type the following:

di**r > content 5**

If the *contents* file doesn’t exist, MS-DOS creates it and stores your directory listing there. If *contents* does exist, MS-DOS replaces what is in the file with the new data,

If you want to append your directory or add one file to another (instead of replacing the entire file), you can use two greater-than signs (») to tell MS-DOS to append the output of the command (such as a directory listing) to the end of a specified file. For exampie, the following command appends your directory listing to an existing file named *contents:*

dir » contents

If *contents* doesn’t exist, MS-DOS creates it.

2. Read the facts and memorize the new words and expressions.

PROGRAMMING A DIGITAL COMPUTER

sequence	последовательность
to deliver	выдавать
to refer to	ссылаться на
high-level language	язык высокого уровня
low-level language	язык низкого уровня
to require	требовать
to suit	подходить
to add	прибавлять, складывать
to subtract	вычитать
to represent	представлять
assembly language	(входной) язык ассемблера
compiler	компилятор, компилирующая программа
assembler	ассемблер, компонующая программа

Programming involves the preparation and writing of detailed instructions for a computer. These instructions tell a computer exactly what data to use and what sequence of operations to perform with the data. Without such programs a computer could not solve problems or deliver any other desired result.

In most cases computer scientists and other computer specialists called programmers write the instructions. They refer to programs as software because the instructions have no physical parts. The term hardware is applied to computer itself, including its electronic circuits and peripheral equipment.

A programmer writes the instructions for a computer in a programming language. Such a language consists of letters, words, and symbols as well as rules for combining those elements. Some programming languages closely resemble the language of mathematics. Others enable programmers to write instructions in simple, everyday expressions such as "READ", "ADD", and "STOP". Programming languages of this kind are called *high-level languages*.

The language that a programmer uses depends largely on the job to be done. If a task involves processing business data, the programmer would most likely use COBOL (Common Business Oriented Language). However, preparing a computer to solve complicated scientific problems might require the use of ALGOL (ALGOrithmic LANGUAGE), which is a mathematically oriented programming language.

Some high-level languages can be used for business, technical, or scientific programming. Such languages include FORTRAN (FORmula TRANslation), APL (A Programming Language), and PL/1 (Programming Language One).

Another commonly used programming language is BASIC (Beginner's ALL-purpose Symbolic Intruction Code). BASIC is well suited for writing relatively simple programs for minicomputers and microcomputers.

Some computer programs can be written in an assembly language. This kind of language is harder to use than a high-level language because it involves symbols as well as words. For example, an assembly language might use the symbols AD for add and S for subtract.

A computer can not work directly with a program written in a high-level or assembly language. The instructions have to be translated into a machine language composed of binary digits that represent operation codes, memory addresses, and various symbols, such as plus and minus signs. Machine language is also known as low-level language. Special programs called compilers and assemblers translate high-level and assembly languages into machine language.

Notes

1. COBOL (Common Business Oriented Language) – КОБОЛ (язык, ориентированный на выполнение общих экономических расчетов).
2. ALGOL (ALGOrithmic language) – АЛГОЛ (алгоритмический язык)
3. FORTRAN (FORmula TRANslation) – ФОРТРАН (перевод формул)
4. APL (A Programming Language) – АПЛ (язык программирования)
5. PL/1 (Programming Language One) – ПЛ/1 (язык программирования/1)
6. BASIC (Beginner's All-purpose Symbolic Instruction Code) – БЭЙСИК (многоцелевой язык символических инструкций для начинающих)

Answer the following questions on the contents of the text

1. What does programming involve? 2. Who writes the instructions? 3. What does a programming language consist of? 4. What programming languages do you know? 5. What is a machine language composed of?

UNIT IX.

1. Read about BBC news service. Make up a short summary of the text

THE BBC NEWS SERVICE

The BBC began in 1922. Of course, in those days there was no television, only radio. The BBC had three aims: to educate, to inform, and to entertain. At first there was a big discussion about who should control the BBC. Should it be independent or should it be controlled by the government? People in Britain looked at broadcasting companies in other countries. In the former Soviet Union, for example, the radio companies were controlled by the government and

had to broadcast exactly what the government wanted – usually political propaganda. By contrast, in the USA there was no government control at all. There were dozens of broadcasting companies, but they were badly organized, the programmes were of low quality, and there were advertisements (’commercial breaks’) in the programmes.

Many British politicians – Winston Churchill, for example – thought that the British Government should have complete control of the BBC. Others thought Britain should follow the American example. But they finally reached a compromise and decided that

- the British Government should own the BBC;
- the BBC should be politically neutral and independent (the government should not tell the BBC what to broadcast);
- the BBC should be a monopoly (no-one else was allowed to broadcast programmes. This changed in 1950s);
- the BBC should receive money from the sale of licenses (everybody who owned a radio or television had to buy a license).

Nowadays many people think that the BBC news programmes are better that those on other channels because the BBC is not a commercial company.

The BBC, which is often known as ’Auntie", is the biggest news collecting operation in the world. It has the world’s largest network of foreign correspondents. Ten percent of the BBC’s annual budget is spent on news collecting, reporting and presenting. More than 1,700 people work for the BBC news service.

The BBC produces more than 214 hours of news and current affairs programmes for radio and television each week. Each television news programme costs about £78,000 (US $ 117,000) per hour and each radio news programme costs roughly £ 4,800 (US $ 7,200) per hour. In the UK, roughly 19 million people – almost 35% of the total population – watch the BBC television news programmes every day.

Developments in technology are improving news collection and presentation every year. The BBC now uses special robotic cameras in the TV news studios to film the news presenters, and captions – the words and sentences at the bottom of the screen - are now produced automatically by computer.

Answer the questions:

1. What were the three aims of the BBC? 2. What was the big discussion about? 3. Did American broadcasting companies produce high-quality programmes? 4. Who thought that the British government should control the BBC? 5. Can the British government tell the BBC what to broadcast? 6. Is the BBC

still a monopoly? 7. Where does the BBC get money from? 8. How much of the BBC budget is spent on news collecting? 9. How many people work for the BBC? 10. How much does each television news programme cost? 11. How many people in Britain watch the BBC television news programmes every day? 12. What is improving every year? 13. What does the BBC use nowadays?

*** * ***

During the Second World War, Winston Churchill was the British Prime Minister. One day he had to go to the British Broadcasting Corporation (the BBC) to make an important speech to the nation.

An hour before the time of this speech, he stopped a taxi in the street and asked the driver to take him to the BBC; but the taxi-driver, who did not recognize him, said he could not take him anywhere just then, because he wanted to go back to his home at the other end of London to hear Churchill make a speech on the radio.

Churchill was so pleased when he heard this answer that he gave a man a pound, which was worth quite a lot in those days.

'All right, get in, said the driver happily, opening the door of the taxi. 'I'll take you, and to hell with Churchill and his speech".

Answer the questions

- Why did Churchill want to go to the BBC?
- Why did taxi-driver not want to take him?
- How did Churchill feel about this?
- What did not please him after that?

2. Read about recent developments in computer technology. Can you complete the text with the correct phrasal verbs? Be careful, you need to change the form of the verb.

AROUND THE WORLD FOR THE PRICE OF A LOCAL PHONE CALL

Here is useful computer vocabulary. Can you match each word/phrase to the correct meaning?

1	software	a a message sent from one computer to another
2	log on	b programs that a computer uses
3	email	c the physical equipment of a computer
4	Internet provider	d two or more computers that communicate with each other
5	network	e to connect to a network

Fill in the gaps with

Call up, close down, come down, go up, link up, log off, log on, start up, start up, try out, turn on.

Prices …..all the time, but recent technology means that the cost of making a telephone call has …… a lot. Today, many people use a computer to ….. someone on the other side of the world – for the same cost as a local telephone call. This is how they do it.

- Before they start , they …… a microphone and earphones to their computer.
- Usually, they agree when they will talk to each other because both computers have to be ….. .One person suggests a day and time by e-mail and the other person sends back their reply.
- At the agreed time, they …. Their computers and, via their modem, ….. to an Internet provider in their town.
- Next, they ……. the special telephone software.
- The telephone software connects through the Internet to the computer on the other side of the world.
- They can talk to each other using the microphone and earphones.
- When they have finished, they …. From the Internet and …. The computer.

Talking via the Internet is much cheaper than using ordinary telephone connections. If you have a computer and a modem, …. an Internet conversation!

UNIT X.

1. Read and translate the text. Retell it

WHERE REAL REALITY ENDS…

What is 'virtual reality'?

Virtual reality is an artificial, three-dimensional environment, produced by a computer. Objects in virtual reality seem to have height, length and width. We can pick them up and turn them around. We can see, hear and feel things that don't exist.

How does it work?

To see a virtual world, users put on a head-mounted display (HMD) and wear a special glove.

The HMD is linked up to a computer. The computer sends and receives data to and from the HMD and the glove.

Inside the HMD there are two liquid crystal displays (LCD), one for each eye. These show slightly different images. Our brain puts the images' together to make a three-dimensional image.

The computer also sends sounds to speakers in the HMD. If an object moves near you, the sounds get stronger. If an object moves away from you, the sounds get weaker.

A 'tracker' inside the HMD follows the movement of your head and your eyes. It sends is information back to the computer and the computer changes the images and sounds in the HMD.

If you move your hand, a special glove sends signals back to the computer and the computer changes the images in the HMD. You can see the glove in the HMD and watch how it moves. For example, you can play virtual tennis and se how you hit the ball.

The computer needs change the image in the HMD at least 10 times every second. For this, you need very fast, powerful computers. Today, it is easy to know that the images and sounds in the HMD are not 'real reality'. In the future, with bigger, faster computers, it won't be so easy to tell where real reality ends and virtual reality begins ...

What use does it have ?

Today, virtual reality is mainly used in video games. In the future, we will see more serious uses for virtual reality. Surgeons could plan and practice an operation on a virtual patient. Engineers could test machines which do not even exist. Architects could show people around houses that have not been built and tennis players could play against opponents before the real match begins.

2. Read and translate the text

BY2050…

ENTERTAINMENT

TV channels will have disappeared. Instead, people will choose a programme from a 'menu' and a computer will send the programme directly to the television. Today, we can use the World Wide Web to read newspaper stories and see pictures on a computer thousands of kilometres away. By 2050, music, films, programmes, newspapers, and books will come to us by computer.

Holographic Feedback TV' will have arrived. Holograms are pictures that have height, width and depth. Simple holograms exist today and Virtual reality' games are already popular. By 2050, we will be able to see, smell and touch the things that we see on television.

TRANSPORT

Cars will run on new, clean fuels and they will go very fast. Cars will have computers to control the speed of the car and there won't be any accidents. Today, many cars have computers that tell drivers exactly where they are. By 2050, the computer will control the car and drive it to your destination. ***Space planes will take people halfway*** *around the world in 2* ***hours.*** Today, the United States Space Shuttle can go into space and land on Earth again. By 2050, space planes and people will fly from Los Angeles to Tokyo in just two hours.

TECHNOLOGY

Robots will have replaced people in factories. Many factories already use robots. Big companies prefer robots - they don't ask for pay rises or go on strike, and they work 24 hours a day. By 2050, we will see robots everywhere – in factories, schools, offices, hospitals, shops and homes.

THE ENVIRONMENT

Water will have become one of our most serious problems. In many places, agriculture is changing and they are growing fruit and vegetables to export. This uses a lot of water. Demand for water will increase ten times between now and 2050 and water could be the cause of war if we don't act now.

MEDICINE

Medical technology will have conquered many diseases. Today there are electronic devices that connect directly to the brain to help people hear. By 2050, we will be able to help blind and deaf people see and hear again.

Scientists will have discovered how to control genes. Scientists have already produced clones of animals. By 2050, scientists will be able to produce clones of people, and decide how they look, how they behave and how much intelligence they have. Scientists will be able to do these things – but should they?

What's the word?

1 Clone (n.)	A defeat
2 gene(n.)	B like one thing more than another
3 shortage (n.)	C join
4 fuel (n.)	D say what will happen in the future
5 cause (n.)	E 'chemical' information in your body
6 prefer (v.)	F an exact copy of animal or thing
7 conquer (v.)	G an amount that is not enough
8 predict (v.)	H something that gives heat or power
9 connect (v.)	I reason

UNIT XI.

Pre-text exercises

Translate the following word-combinations from the text and memorize them.

The individual storage cell provides; this basic unit is usually referred to as; computers are normally built with; although it would be possible to construct; the fundamental group of bits is called; the size of a byte is chosen so that; the individual bits of a byte are linked; alphabetic symbols are represented.

1. Read the text and say about the smallest unit of digital information.

BITS, BYTES, AND WORDS

The individual storage cell provides the smallest unit of digital information which can be stored within a computer. This basic unit is usually referred to as a binary digit or bit. Computers are normally built with a large number of bit storage cells to that programs involving extensive instruction sets and data can be stored and processed internally.

Although it would be possible to construct computer circuits to give individual addresses to each binary digit stored in the computer memory, such an arrangement would be very extravagant. For purposes such as alphanumeric data, groups of bits are normally stored together under one common address and treated by the computer as a unit of information. In some recent computers the fundamental group of bits is called a byte. The size of a byte, usually six or eight bits, is chosen so that the byte can store one alphanumeric character using the binary character code adopted for the computer. The individual bits of a byte are electrically linked in each a way that a single memory address applies to the entire byte. For such machines the byte is the basic units of addressable information.

While bytes are well adapted for character representation and storage, larger organizations of bits must be provided for storage of instructions and numbers. Such a large unit is formed by linking bytes together to form a word. The IBM 360 computer system, for example, uses four eight-bit bytes to form a word. The information stored in a word of this type can be directly referenced through the use of one address.

The various addressable groupings of information units are not restricted to bytes and words. It is found, for example, that instructions do not require as many bits as are needed for number representation. Hence, to conserve computer memory space instruction half words are often used. Likewise, although numbers are normally represented in words, for more accurate arithmetic it is possible to link two words together to form an addressable double word. The ultimate

flexibility now available in large computer system uses variable length fields composed of suitably linked bytes referenced by a single address.

Alphabetic symbols and special characters are represented in computers through codes on sequences of binary digits. Normally at least six bits ($2^6 = 64$ separate patterns) are required to establish a unique code set for the 26 upper case letters, the 10 Arabic numerals, various arithmetic operators, and punctuation marks. Most large computers having a byte structure use eight character codes ($2^8 = 256$ separate patterns) to take advantage of the larger available character set.

Both the six and eight bit character representations are subdivided into two parts: a zone part of two or four bits and a numeric part of four bits.

2. Answer the following questions

a) What does the individual storage cell provide? b) How is this basic unit usually referred to? c) What are computers normally built with?

3. Ask additional questions and answer them. Work in pairs.

4. Make up a plan and retell the text according to your plan.

2. Read and translate the text.

TYPES OF TRANSMISSION

The data to be transmitted must first be encoded into a form suitable for specific transmission handling, as the transmission over a communication line produces attenuation and phase delay; it is impractical to transmit the digital pulses in their raw form over telephone lines. It is necessary to modulate the data to be transmitted over analogue telephone lines and to demodulate the signal at the receiver end. Similarly as to the speech, data transmission is generally possible to both directions, although not simultaneously. The data transmitter receiver which perform the dual process of modulation and demodulation is consequently referred to by the abbreviated form of modem. The modem performs the operation of translation between the binary data pulses and the voice frequency waveform; hence it could also be regarded as analogue to digital and digital to analogue converters.

Without regard to the communication media, there are three types of transmission, (a) Simplex transmission, where a line carries data in one direction only. Half-duplex transmission, where a line can carry data in either direction but only in one direction at a time. Here identical modems are inserted at both end of the transmission path. This is a most popular data transmission configuration, as it can be used in any public telephone network, (c) Duplex (or full duplex) transmission, where a line can carry data in both directions simultane-

ously. This double direction can be achieved by either transmission over two different frequency bandwidths or by a 4-wire line circuit.

Although data can flow in both directions simultaneously in a duplex configuration, it is common practice to operate it in a half-duplex mode. In these applications the digital information flows in one direction while conversely the control data flows in the other direction to indicate either an acknowledgement or a request for retransmission of the message. This mode of operation saves time when two terminals or two computers communicate. It must be appreciated that for most communication procedures an answer-back is essential.

Make sure that you know these words. Say what Russian words help you to guess their meanings.

Telephone, limit, analogue, illustrate, basic elements, form, specific, communication, phase, binary, (de)modulation, popular, configuration, pulse, criterion, bit, information, voltage, individual, process, instruction, construct, extravagant, address, organization, alphabetic, Arabic.

Memorize the following words and word-combinations, check if you know their meanings.

Data transmission передача данных; voice traffic речевая нагрузка; analogue-type signals сигналы аналогового типа; data transmitter receiver приемо-передатчик данных; remote geographical locations отдаленные географические точки; encode закодировать; specific transmission handling особая обработка при передаче; raw form необработанная, сырая форма; moden модем (модулятор-демодулятор); translation трансляция, преобразование; voice frequency waveform колебание звуковой частоты; binary data pulses двоичные импульсы; simplex симплексный (односторонний); half-duplex полудуплексный *(режим, передача);* insert *зд.* размещаться; path тракт; public telephone network телефонная сеть общего пользования; carry data нести, передавать данные; 4-wire line circuit четырехпроводная линейная цепь; while conversely тогда как обратно; request запрос; communication procedures an answer-back процедуры (методы) связи с подтверждением приема (с квитированием).

UNIT XII.

1. Read and learn the equivalents. Read the text to yourself and grasp the main idea of it.

Computers in Command and Control Systems ЭВМ в автоматизированных системах управления; closed loop – заскнутая петля; simultaneously одновременно; data collection centres центры сбора данных; input inquiries входные запросы; expeditiously ускоренно, немедленно; data continuously flow up and down the line данные непрерывно перемещаются вверх и вниз (на верхние и на нижние звенья управления); can be finely defined могут

быть в конце концов определены; take into account учитывать, принимать во внимание; remote equivalent of the computer-room input-output devices удаленный эквивалент устройств ввода и вывода, которые размещаются вместе с ЭВМ (в одной комнате); paper-tape readers устройство для считывания с перфоленты; punch-card readers устройство для считывания с перфокарты; non-real-time terminals терминалы, не способные работать в реальном времени; key-board панель с клавиатурой; screen display устройство отображения на экране; conversational terminals «разговаривающие» терминалы (терминалы с возможностью обмена информацией с ЭВМ); on-line or off-line непосредственно (без задержки во времени) или в буфферном режиме (с задержкой во времени); punch v. перфорировать.

COMPUTERS AND DATA TRANSMISSION

The Command and Control System is organized in a closed-loop where data continuously flow up and down the line. Computers are employed both in the command and in the data collection centres. Decisions for execution are sent forward and the results are continuously fed back, all processes operating in real-time. The best control of the organization resources can be effective only if the transmission of the information in both directions is fully exploited.

It is a basic requirement of a Command and Control System that the computers involved are communication orientated and can be operated on-line in a real-time environment. The adopted computers must possess the following qualifications:

(a) They should be capable of handling masses of data swiftly and efficiently and store large quantities of information.

(b) They must be able to operate a large number of input inquiries simultaneously and respond to them expeditiously.

A vast ever-growing array of machines can be attached to telecommunication lines for transmitting and receiving data.

Data transmission can be: 1. Between computer and computer. 2. Between terminal and computer. 3. Between terminal and terminal .

In any of these links there can be intermediary network devices such as concentrators and switches.

2. Read the text, find the part of it dealing with the terminals designed for human use.

TERMINALS

A device for feeding data to or receiving data from a distant computer is called a terminal (perhaps an unfortunate choice of a word because line termination equipment in general has been called a terminal: "microwave terminal", for example, refers to the electronic equipment at the end of a microwave link).

Terminals can be devices into which data are entered by human operators or devices that collect data automatically from instruments. Terminals designed for human use may permit a fast two-way "conversation " with the computer or may be a remote equivalent of the computer-room input/output devices. The people use terminals to communicate with a computer. Paper-type readers and punched-card readers may provide input over communication lines. Printers may provide the output.

Most computers peripherals can be taken out of the computer room and attached to a communication line. They can have a typewriter added or a key-board or screen display, and then they are called conversational terminals.

The information, whether from automatic devices or from manually operated key-boards, may be transmitted immediately to the computer or may be stored in some medium for transmission at a later moment. In other words the entry of data may be on-line or off-line. Reading of instruments, for example, may be punched into paper tape, which is later transmitted to the computer.

The output may also make use of an interim medium, such as paper tape or punched card, or it may directly control the environment in question. Very often it is necessary to make a printed copy of the computer output for later analysis. In this case, part of the terminal equipment may be a typewriter or printer.

Answer the following questions embracing the contents of the Text 1 and the Text 2.

1. Where are computers employed? 2. When can the best control of the organization resources be effective? 3. What is the basic requirement of a Command and Control System? 4. What can be attached to telecommunication lines for transmitting and receiving data 5. What devices are terminals? 6. What may terminals designed for human use permit? 7. Why do people use terminals? 8. What may paper-tape readers and punched-card readers provide? 9. What may printers provide? 10. May the information be transmitted immediately to the computer?

Speak on common types of terminal devices.

Make a short written summary of the Text 2.

3. Read and translate the text. Use the given words and equivalents

Pre-text exercises

Be sure that you know these words and word-combinations, speak on different types of pulse waveform code format.

Pulse waveform code formats форматы импульсно-кодированных си-сигналов; return-to-zero method запись методом возврата к нулю; return to zero method запись методом возврата к нулю, ternary троичный; quadric четверичный; consecutive bits последовательные биты.

Translate the expressions

Binary data transmission; the first criterion of division; half binary transmission; second criterion of division; the transmission of each bit of information; a third accepted criterion of division; respective pulse formats; the same binary information; the unit of signalling speed; the actual number of binary digit.

PULSE CODE FORMAT

There are many different types of pulse waveform code formats which may be used in binary data transmission. All the code formats could be divided into three classes. The first criterion of division is the form of information transmission, viz. (a) Full binary transmission, where both the "0" and "l" bits are part of the formats. (b) Half binary transmission, where only the "1’s " are transmitted, having the "0"’s recognized by the absence of a pulse at the time of clock, (c) Multiple binary transmission, where ternary and quadric codes are used for each transmitted pulse. A second criterion of division is that of relation to the zero level, viz. (a) Return-to zero (RZ), where there is a return to the zero level after the transmission of each bit of information, (b) Non-return-zero (NRZ), where there is no voltage level change if consecutive bits are transmitted, although there is a level change when there is an information variation from 0 to 1 or 1 to 0.

A third accepted criterion of division is that of direction, viz. (a) Unipolar, where the pulses are in the single direction. (b) Bipolar, where the pulses are in both directions.

The various coding patterns for the respective pulse formats represent the same binary information of 1011010010.

For data transmission, the unit of signaling speed should be measured by the number of bits transmitted per second. The term “bit per second” (bits/s) refers to the actual number of binary digits that are transmitted per second.

PART II.

UNIT I.

1. Read and translate the text. Check the meaning of the underlined words. Use your dictionary.

COMPUTER SYSTEM ORGANIZATION

Computer is a fast and accurate manipulating system. The term "system" is used in many ways. For computer users, a system is a group of parts that are integrated for the purposes of achieving some objective. The three following characteristics are key:

1. A group of parts. A system has more than one element.
2. Integrated parts. A logical relationship must exist between system parts.
3. A common purpose of achieving some objective. The system is designed to accomplish one or more goals. All system elements should be tied together and controlled so that the system goal is achieved.

Since a computer is a group of integrated parts that have common purpose of performing the operations called for in the program being executed, it qualifies as a system.

Computer system is the input, processor and output elements.

Computer systems use input devices – machines used for data entry purposes. Some machine devices allow direct human/machine communication, while others require data to be recorded on an input medium such as magnetizable material. Devices that read data recorded on a specially coated plastic flexible or floppy disks and magnetic tapes are often used. The keyboard of a workstation connected directly to a computer is an example of a direct input device. Devices connected directly to a computer are said to be online to it. The mouse, input pen, touch screen, and microphone are other online input devices.

Processor unit is the heart of any computer system, which consists of primary storage, arithmetic-logic, and control elements.

1. The primary storage section (also called main memory) section is used for four purposes. Three of these relate to the data being processed:

a. Data are fed into an input storage area where they are held until ready to be processed.

b. A working storage space that's like a sheet of scratch paper is used to hold the data being processed and the intermediate results of such processing.

c. An output storage area holds the finished results of the processing operations until they can be released.

d. In addition to these data-related purposes, the primary storage section also contains a program storage area that holds the processing instructions.

The separate areas used for these general purposes are not fixed by built-in physical boundaries in the storage section. Rather, they can vary from one application to another. Thus, a specific physical space may store input data in one application, output results in another, and processing instructions in a third. The person writing the application instructions determines how the space will be used for each job.

2. The arithmetic-logic section. The arithmetic-logic and control sections together make up the central processing unit (CPU). All calculations are performed and all comparisons (decisions) are made in the arithmetic-logic section of the CPU. Once data are fed into primary storage from input devices, they are held and transferred as needed to the arithmetic logic section, where processing takes place. No processing occurs in primary storage. Intermediate results generated in arithmetic-logic unit are temporarily placed in a designated working storage area until needed at a later time. Data may thus move from primary storage to the arithmetic-logic unit and back again to storage many times before the processing is finished. Once completed, the final results are released to an input storage section and from there to an output device.

3. The Control section. By selecting, interpreting, and seeing to the execution of program instructions, the control section of the CPU maintains order and directs operations of the entire system. Although the control section doesn't process data, it acts as a central nervous system for the data-manipulating components of the computer. At the beginning of processing: the first program instruction is selected and fed into the control section from the program storage area. There it is interpreted, and from there signals are sent to other components to execute the necessary action. Further program instructions are selected and executed, one after another, until the processing is completed.

2. Answer the questions

1. What is computer? 2. How is the term system used? 3. What is a system for computer users? 4. What are its key characteristics? 5. Why computer qualifies as a system? 6. What does computer system consist of? 7. What do computer systems use input devices for? 8. What do some machines allow? 9. What devices for reading recorded data are often used? 10. Will you give an example of a direct input device? 11. When devices are said to be online to a computer? 12. List other online input devices. 13. What is a processor unit? 14. What is the primary storage section used for? 15. Which of these purposes relate to the data being processed? Name them and give detailed information. 16. What areas are not fixed by built-in boundaries? 17. What can vary from one application to another? 18. Who determines the space to be used for each job?

19. What makes up CPU? 20. Where are all calculations performed? 21. Are data fed into primary storage from input devices? 22. Does processing occur in primary storage? 23. Where are intermediate results temporarily placed? 24. Where can data thus be moved? 25. Where are the final results released to? 26. What does the control section of the CPU perform? 27. The control section doesn't process data, does it? 28. How does control section act? 29. What happens at the beginning of the processing? 30. What is selected and executed further?

3. Learn the following definitions by heart

A System is a group of parts that are integrated for the purpose of achieving some objective.

Input devices are machines designed for data entry purposes.

Floppy disks are devices that read recorded data.

Input storage area is the one where data are fed into.

A working storage area is used to hold the data being processed.

An output storage area holds the finished results of the processing operations until they are released.

A program storage area holds the processing instructions.

Central processing unit is made up of the arithmetic-logic and control sections.

4. Give a short summary of the reading.

UNIT II.

1. Read and translate the text. Use a dictionary.

THE SIX ELEMENTS OF A COMPUTER AND COMMUNICATION SYSTEM

A computer and communications system has six elements (1) people, (2) procedures, (3) data/ information, (4) hardware, (5) software and (6) communications.

A system is a group of related components and operations that interact to perform a task. A system can be many things: registration day at your college, the 52 bones in the foot, a weather storm front, the monarchy of Great Britain. Here we are concerned with a technological kind of system. A computer – and-communication system is made up of six elements: (1) people, (2) procedures, (3) data/ information, (4) hardware, (5) software and (6) communications.

System element 1: People

People are the most important part of, and the beneficiaries of, a computer-and-communication system.

There are two types of people using informational technology – *professionals and end-users.*

People can analyze, develop, and improve computer systems. They can also complicate the operation of a system: their assessment of information needs is sometimes faulty, their emotions may affect their performance, and their perceptions may be too slow.

People are the most important part of a computer-and-communications system. People of all levels and skills, from novices to programmers, are the users and operators of the system. The whole point of the system, of course, is to benefit people.

TWO TYPES OF USERS:

Two types of people use informational technology – *professionals and "end-users".*

Professionals: An informational technology professional is a person who has had formal education in the technical aspects of using a computer-and-communications system. For example, a computer programmer creates the programs (software) that process the data in a computer system.

End-users: An "end-user" is a person probably much like yourself. An end-user, or simply a user, is someone without much technical knowledge of informational technology who uses computers for entertainment, education, or work related tasks. The user is not a technology expert but knows enough about it to use it for his or her own purposes, such as for caree advancement. Lawyers, for example, may know how to use a computer to search a huge data bank of information for legal decisions relevant to their cases.

Both computer professionals and end-users can work to improve computer systems by analyzing old systems and suggesting or developing new ones. However, people can also be a complicating factor in a computer system.

PEOPLE AS A COMPLICATING FACTOR

When experts speak of "unintended effects of technology", what they are usually referring to are the unexpected things people do with it. People can complicate the workings of a system in three ways:

**Faulty assessment of information needs:* Humans are not often good at assessing their own information needs. Thus, for example, many users will acquire a computer-and-communications system that either is not sophisticated enough or is far more complex than they need. If all you need is a personal

computer on which to type research papers, for instance, you don't need to spend $10,000 on a state-of-the-art system. An outdated system bought used for $500 or less may do just fine. In addition, people don't always know what information is needed to make decision. In other words, they don't know what they need to know.

*_Human emotions affect performance_: Of course, human emotions can also affect the performance of a system. For example, one frustrating experience with a computer is enough to make some people abandon the whole system. Hammering on the keyboard or bashing the display screen is certainly not going to advance the learning experience. Also, many people are afraid of computers. However, this feeling is common and diminishes with experience.

* _Human perceptions may be too slow_: Humans act on their perceptions, which in modern information environments are often too slow to keep up with the equipment. You can be so overwhelmed by information overload, for example, that decision making may be just as faulty as if you had too little information.

In summary, although people are the supposed beneficiaries of a computer-and-communications system, they can be the most complicating factor in it.

2. Ask a question to each paragraph contents.

3. Do you agree with the ideas expressed in the article. Give your own opinion.

4. Learn the following definitions. Pay attention to the their situational usage.

*Communications. The sixth element of a computer-and-communications system; the electronical transfer of data from one place to another.

e.g. Communications systems have helped to expand human communication beyond face-to-face meetings to electronic connections.

* Communications network. System of interconnected computers, telephones, or other communications devices that can communicate with each other.

e.g. Communications networks allow users to share applications and data; without networks, information couldn't be electronically exchanged.

* Communications technology. Consists of electromagnetic devices and systems for communicating over long distances; also called telecommunications.

e.g. Communications technology enables computers and people to be connected in order to share information resources.

* Computer. Programmable, multiuse machine that accepts raw data – facts and figures – and processes (manipulates) it into useful information, such as summaries and totals.

e.g. Computers greatly speed up the process whereby people solve problems and accomplish many tasks and thus increases their productivity.

*End-user. Also called user; a person without much technical knowledge of information technology who uses computers for entertainment, education, and/or work related tasks.

e.g. End-users are the people for whom most computer-and-communications systems are created (by information technology professionals).

5. Translate into English

Существует особый вид обучающих программ, от игровых до серьезных, ориентированных на студентов вузов, которые могут использоваться как живой учебник. В них, как правило, есть обычный текст с рисунками; он может быть озвучен средствами мультимедиа. Компьютер позволяет эффективно демонстрировать различные объекты и явления, например броуновское движение или строение скелета человека, используя средства анимации. Это позволяет «увидеть» различные абстракции, масштабировать явления во времени и пространстве и т.д. Более того, можно вручную манипулировать отдельными частями объекта (повернуть скелет) или параметрами явления. Средства виртуальной реальности позволяют, например, оказаться в желудке кита или осмотреть пещеру первобытного человека.

Не будет преувеличением сказать, что обучающие программы выпускаются по всем направлениям: медицина, физика, математика, история, язык, право, дорожное движение, малярные работы и т.д. например, «Повседневный английский в ситуациях общения» (New Media Generation).

Для проверки эффективности обучения необходим контроль знаний. Большинство обучающих программ содержат вопросы, задачи и упражнения для самостоятельной работы. Есть специальные программы, помогающие преподавателю проводить экзамен.

UNIT III.

1. Read and translate the article. Write out and memorize all the new words and expressions

THE SIX ELEMENTS OF A COMPUTER AND COMMUNICATIONS SYSTEM

System element 2: Procedures

Procedures are descriptions of how things are done, steps for accomplishing a result. Sometimes procedures are unstated, the result of tradition or common practice. You may find this out when you join a club or are a guest in someone's house for the first time. Sometimes procedures are laid out in great detail in manuals, as is true, say, of tax laws.

When you use a bank ATM – a form of computer system- the procedures for making a withdrawal or a deposit are given in on-screen messages. In other

computer systems, procedures are spelled out in manuals. **Manuals, called documentation, contain instructions, rules, or guidelines to follow when using hardware or software**. When you buy a microcomputer or a software package, it comes with documentation, or procedures. Nowadays, in fact, many such procedures come not only in a book or pamphlet but also on a computer disk, which presents directions on your display screen. Many companies also offer documentation online.

System element 3: Data/Information

The distinction is made between raw data, which is unprocessed, and information, which is processed data. Units of measurements of data/ information capacity include kilobytes, megabytes, gigabytes, and terabytes.

Though used loosely all the time, the word *data* has some precise and distinct meanings.

"Raw data" Versus Information

Data can be considered the raw material – whether in paper, electronic, or other form – that is processed by the computer. In other words, **data consists of the raw facts and figures that are processed into information.**

Information is summarized data or otherwise manipulated data that is useful for decision making. Thus, the raw data of employees' hours worked and wage rates is processed by a computer into the information of paychecks and payrolls. Some characteristics of useful information may be another person's data. Some characteristics of useful information are that is *relevant, timely, accurate, concise, and complete.*

Actually, in ordinary usage the words *data* and *information* are often used synonymously. After all, one person's information may be another person's data. The "information" of paychecks and payrolls may become the "data" that goes into someone's yearly financial projections or tax returns.

Units of measurement for Capacity: From Bytes to Terabytes

A common concern of computer users is "How much data can this gadget hold?" The gadget might be a diskette, a hard disk, or a computer's main memory. The question is a crucial one. If you have too much data, the computer may not be able to handle it. Or if a software package takes up too much storage space, it can not be run on a particular computer.

Computers deal with "on" and "off" (or high-voltage and law voltage) electrical states, which are represented in the hardware in terms of 0s and 1s,

called bits. Bits are combined in groups of eight, called bytes, to hold the equivalent or character. A character is a single letter, number, or special symbol (such as a punctuation mark or dollar sign). Examples of characters are A,1, and?

A computer system's data/information storage capacity is represented by bytes, kilobytes, megabytes, gigabytes, and terabytes:

***Kilobyte: a kilobyte (abbreviated K or KB) is equivalent to approximately 1000 bytes (or characters).** More precisely, 1 kilobyte is 1024 (2^{10}) bytes, but the figure is commonly rounded off. Kilobytes are a common unit of measure for the data holding (memory) capacity of personal computers. The original IBM PC, for example, could hold (in memory) 640 kilobytes, or about 640,000 bytes of data, and early home computers held only 64 K.

***Megabyte: A megabyte (abbreviated M or MB) is about 1 million bytes.** Some personal computers can run programs requiring 16 or less megabytes, or about 16 million bytes, of memory.

***Gigabyte: A gigabyte (G or GB) is about 1 million bytes.** Pronounced "gig-a-bite" (not "jig-a-bite"), this unit of measure is used not only with "big iron" computers (mainframes and supercomputers) but also with newer personal computers.

***Terabyte: a terabyte (T or TB) is about 1 trillion bytes.**

System element 4: Hardware

The basic operation of a computing consists of (1) input, (2) processing, (3) output, and (4) storage. Communications (5) adds extension capability to each phase.

Hardware devices are categorized according to which of these five operations they perform. (1) Input hardware includes the keyboard, mouse, and scanner. (2) Processing and memory hardware consists of the CPU (the processor) and main memory. (3) Output hardware includes the display screen, printer, and sound devices. (4) Secondary storage hardware stores data on diskette, hard disk, magnetic tape devices, and optical-disk. (5) Communications hardware includes modems.

As we said earlier, *a system* is a group of related components and operations that interact to perform a task. Once you know how pieces of the system fit together, you can then make better judgments about any one of them. And you can make knowledgeable decisions about buying and operating a computer system.

The Basic Operations of Computing

How does a computer system process data into information? It goes through four operations: (*1) input, (2) processing, (3) output, and (4) storage.*

1. Input operation: In the input operation, data is entered or otherwise captured electronically and is converted to a form that can be processed by the computer. The means for "capturing" data (the raw, unsorted facts) is input hardware, such as a keyboard.

2. Processing operation: In the processing operation, the data is manipulated to process or transform it into information (such as summaries or totals). For example, numbers may be added or subtracted.

3. Output operations: In the output operation, the information, which has been processed from the data, is produced in a form usable by people. Examples of output are printed text, sound, and charts and graphs displayed on a computer screen.

4. Secondary storage operation: In the storage operation, data, information, and programs are stored in computer-processable form. Diskettes are examples of materials used for storage.

Often these four operations occur so quickly that they seem to be happening simultaneously.

Where does communications fit in here? In the four operations of computing, communications offers an extension capability. Data may be input from afar, processed in a remote area, output in several different locations, and stored yet in other places. And information may be transmitted to other computers. All this is dome through a wired or wireless connection to the computer.

2. Ask 10 questions to the article so that they reflect its contents.

3. Find in the text and learn the definitions of a raw data, information, bits and bytes, the basic operations of a computing.

4. Translate the following into English.

Биты и байты

Для обозначения двоичных цифр применяется термин бит – сокращение словосочетания «двоичная цифра» (binary digit – bit).

Для передачи и хранения информации применяют 8-битовые коды – байты (byte). Существует 2^8=256 восьмибитовых чисел. Этого достаточно для кодирования всех заглавных и строчных букв алфавита, цифр, знаков препинания, символов национальных алфавитов, других необходимых символов и служебных кодов, используемых при передаче информации.

Для работы с большими числами используются слова — 16-битовые числа, и двойные слова — 32-битовые числа.

Единицы измерения больших объемов информации

В основе измерения больших объемов информации лежит байт. Ин-

формация, содержащаяся в одном байте, обычно достаточна для представления одной буквы алфавита или 2 десятичных цифр. Более крупные единицы измерения: килобайт (1 Кбайт = 2^{10} байт = 1024 байта), мегабайт (1 Мбайт = 1024 Кбайт = 2^{20} байт = 1048576 байт), гигабайт (1 Гбайт = =1024 Мбайт = 2^{30} байт = 1073741824 байт). Современные носители информации имеют емкость до нескольких гигабайт.

Интернет

Сеть Internet — мировая ассоциация компьютерных сетей. Она состоит из различных физически неоднородных коммуникационных сетей, объединенных между собой в единую логическую архитектуру. Internet объединяет множество серверов, на которых находится огромный объем информации по разнообразным темам. Информация на серверах организована для доступа пользователей различными способами. По этому признаку наиболее популярными являются серверы FTP, WWW и Telnet (см. Виды серверов). Internet — это глобальная сеть сетей, взаимно связанных протоколами TCP/IP и другими коммуникационными протоколами» (д-р Винтон Серф, президент Сообщества Internet).

Электронная почта — это система пересылки сообщений между пользователями. Каждый пользователь должен иметь адрес электронной почты, который, аналогично почтовому, однозначно определяет адресата. Посланная информация (файл или сообщение) попадет в почтовый ящик в любой точке сети за считанные минуты. Получить информацию со своего почтового ящика можно в любое удобное время. Кроме того, использование электронной почты позволяет принимать участие в конференциях (обмене информацией) по какой-либо тематике, которые организуются в глобальных сетях.

UNIT IY.

1. Read and translate the articles. Use a dictionary to help you check the meaning of the underlined words and expressions.

HARDWARE CATEGORIES

Hardware is what most people think of when they picture computers. ***Hardware*** **consists of all the machinery and equipment** in a computer system. The hardware includes, among other devices, the keyboard, the screen, the printer, and the computer or processing device itself.

As computing and telecommunications have drawn together, people have begun to refer loosely to *any* machinery or equipment having to do with either one as "hardware." This is the case whether the equipment is a "smart box," such as a cable-TV set-top controller, or (sometimes) the connecting cables, transmitters, or other communications devices.

In general, computer hardware is categorized according to which of the five computer operations it performs:

* Input
* Processing and memory
* Output
* Secondary storage
* Communications

External devices that are connected to the main computer cabinet are referred to as "peripheral devices." **A *peripheral device* is any piece of hardware that is connected to a computer.** Examples are the keyboard, mouse, monitor, and printer.

Input Hardware

Input hardware consists of devices that allow people to put data into the computer in a form that the computer can use. For example, input may be by means of a *keyboard*, *mouse*, or *scanner*. The keyboard is the most obvious. The mouse is a pointing device attached to many microcomputers. An example of a scanner is the grocery-store bar-code scanner.

* Keyboard: A *keyboard* includes the standard typewriter keys plus a number of specialized keys. The standard keys are used mostly to enter words and numbers. Examples of specialized keys are the *function keys*, labeled *Fl*, *F2*, and so on. These special keys are used to enter commands.

* Mouse: A *mouse* is a device that can be rolled about on a desktop to direct a pointer on the computer's display screen. The pointer is a symbol, usually an arrow, on the computer screen that is used to select items from lists (menus) or to position the cursor. The *cursor* is the symbol on the screen that shows where data may be entered next, such as text in a word processing program.

* Scanners: *Scanners* translate images of text, drawings, and photos into digital form. The images can then be processed by a computer, displayed on a monitor, stored on a storage device, or communicated to another computer.

Processing & Memory Hardware

The brains of the computer are the *processing* and *main memory* devices, housed in the computer's system unit. The *system unit*, or *system cabinet*, houses the electronic circuitry, called the CPU, which does the actual processing and the main memory, which supports processing.

* CPU – the processor: The *CPU*, for *Central Processing Unit*, is the processor, or computing part of the computer. It controls and manipulates data to produce information. In a personal computer the CPU is usually a single fingernail-size "chip" called a *microprocessor*, with electrical circuits printed on it. This microprocessor and other components necessary to make it work are mounted on a main circuit board called a *motherboard* or *system board*.

* Memory-working storage: *Memory* – also known as *main memory, RAM,* or *primary storage* – is working storage. Memory is the computer's "work space," where data and programs for immediate processing are held.

Computer memory is contained on memory chips mounted on the motherboard. Memory capacity is important because it determines how much data can be processed at once and how big and complex a program may be used to process the data.

Despite its name, memory does not remember. That is, once the power is turned off, all the data and programs within memory simply vanish. This is why data/information must also be stored in relatively permanent form on disks and tapes, which are called *secondary storage* to distinguish them from main memory's *primary storage.*

Output Hardware

Output hardware consists of devices that translate information processed by the computer into a form that humans can understand. We are now so exposed to products output by some sort of computer that we don't consider them unusual. Examples are grocery receipts, bank statements, and grade reports. More recent forms are digital recordings and even digital radio.

As a personal computer user, you will be dealing with three principal types of output hardware – screens, *printers*, and sound output *devices.*

Two sizes of diskettes are used for microcomputers. The older and larger size is *5¼ inches* in diameter. The smaller size, now by far the most common, is *3½ inches.* The smaller disk, which can fit in a shirt pocket, has a compact and rigid case and actually does not feel "floppy" at all.

To use a diskette, you need a disk drive. A *disk drive* is a device that holds and spins the diskette inside its case; it "reads" data from and "writes" data to the disk. The words *read* and *write* are used a great deal in computing.

Read means that the data represented in magnetized spots on the disk (or tape) are converted to electronic signals and transmitted to the memory in the computer.

Write means that the electronic information processed by the computer is recorded onto disk (or tape).

The diskette drive may be a separate unit attached to the computer, particularly on older models. Usually, however, it is built into the system cabinet. Most newer PCs have one or two 3l/2-inch drives and perhaps one $5^{1/4}$-inch drive.

* Hard disk: Diskettes are made out of tape-like material, which is what makes them "floppy." They are also removable. By contrast, a *hard disk* is a disk made out of metal and covered with a magnetic recording surface It also holds data represented by the presence (1) and absence (0) of magnetized spots.

Hard-disk drives *read* and *write* data in much the same way that diskette drives do. However, there are three significant differences. First, hard-disk drives can handle thousands of times more data than diskettes do. Second, hard-disk drives are usually built into the system cabinet, in which case they are not removable. Third, hard disks read and write data faster than diskettes do.

* Magnetic tape: Moviemakers used to love to represent computers with banks of spinning reels of magnetic tape. Indeed, with early computers, "mag tape" was the principal method of secondary storage.

The magnetic tape used for computers is made from the same material as that used for audiotape and videotape. That is, *magnetic tape* is made of flexible plastic coated on one side with a magnetic material; again, data is represented by the presence and absence of magnetized spots. Because of its drawbacks nowadays tape is used mainly to provide low-cost duplicate storage, especially for microcomputers. A tape that is a duplicate or copy of another form of storage is referred to as a *backup*.

Because hard disks sometimes fail ("crash"), personal computer users who don't wish to do backup using a lot of diskettes will use magnetic tape instead.

Optical disk – CD-ROM: If you have been using music CDs (compact disks), you are already familiar with optical disks. An *optical disk* is a disk that is written and read by lasers. *CD-ROM,* which stands for Compact *Disk* Read Only Memory, is one kind of optical-disk format that is used to hold text, graphics, and sound. CD-ROMs can hold hundreds of times more data than diskettes, and can hold more data than many hard disks.

2. Ask 10 questions to any of the articles. Prove that you can answer them.

3. Learn the following definitions: *Input hardware, keyboard, mouse, the CPU, memory, output hardware, screen diskette, a disk drive, CD-ROM*.

4. Ask questions to the underlined sentences.

5. Fill in the blanks

Output hardware …of devices that … information processed by the … into a form that … can understand. We are now so … products output by some sort of computer that we don't consider them …. . Examples are grocery …, … statements, and … reports. More recent forms are … and even digital radio.

Input hardware consists of … that allow people to put … into the computer in a form that the computer can … . For example, input may be by means

of a …, *mouse,* or *scanner*. The keyboard is the most obvious. The mouse is a … device attached to many …. An example of a scanner is the grocery-store …-code scanner.

UNIT V

2. Read and translate the text.

COMMUNICATIONS HARDWARE

Computers can be "stand-alone" machines, meaning that they are not connected to anything else, many students tote around portable personal computers on which they use word processing or other programs to help them with their work. Many people are quite happy using a computer that has no communications capabilities.

However, the *communications* component of the computer system vastly extends the range of a computer. Indeed, the range is so many orders of magnitude larger that comprehending it is difficult.

In general, computer communications is of two types: *wired connections,* such as telephone wire or cable, and *wireless connections,* such as via radio waves.

The dominant communications media that have been developed during this century use analog transmission. Thus, for many years, the principal form of direct connection was via standard copper-wire telephone lines. Hundreds of these twisted-pair copper wires are bundled together in cables and strung on telephone poles or buried underground. As mentioned, a modem is communications hardware required to translate a computer's digital signals into analog form for transmission over telephone wires. Although copper wiring still exists in most places, it is gradually being supplanted by two other kinds of direct connections: coaxial cable and fiber-optic cable. Eventually, all transmission media will accommodate digital signals.

System Element 5: Software

***Software,* or *programs,* consists of the step-by-step instructions that tell the computer how to perform a task.** In most instances, the words *software* and *program are* interchangeable. Although it may be contained on disks of some sort, software is invisible, being made up of electronic blips. There are two major types of software:

Applications software: This may be thought of as the kind of software that people use to perform a general-purpose task, such as word processing software used to prepare the text for a document.

Systems Software: This may be thought of as the underlying software that the computer uses to manage its own internal activities and run applications software.

Although you may not need a particular applications program, you must have systems software, or you will not even be able to "boot up" your computer (make it run).

Applications Software

Applications software **is defined as software that can perform useful work on general-purpose tasks.** Examples are programs that do word processing, desktop publishing, or payroll processing.

Applications software may be either *customized* or *packaged*. *Customized software* is software designed for a particular customer. This is the kind of software that you would hire a professional computer programmer – a software creator – to develop for you. Such software would perform a task that could not be done with standard off-the-shelf packaged software available from a computer store or mail-order house.

Packaged software, or a *software package*, is the kind of "off-the-shelf" program developed for sale to the general public. This is the principal kind that will be of interest to you. Examples of packaged software that you will most likely encounter are word processing and spreadsheet programs.

Systems Software

As the user, you interact mostly with the applications software. ***Systems software*** **enables the applications software to interact with the computer and manages the computer's internal resources.**

Systems software consists of several programs, the most important of which is the operating system. **The *operating system* acts as the master control program that runs the computer.** It handles such activities as running and storing programs and storing and processing data. The purpose of the operating system is to allow applications to operate by standardizing access to shared resources such as disks and memory. Examples of operating systems are MS-DOS, Windows 95, OS/2 Warp, and the Macintosh operating system (MacOS).

Element 6: Communications

Communications **is defined as the electronic transfer of data from one place to another.** Of all six elements in a computer-and-communications system, communications probably represents the most active frontier at this point. We mentioned that, until now, most data being communicated has been analog

data. However, as former analog methods of communication become digital, we will see a variety of suppliers, using wired or wireless connections, providing data in digital form: telephone companies, cable-TV services, news and information services, movie and television archives, interactive shopping channels, video catalogs, and more.

2. Ask 10 different type questions to the text. Make sure you can give the detailed information.

3. Make up a short oral summary of the text.

UNIT YI.

1. Read and translate the text.

DEVELOPMENTS IN COMPUTER TECHNOLOGY

A human generation is not a very long time, about 30 years. During the short period of one and a half generations, computers have come from nowhere to transform society in unimaginable ways. One of the first computers, the outcome of military-related research, was delivered to the U.S. Army in 1946. ENIAC – short for Electronic Numerical integrator And Calculator – weighed 30 tons, was 80 feet long and two stones high, and required 18,000 vacuum tubes. However, it could multiply a pair of numbers in the then-remarkable time of three-thousandths of a second. This was the first general-purpose, programmable electronic computer, the grandparent of today's lightweight h a n d h e 1 d m a c h i n e s .

The Three Directions of Computer Development

Since the days of ENIAC, computers have developed in three directions:

Smaller size: Everything has become smaller. ENIAC's old-fashioned radio-style vacuum tubes gave way to the smaller, faster, more reliable transistor. A *transistor* is a small device used as a gateway to transfer electrical signals along predetermined paths (circuits).

The next step was the development of tiny integrated circuits. *Integrated circuits (ICs)* are entire collections of electrical circuits or pathways etched on tiny squares of silicon half the size of your thumbnail. *Silicon* is a natural element found in sand that is purified to form the base material for making computer processing devices.

More power: In turn, miniaturization allowed computer makers to cram more power into their machines, providing faster processing speeds and more data storage capacity.

Less expense: The miniaturized processor of a personal computer that sits on a desk performs the same sort of calculations once performed by a computer that filled an entire room. However, processor costs are only a fraction of what they were 15 years ago.

2. Answer teacher's questions about the text.
3.Translate the following information into English

UNIT YII.

I. Read and translate the text

THE MIGHTY MICROPROCESSOR

Computers by themselves are important. However, perhaps equally significant are the affiliated technologies made possible by the invention of the microprocessor. **A *microprocessor* is the part that manipulates data into information. The circuitry is etched on a sliver or "chip" of material, usually silicon.**

Microprocessors are the CPUs in personal computers. Equally important, microprocessors provide the "thinking" for most other new electronic devices, from CD players to music synthesizers to automobile fuel-injection systems. When you hear of all the things gadgetry is supposed to do for us, often you can credit the microprocessor.

Developments in Communications Technology

Preview & Review: Communications, or telecommunications, has had three important developments. They are better communications channels, better networks, and better sending and receiving devices.

Throughout the 1980s and early 1990s, telecommunications made great leaps forward. Three of the most important developments were:

- Better communications channels
- Better networks
- Better sending and receiving devices

Better Communications Channels

We mentioned that data may be sent by wired or wireless connections. The old copper-wire telephone connections have begun to yield to the more efficient coaxial cable and, more important, to fiber-optic cable, which can transmit vast quantities of information in both analog and digital form.

Even more interesting has been the expansion of wireless communication. Federal regulators have permitted existing types of wireless channels to be given over to new uses, as a result of which we now have many more kinds of two-way radio, cellular telephone, and paging devices than we had previously.

Better Networks

When you hear the word "network," you may think of a *broadcast network,* a group of radio or television broadcasting stations that cut costs by airing the same programs. Here, however, we are concerned with ***communications networks,*** **which connect one or more telephones or computers or associated devices.** The principal difference is that *broadcast networks transmit messages in only one direction, communications networks transmit in both directions.* Communications networks are crucial to technological convergence, for they allow information to be exchanged electronically.

A communications network may be large or small, public or private, wired or wireless or both. In addition, smaller networks may be connected to larger ones. For instance, a *local area network (LAN)* may be used to connect users located near one another, as in the same building. On some college campuses, for example, microcomputers in the rooms in residence halls are linked throughout the campus by a LAN. **A computer in a network shared by multiple users is called a *server.***

Better Sending & Receiving Devices

Part of the excitement about telecommunications in the last decade or so has been the development of new devices for sending and receiving information. Two examples are the *cellular phone* and the *fax machine.*

• Cellular phones; *Cellular telephones* use a system that divides a geographical service area into a grid of "cells." In each cell, low-powered, portable, wireless phones can be accessed and connected to the main (wire) telephone network.

The significance of the wireless, portable phone is not just that it allows people to make calls from their cars. Most important is its effect on worldwide communications. Countries with underdeveloped wired telephone systems, for instance, can use cellular phones as a fast way to install better communications. Such technology gives these nations Mexico, Thailand, Pakistan, Hungary, and others – a chance to join the world economy.

Today's cellular phones are also the forerunners of something even more revolutionary – pocket phones. Cigarette-pack – size portable phones and more fully developed satellite systems will enable people to have conversations or exchange information from anywhere on earth.

• Fax machines: *Fax* stands for "facsimile," which means "a copy,-" more specifically, *fax* stands for "facsimile transmission." A *fax machine* scans an image and sends a copy of it in the form of electronic signals over transmission lines to a receiving fax machine. The receiving machine recreates the image on paper. Fax messages may also be sent to and from microcomputers.

Fax machines have been commonplace in offices and even many homes for some time, and new uses have been found for them. For example, some newspapers offer facsimile editions, which are transmitted daily to subscribers' fax machines. These editions look like the papers' regular editions, using the same type and headline styles, although they have no photographs. Toronto's *Globe & Mail* offers people who will be away from Canada a four-page fax that summarizes Canadian news. The *New York Times* sends a faxed edition, transmitted by satellite, to island resorts and to cruise ships in mid-ocean.

UNIT YIII.

1. Read and translate the text. Make up your own list of words

COMPUTER & COMMUNICATIONS TECHNOLOGY «COMBINED: CONNECTIVITY & INTERACTIVITY

Preview & Review: Trends in information technology involve connectivity and interactivity. Connectivity, or online information access, refers to connecting computers to one another by modem or network and communications lines. Connectivity, among other things, provides the benefits of voice mail and e-mail, computing, teleshopping, databases, online services and networks, and electronic bulletin board systems.Interactivity refers to the back-and-forth "dialog" between a user and a computer or communications device. Interactive devices include multimedia computers, personal digital assistants, and up-and-coming "smart boxes" and "Internet appliances."

Lee Taylor is what is known as a *lone eagle.* Once he was the manager of several technical writers for a California information services company. Then, taking a one-third pay cut, he moved with his wife to a tiny cabin near the ski-resort town of Telluride, Colorado. There he operates as a freelance consultant for his old company, using phone, computer network, and fax machine to stay in touch.

"Lone eagles" like Taylor constitute a growing number of professionals who, with information technology, can work almost anywhere they want, such as resort areas and backwoods towns. Although their income may be less, it is

offset by such "quality of life" advantages as weekday skiing or reduced housing costs. Taylor is one beneficiary of trends that will probably intensify as information technology continues **to proliferate**. These trends are:

* Connectivity
* Interactivity

Connectivity (Online Information Access)

As we discussed, small telecommunications networks may be connected to larger ones. This is called ***connectivity,*** **the ability to connect computers to one another by modem or network and communications lines to provide online information access.** It is this connectivity that is the foundation of the latest advances in the Digital Age.

The connectivity of telecommunications has made possible many kinds of activities. Although we cover these activities in more detail in Chapter 8, briefly they are as follows:

*** Voice mail and e-mail** *Voice mail* acts like a telephone answering machine. Incoming voice messages are digitized and stored for your retrieval later. Retrieval is accomplished by dialing into your "mailbox" number from any telephone.

The advantage of voice mail over an answering machine is that you don't have to worry about the machine running out of message tape or not functioning properly. Also, it will take messages *while* you're on the phone. You can get your own personal voice-mail setup by paying a monthly fee to a telephone company, such as AT&T.

An alternative system is e-mail. ***E-mail,*** **or** ***electronic mail,*** **is a software-controlled system that links computers by wired or wireless connections. It allows users, through their keyboards, to post messages and to read responses on their computer screens.** Whether the network is a company's small local area network or a worldwide network, e-mail allows users to send messages anywhere on the system.

*** Telecommuting:** In standard commuting, one takes transportation (car, bus, train) from home to work and back. In *telecommuting*, one works at home and communicates with ("commutes to") the office by computer communications technology. Already nearly 9 million people – not only business owners or independent contractors – telecommute.

*** Teleshopping** is the computer version of cable-TV shop-services. With *teleshopping,* microcomputer users dial into a phone-linked computer-based shopping service listing prices and descriptions of products, which may be or-

dered through the computer. You make the purchase with your credit card. The teleshopping service sends merchandise to you by mail or other delivery service.

* **Databases:** A database may be a large collection of data located within their own unconnected personal computer. Here, however, we are connected with databases located elsewhere. These are libraries of information at the other end of a communications connection that are available to you through your microcomputer. A *database* is a collection of electronically stored data. The data is integrated, or cross-referenced, so that different people can access it for different purposes. For example, suppose an unfamiliar company offered you a job. To find rout about your prospective employer, you could go online to gain access to some helpful databases.

Examples are Business Database Plus, Magazine Database Plus, and TRW Business Profiles. You could then study the company's products, review financial data, identify major competitors, or learn about recent sales increases or layoffs. You might even get an idea of whether or not you would be happy with the "corporate culture."

A *computer online service* is a commercial information service that, for a fee, makes various services available to subscribers through their telephone-linked microcomputers.

Among other things, consumers can research information in databases, go teleshopping, make airline reservations, or send messages via e-mail to others using the service.

Through a computer online service you may also gain access to the greatest network of all, the Internet. **The *Internet* is an international network connecting approximately 36,000 smaller networks that link computers at academic, scientific, and commercial institutions.** An estimated 24 million people in the United States and Canada alone are already on the Internet – fully 11% of the North American population over age 16. The most well known part of the Internet is the World Wide Web, which stores information in multimedia form – sounds, photos, video, as well as text.

***Electronic bulletin board systems: An *electronic bulletin board system(BBS)* is a centralized information source and message-switching system for a particular computer-linked interest group.** For example, there are BBSs on such varying subjects as fly-fishing, clean air, ecology, genealogy, San Diego entertainment, Cleveland city information, and adult chat. BBSs are now also generally accessible through the Internet.

UNIT IX.

1. Read and translate the text.

INTERACTIVITY: THE EXAMPLES OF MULTIMEDIA COMPUTERS, PERSONAL DIGITAL ASSISTANTS, & FUTURISTIC "Smart BOXES" & "INTERNET APPLIANCES"

The movie rolls on your TV/PC screen. The actors appear. Instead of passively watching the plot unfold, however, you are able to determine different plot developments by pressing keys on your keyboard. This is an example of interactivity. ***Interactivity*** **means that the user is able to make an immediate response to what is going on and modify the processes. That is, there is a dialog between the user and the computer or communications device.** Videogames, for example, are interactive. Interactivity allows users to be active rather than passive participants in the technological process.

Among the types of interactive devices are multimedia computers, personal digital assistants, and various kinds of up-and-coming "smart boxes" that work either with a TV or a PC.

• **Multimedia computers:** The word *multimedia*, one of the buzzwords of the '90s, has been variously defined. Essentially, however, ***multimedia*** **refers to technology that presents information in more than one medium, including text, graphics, animation, video, music and voice.**

Multimedia personal computers are powerful microcomputers that include sound and video capability, run CD-ROM disks, and allow users to play games or perform interactive tasks.

• **Personal digital assistants:** In 1988, handheld electronic organizers were introduced, consisting, of tiny keypads and barely readable screens. They were unable to do much more than store phone numbers and daily "to do" lists.

In 1993, electronic organizers began to be supplanted by personal digital assistants, such as Apple's Newton. Personal digital assistants *(PDAs)* are small pen-controlled, handheld computers that, in their most developed form, can do two-way wireless messaging. Instead of pecking at a tiny keyboard, you can use a special pen to write out commands on the computer screen. The newer generation of PDAs can be used not only to keep an appointment calendar and write memos but also to access the Internet and send and receive faxes and e-mail. With a PDA, then, you can immediately get information from some remote location – such as your microcomputer on your desk at home – and, if necessary, change it to update it.

Up-and-coming "smart boxes" and "Internet appliances": Already envisioning a world of cross-breeding among televisions, telephones, and computers, enterprising manufacturers are experimenting with developing TV/PC set-top control boxes, or *"smart boxes,"* and *"Internet appliances."* With these futuristic devices, consumers presumably could listen to music CDs, watch movies, do computing, view multiple cable channels, and go online. Set-top boxes would provide two-way interactivity not only with videogames but also with online entertainment, news, and educational programs.

Recently a *network computer*, or "hollow personal computer," has been developed, a machine intended to cost $500 or so that would be "hollowed out." Instead of having all the complex memory and storage capabilities built in, the network PC is designed to serve as an entry point to the online world, which is supposed to contain all the resources anyone would need.

Another gadget is the *cable modem*, which will allow cable-TV subscribers to connect their personal computers to various online computer services at speeds many times faster than traditional computer modems. This represents a way for cable operators to introduce voice, data, and video services on a large scale.

The converse of this is a kind of *"Internet TV" technology* known as Intercast, produced by chip maker Intel. Intercast lets specially equipped personal computers receive data from the Internet as well as television programming. Television networks could thus broadcast not only television shows but also additional data, such as geographical information about a country that is the subject of a news story, which computer owners could then look up.

All these devices seem to be leading toward a kind of *"information appliance,"* as we describe next.

The "All-Purpose Machine": The Information Appliance That Will Change Your Future

Preview & Review: In the future, we may have an "information appliance," a device that combines telephone, television, VCR, and personal computer. This device would deliver digitized entertainment, communications, and information.

The basis for the information appliance may be the personal computer, although it may come in various sizes, shapes, and degrees of portability. The device will probably become increasingly "user-friendly" and will have multimedia capability.

Computer pioneer John Von Neumann said that the computer should not be called the "computer" but rather the "all-purpose machine." After all, he pointed out, it is not just a gadget for doing calculations. The most striking thing

about it is that it can be put to *any number of uses.* More than ever, we are now seeing just how true that is.

The "Information Appliance": What Will It Be?

Recently, there has been enormous interest in what is perceived to be the coming Information Superhighway. This electronic delivery system would presumably direct a digitized stream of sound, video, text, and data to some sort of box, perhaps something called an *information appliance.* An information appliance would deliver digitized entertainment, communications, and information in a device that combines telephone, television, VCR, and personal computer. The vision inspired by this futuristic gadget has caused furious activity in the communications world. Telephone, cable, computer, consumer electronics, and entertainment companies have rushed to position themselves to take advantage of these developments.

So what, exactly, will the information appliance (a term coined by Apple Macintosh researcher Jef Raskin in 1978) turn out to be? Perhaps it could be the under-$500 network computer proposed by Oracle and others. Or it might be a variation on the TV set, like Gateway's Destination, a home-entertainment setup built around a personal computer and a 31-inch TV. Or it could be a new wrinkle on the videogame player, like the Pippin Atmark combination game player-Internet browser. Or it might be the grand fusion of the Internet and household appliances envisioned by Microsoft in its 1996 SIPC (Simply Interactive Personal Computer) standards. Whatever its final form, the information appliance will no doubt be adapted from a machine now present everywhere – the microcomputer. Clearly, then, anyone who learns to use a microcomputer now is getting a head start on the revolution.

The Ethics of Information Technology

Every reader of this book at some point will have to wrestle with ethical issues related to computers-and-communications technology. *Ethics* is defined as a set of moral values or principles that govern the conduct of an individual or group. Indeed, ethical questions arise so often in connection with information technology that we have decided to earmark them wherever they appear in this book – with the special "E-for-ethics" symbol you see in the margin.

Here, for instance, are some important ethical concerns pointed out by Tom Forester and Perry Morrison in their book *Computer Ethics:*

***Speed and scale:** Great amounts of information can be stored, retrieved, and transmitted at a speed and on a scale not possible before. Despite the benefits, this has serious implications "for data security and personal privacy (as well

as employment)," they say, because information technology can never be considered totally secure against unauthorized access.

***Unpredictability:** Computers and communications are pervasive, touching nearly every aspect of our lives. However, compared to other pervasive technologies – such as electricity, television, and automobiles – information technology is a lot less predictable and reliable.

*** Complexity,** The on/off principle underlying computer systems may be simple, but the systems themselves are often incredibly complex. Indeed, some are so complex that they are not always understood even by their creators**.** "This," say Forester and Morrison, "often makes them completely unmanageable," producing massive foul-ups or spectacularly out-of control costs.

Onward: The Gateway to the Information Superhighway

The term *Information Superhighway* has roared into the nation's consciousness in recent times. Some say it promises what might be called a communications cornucopia – a *"communicopia"* of electronic interactive services. Others say it is surrounded "by more hype and inflated expectations than any technological proposal of recent memory." What, in fact, is this electronic highway? Does it or will it really exist?

The *Information Superhighway* is a vision or a metaphor for a fusion of two-way wired and wireless capabilities of telephones and networked •computers with cable-TV's capacity to transmit hundreds of programs. The resulting interactive digitized traffic would include movies, TV shows, phone calls, databases, shopping services, and online services. This superhighway, it is hoped, would link all homes, schools, businesses, and governments. Parts of this idea have been raised before. Indeed, in many ways the Information Superhighway is a 1990s dusting off of earlier concepts of "the wired nation." In 1978, for example, James Martin wrote *The Wired Society*, which considered the social impacts of various telecommunications technologies. At present, this electronic highway remains a vision, much as today's interstate highway system was a vision in the 1950s. It is as though we still had old-fashioned Highway 40s and Route 66s, along with networks of one-lane secondary and gravel backroads. These, of course, have largely been replaced by high-speed blacktop and eight-lane freeways. In 40 years, will the world be as changed by the electronic highway as North America has been by the interstate highways of the last four decades? It is the thesis of this book that it will be – and that we should prepare for it.

2. Make up a detailed summary of the reading.

UNIT X.

1. Read English Russian equivalents. Learn them. Use new words and equivalents to translate the text.

INFORMATION TECHNOLOGY – CODE OF PRACTICE FOR INFORMATION SECURITY MANAGEMENT

1 Scope

This standard gives recommendations for information security management for use by those who are responsible for initiating, implementing or maintaining security in their organization. It is intended to provide a common basis for developing organizational security standards and effective security management practice and to provide confidence in inter-organizational dealings. Recommendations from this standard should be selected and used in accordance with applicable laws and regulations.

2 Terms and definitions

For the purposes of this document, the following definitions apply.

2.1. Information security
Preservation of confidentiality, integrity and availability of information.

- **Confidentiality**

Ensuring that information is accessible only to those authorized to have access.

- **Integrity**

Safeguarding the accuracy and completeness of information and processing methods.

- Availability

Ensuring that authorized users have access to information and associated assets when required.

2.2. Risk assessment

Assessment of threats to, impacts on and vulnerabilities of information and information processing facilities.

2.3. Risk management

Process of identifying, controlling and minimizing or eliminating security risks that may affect information system, for an acceptable cost.

3 Security policy

3.1.Information security policy

Objective: To provide management direction and support for information security.

Management should set a clear policy direction and demonstrate support for, and commitment to, information security through the issue and maintenance of an information security policy across the organization.

3.1.1 Information security policy document

A policy document should be approved by management, published and communicated, as appropriate to all employees. It should state management commitment and set out the organization's approach to managing information security. As a minimum, the following guidance should be included:

a) a definition of information security, its overall objectives and scope and the importance of security as a mechanism for information sharing;

b) a statement of management intent, supporting the goals and principles of informational security;

c) a brief explanation of the security policies, principles, standards and compliance requirements of particular importance to the organization, for example:

1) compliance with legislative and contractual requirements;

2) security educational requirements;

3) prevention and detection of viruses and other malicious software;

4) business continuity management;

5) consequences of security police violations;

d) a definition of general and specific responsibilities for information security management, including reporting security incidents;

e) references to documentation which may support the policy, e.g. more detailed security policies and procedures for specific information system or security rules users should comply with.

This policy should be communicated throughout the organization to users in a form that is relevant, accessible and understandable to the intended reader.

2. Answer the questions

1. What recommendations does this standard give? 2. What is it intended to? 3. How should these recommendations be selected and used? 4. What are the following definitions applied for? 5. Give definitions of a) information security; b) confidentiality; c) integrity; d) availability. 6. What is risk assessment? 7. What cost may risk management affect information system? 8. What is the objective of the information security policy? 9. What is information security policy document? 10. What will the guidance include? 11. How should the policy be communicated?

3. Make up 10 sentences with new words and expressions.

TEXTS FOR READING AND COMPREHENSION. GRAMMAR USE ILLUSTRATION

UNIT I
Reading and speaking

TWO TEENAGE GENUISES

Pre-reading task

What do young people like doing in your country?
Think of three things and tell the others in the class.
Pay attention to the use of Present Simple and Past Simple in the texts. Ask questions to the underlined sentences.

Ivan Mirsky is thirteen and he is the number 13 chess player in the world.

He was born in Russia but now lives in America with his father, Vadim. They live in a one-room flat in Brooklyn. Ivan doesn't go to school and his father doesn't have a job. They practice chess problems all day, every day, morning, afternoon, and evening. Ivan was different from a very young age: he could ride a bike when he was eighteen months old and read before he was two. He could play cards at three and the piano at four. When he was twelve, he was the under-20 chess champion of Russia. His father can't speak English and can't play chess, either! Ivan translates for him. Vadim says, 'I know that I can't play chess, but I can still help Ivan. He and I don't have any friends-we don't want any friends. Other teenagers are boring! We don't like playing sports or watching TV. We live for chess!'

Jaya Rajah is fourteen, but he doesn't go to school. He studies medicine at New York University in a class of twenty-year-olds. Jaya was born in Madras in India but now lives in a house in New York with his mother, father, and brother. They can all speak English fluently. His father is a doctor. Jaya was different from a very young age. He could count before he could say 'Mummy' or 'Daddy'. He could answer questions on calculus when he was five and do algebra when he was eight. Now he studies from 8.15 to 4.00 every day at the university. Then he studies at home with his father from 6.30to 10.00 every evening. Jaya doesn't have any friends. He never goes out in the evenings, but he sometimes watches TV. He says/I live for onething-1 want to be a doctor before I am seventeen. Other children of my age are boring. They can't understand me.'

Comprehension check

1. How old is he? 2. Does he go to school? 3. Where was he born? 4. Where does he live now? 5. Who does he live with? 6. What does his father

do? 7. How was he different when he was very young? 8. What does he do in the evening? 9. Can his father speak English? 10. Does he have any friends? 11. What does he do in his free time?

Check your answers with your group.

UNIT II.

1. Read and translate the story about Charles Dickens

CHARLES DICKENS
(1812-187O)

Charles Dickens is one of the greatest novelists in the English language. He wrote about the real world of Victorian England and many of his characters were not rich, middle-class ladies and gentlemen, but poor and hungry people.

DICKENS THE CHILD

His family lived in London. His father was a clerk in an office. It was a good job, but he always spent more money than he earned and he was often in debt. There were eight children in the family, so life was hard.

Charles went to school and his teachers thought he was very clever. But suddenly, when he was only eleven, his father went to prison for his debts and the family went, too. Only Charles didn't go to prison. He went to work in a factory, where he washed bottles. He worked ten hours a day and earned six shillings (30p) a week. Every night, after work, he walked four miles back to his room. Charles hated it and never forgot the experience. He used it in many novels, especially *David Copperfield* and *Oliver Twist.*

DICKENS THE WRITER

When he was sixteen, he started work for a newspaper. He visited law courts and the Houses of Parliament. Soon he was one of the *Morning Chronicle's* best journalists. He also wrote short stories for magazines. These were funny descriptions of people that he met. Dickens' characters were full of colour and life – good people were very, very good and bad people were horrible. His books became popular in many countries and he spent a lot of time abroad, in America, Italy, and Switzerland.

DICKENS THE MAN

Dickens had ten children, but he didn't have a happy family life. He was successful in his work but not at home, and his wife left him. He never stopped writing and travelling, and he died very suddenly in 1870.

Writing

Revise Past Simple. Write about your past. Use these ideas to help you.

Born when?. where?	Parents work? live?	School like? not like?	Free time sports? hobbies?	First job what? when? earn?

2. Answer the questions

a How old was Dickens when he died?
b How many brothers and sisters did he have?
c Was he good at school?
d Why did he leave school when he was eleven?
e Who was in prison?
f What did Charles do in his first job?
g What was his next job?
h Was he happy at home?
i When did he stop writing?

UNIT III.

1. Read the text. Make up your own list of words on the topic

Pre-reading task

1 What's your favourite food? What do you eat with it? When do you have it?

2 You are going to read a text about what British people eat and when. What do you want to know? Write some questions.

Examples

What do they have for breakfast?
Do they have hot things or cold things?
Do they eat a lot of fish?

MEALS IN BRITAIN

A traditional English breakfast is a very big meal – sausages, bacon, eggs, tomatoes, mushrooms.... But nowadays many people just have cereal with milk and sugar, or toast with marmalade, jam, or honey. Marmalade and jam are not the same! Marmalade is made from oranges and jam is made from other fruit. The traditional breakfast drink is tea, which people have with cold milk. Some people have coffee, often instant coffee, which is made with just hot water.

Many visitors to Britain find this coffee disgusting!

For many people lunch is a quick meal. In cities there are a lot of sandwich bars, where office workers can choose the kind of bread they want – brown, white, or a roll – and then all sorts of salad and meat or fish to go in the sandwich. Pubs often serve good, cheap food, both hot and cold. Schoolchildren can have a hot meal at school, but many just take a snack from home-a sandwich, a drink, some fruit, and perhaps some crisps.

Tea' means two things. It is a drink and a meal! Some people have afternoon tea, with sandwiches, cakes, and, of course, a cup of tea. Cream teas are popular. You have scones (a kind of cake) with cream and jam.

The evening meal is the main meal of the day for many people. They usually have it quite early, between 6.00 and 8.00, and often the whole family eats together.

On Sundays many families have a traditional lunch. They have roast meat, either beef, lamb, chicken, or pork, with potatoes, vegetables, and gravy. Gravy is a sauce made from the meat juices.

The British like food from other countries, too, especially Italian, French, Chinese, and Indian. People often get takeaway meals – you buy the food at the restaurant and then bring it home to eat. Eating in Britain is quite international!

Comprehension check

1 Can you answer your questions from the Pre-reading task?
2 Are the sentences true (+) or false (-)? Correct the false sentences.
   a Many British people have a big breakfast.
   b People often have cereal or toast for breakfast.
   c Marmalade is different from jam.
   d People drink tea with hot milk.
   e Many foreign visitors love instant coffee.
   f All British people have a hot lunch.
   g Pubs are good places to go for lunch.
   h British people eat dinner late in the evening.
   i Sunday lunch is a special meal.
   j When you get a take-away meal, you eat it at home.

UNIT IY.

1 Regular and irregular verbs

'Braille' is a system of reading and writing for blind people. Read the story of Louis Braille. Check the meaning of new words in your dictionary. Put the verbs in brackets into the Past Simple.

LOUIS BRAILLE (1809-1852)

Louis Braille (a) *was* (be) the son of a French leather worker. He (b) (go) blind at the age of three when he (c) (fall) on a tool in his father's workshop. But Louis was a brave and talented boy. He (d) (want) to be a musician, so he (e) (learn) to play the cello, and at the age of ten he (f) (win) a scholarship to the National Institute for Blind Children in Paris. He (g) (can) play the cello, but he (h) (can not) read or write. In 1819 a French soldier, Charles Barbier, (i) (invent) 'night writing'. He (j) (use) patterns of twelve raised dots on paper so that soldiers (k) (can) read in the dark. Louis Braille (1) (understand) the importance of this invention for blind people and when he was fifteen, he (m) (begin) to develop it. He (n)(make) it simpler, with six dots, not twelve. In 1829 he (o) (introduce) it at the Institute. By 1932 'Braille' was in use all over the world in many languages, but unfortunately Louis (p) (die) of tuberculosis in 1852 and never (q) (know) of the importance of his invention.

2 Making negatives

Correct the false sentences about Louis Braille.

Examples

Louis Braille was English.

He wasn't English. He was French.

He introduced Braille in 1839.

He didn't introduce it in 1839. He introduced it in 1829.

a His father was a teacher. b He went blind when he was six. c He wanted to be a soldier. d He learnt to play the piano. e He won a scholarship to the Institute of Music. f He invented 'night writing'. g He made 'night writing' more difficult. h He died when he was fifty-three.

UNIT IY.

SATELLITES

Satellites in our lives

Satellites are an important part of our ordinary lives. For example, the information for weather forecasts is sent by satellite. Some satellites have cameras which take photographs of the Earth to show how clouds are moving. Satellites are also used to connect our international phone calls. Computer connections of the World Wide Web and Internet also use satellites. Many of our TV programmes come to us through satellites. Aeroplane pilots also sometimes use a satellite to help them find their exact location.

Television

We use satellites to send television pictures from one part of the world to another. They are usually 35,880 kilometres above the equator. Sometimes we can see a satellite in the sky and it seems to stay in the same place.

This is because it is moving around the world at 11,000 kilometres an hour – exactly the same speed that the Earth rotates. A satellite must orbit the Earth with its antennae facing the Earth. Sometimes, it moves away from its orbit, so there are little rockets on it which are used to put the satellite back in the right position. This usually happens about every five or six days.

The Earth is a dustbin?

Space is not empty! Every week, more and more satellites are sent into space to orbit the Earth. A satellite usually works for about 10-12 years. Satellites which are broken are sometimes repaired by astronauts or sometimes they are brought back to Earth to be repaired. Often, very old or broken satellites are left in space to orbit the Earth for a very long time. This is very serious because some satellites use nuclear power and they can crash into each other.

Learn the new words

Here are some words from the texts. Can you put them into pairs with similar meanings?

orbit position move around send energy place about transmit approximately

Now put one of the words into each sentence.

1. Every day, more satellites … the Earth.
2. TV stations .....signals to the satellites.
3. … 200 million people watched the Olympic Games at the same time on television.
4. Each satellite has a different … in space.
5. Satellites use batteries and solar … .

UNIT Y.

1. Read and translate the text

THE BUCKIGHAM PALACE

There are two addresses in London that the whole world knows. One is 10 Downing Street, where the Prime Minister lives. The other is Buckingham Palace. This famous palace, first built in 1703, is in the very centre of London.

It is two places, not one. It is a family house, where children play and grow up. It is also the place where presidents, kings, and politicians go to meet the Queen.

Buckingham Palace is like a small town, with a police station, two post offices, a hospital, a bar, two sports clubs, a disco, a cinema, and a swimming pool. There are 600 rooms and three miles of red carpet. Two men work full-time to look after the 300 clocks. About 700 people work in the Palace.

THE QUEEN'S DAY

When the Queen gets up in the morning, seven people look after her. One starts her bath, one prepares her clothes, and one feeds the Royal dogs. She has eight or nine dogs, and they sleep in their own bedroom near the Queen's bedroom. Two people bring her breakfast. She has coffee from Harrods, toast, and eggs. Every day for fifteen minutes, a piper plays Scottish music outside her room and the Queen reads *The Times.*

Every Tuesday evening, she meets the Prime Minister. They talk about world news and have a drink, perhaps a gin and tonic or a whisky.

AN INVITATION TO THE PALACE

When the Queen invites a lot of people for dinner, it takes three days to prepare the table and three days to do the washing-up. Everybody has five glasses: one for red wine, one for white wine, one for water, one for port, and one for liqueur. During the first and second courses, the Queen speaks to the person on her left and then she speaks to the person on her right for the rest of the meal. When the Queen finishes her food, everybody finishes, and it is time for the next course!

Comprehension check

1 Are the sentences true (Y) or false (X)? Correct the false sentences.

a The Palace is more than two hundred years old.

b It is famous because it is in the centre of London.

c The same person starts the Queen's bath, prepares her clothes, and feeds the dogs.

d The dogs sleep in the Queen's bedroom.

e The Queen and the Prime Minister go out for a drink on Tuesday nights.

2 Answer the questions

a 'Buckingham Palace is two places, not one.' How?

b Why is it like a small town?

c Are there a lot of clocks?

d How many dogs does the Queen have?

e What newspaper does she read?
f What sort of music does the piper play?
g Why do people have five glasses on the table?
h Who does the Queen speak to during a meal?
i What happens when the Queen finishes her food?

UNIT YI.

1. Read and translate the text. Do the exercises.

THE FLYING TRAIN

One of the most exciting new types of train is the Maglev train. The Maglev train is very different from normal trains. It does not have any wheels. It uses magnetic levitation to float on the rail. It can travel very fast – over 500 kilometres an hour. It is very quiet and it is very clean. It doesn't have any wheels or any parts that move**.**

How does it work?

The secret is that it uses magnets in a new type of motor. Have you ever tried to push two magnets together? If you hold them one way, they attract each other. If you hold them the other way, they repel each other.

The Maglev train uses magnets in the same way. The motor is a very big electromagnet. (An electromagnet is a magnet that only works when there is electricity). The electricity changes direction all the time and the magnet changes from north to south, south to north. There are more electromagnets on the rail and this pushes the train forward.

Why don't we see the Maglev train now?

The train is fast, quiet and clean. Why don't we see it everywhere now? Part of the answer is that the train can only take people. It cannot carry very heavy things. Also, because it goes so fast, the rail must be very straight. This makes it difficult to use it in places where there are a lot of hills. But the real answer is because it is very expensive to build. A long rail of electromagnets costs a lot of money. It also uses a lot of electricity. We need to find a cheaper, cleaner way to make electricity if we want to see The Flying Train' in our towns and cities.

Is the information in these sentences true [T], false [F] or not in the text [?].

a The Maglev train cannot take heavy things.
b The Maglev train can only go on straight rails.
c The train makes a lot of noise.

d There is a Maglev train in Japan.
e The biggest problem for the Maglev train is that it is too expensive.
f It is possible to use the Maglev train everywhere.
g The train cannot work when it is raining.

UNIT YII.

1. Read about recent developments in computer technology. Can you complete the text with the correct phrasal verbs? Be careful, you need to change the form of the verb.

AROUND THE WORLD FOR THE PRICE OF A LOCAL PHONE CALL

Here is useful computer vocabulary. Can you match each word/phrase to the correct meaning?

1	software	a a message sent from one computer to another
2	log on	b programs that a computer uses
3	email	c the physical equipment of a computer
4	Internet provider	d two or more computers that communicate with each other
5	network	e to connect to a network

Fill in the gaps with

Call up, close down, come down, go up, link up, log off, log on, start up, start up, try out, turn on.

Prices ….. all the time, but recent technology means that the cost of making a telephone call has …… a lot. Today, many people use a computer to ….. someone on the other side of the world – for the same cost as a local telephone call. This is how they do it.

- Before they start , they …… a microphone and earphones to their computer.
- Usually, they agree when they will talk to each other because both computers have to be ….. .One person suggests a day and time by e-mail and the other person sends back their reply.
- At the agreed time, they …. Their computers and, via their modem, ….. to an Internet provider in their town.
- Next, they ……. the special telephone software.
- The telephone software connects through the Internet to the computer on the other side of the world.
- They can talk to each other using the microphone and earphones.
- When they have finished, they …. From the Internet and …. The computer.

Talking via the Internet is much cheaper than using ordinary telephone connections. If you have a computer and a modem, …. an Internet conversation!

UNIT YIII.

TELEVISION, PAST AND PRESENT

Two texts

Look at Texts A and B. In one text, you have to write all the verbs in the Past simple (’did’), in the other text you have to write them in the Present perfect (’have done’). Decide which, and then complete the texts.

1929 Vladimir Zworykin, a Russian working in the USA,(demonstrate) the first electronic television system.

1936 The BBC in England (transmit) the first TV programmes using the electronic system.

1939-45 World War II(stop) all developments in television.

1946 The television company NBC (begin) transmissions in the USA again.

1954 Colour television (begin) in the USA.

1962 an American company (launch) the first television satellite, Telstar.

1964 Telstar 2 ’ (transmit)the first colour television pictures.

1969 Millions of people (see) Neil Armstrong on the moon – live on television.

1984 The first hand-held ’liquid crystal display" (LCD) televisions (appear).

1985 1.5 billion people all over the world (watch) ’Live Aid", a pop concert to raise money for people in Africa.

1992 High-definition television (HDTV) (arrive), producing very sharp pictures and excellent sound

’Soap operas’ are TV serials that are broadcast two or more times in the week.

They are usually about a domestic drama. They are called ’soap operas’ becausewhen they began in the USA, soap manufacturers paid for the programmes.

Soap operas[1] ..... (become) one of the most successful types of TV programmes.

They[2] .... (grow) into a multi-billion dollar industry. Mexico, Brazil. Australia and the United States[3] ….. (produce) many soap operas which they[4] ….. (sell) all over the world.

Soap operas[5].....(change) the television habits of millions of people. The audience for soap operas[6] ….. (expand) enormously and it now includes types of people. In some countries, soap operas[7] …… (become) important national pastimes – everybody watches their programme and everybody talks about last night’s episode. Many of the actors and actresses from soap operas[8]…… (become) international stars, and they [9]……. (earn) enormous amounts of money.

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