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ВСП «Ковельський промислово-економічний фаховий коледж ЛНТУ»

ІНОЗЕМНА МОВА
за професійним спрямувнням

Методичні вказівки до практичних занять для здобувачів освітньо-професійного ступеня фаховий молодший бакалавр спеціальності F3 Комп’ютерні науки денної форми здобуття освіти

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А 64 Іноземна мова за професійним спрямуванням [Текст]: методичні вказівки до практичних занять для здобувачів освітньо-професійного ступеня фаховий молодший бакалавр спеціальності F3 Компютерні науки денної форми здобуття освіти /уклад. Тетяна ВЕГЕРА. – Ковель: ВСП «КПЕФК ЛНТУ», 2026. – 84 с.

Видання містить методичні вказівки до практичних занять з освітнього компонента «Іноземна мова за професійним спрямуванням». Вони спрямовані на закріплення набутих знань і навичок та направлені на формування комунікативно-діяльнісної компетентності в ІТ-сфері. Призначене для здобувачів освітньо-професійного ступеня фаховий молодший бакалавр спеціальності F3 Комп'ютерні науки денної форми здобуття освіти.

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Передмова

Сьогодні технології та глобальні компанії з'єднують людей із різних частин світу, а іноземна мова є базовим інструментом для роботи з документацією, технічними стандартами, стеком технологій, реалізацією проєктів, співпраці з міжнародними компаніями та професійною комунікацією в глобальній ІТ-сфері. У сучасному ІТ-середовищі англійська мова – це фактично «мова інтерфейсу» професії. Саме тому Методичні вказівки до практичних занять з освітнього компонента «Іноземна мова за професійним спрямуванням» направлені на формування комунікативно-діяльнісної компетентності в ІТ-сфері та спрямовані на закріплення набутих знань і навичок, які відповідають потребам ІТ-ринку. Рівень набутих компетентностей забезпечує ІТ-фахівцям можливість належного виконання професійних обов'язків у процесі іншомовного професійно-орієнтованого усного та писемного спілкування і розвиватися у професії без обмежень.

Методичні вказівки складаються із 16 текстів-тем, які містять окрему комп'ютерну проблему – тему, і включають автентичні, спеціалізовані тексти, що є основою для ведення бесіди або нескладної дискусії (призначені для закріплення активної лексики певної теми). До текстів пропонуються передтекстові і післятекстові вправи та завдання на відпрацювання мовленнєвих навичок і вмінь, використання лексичного матеріалу, що вивчається. Побудова системи завдань до кожного тексту визначається методичним призначенням цих текстів. Підібрані вправи дають можливість не лише краще закріпити даний матеріал, але й проконтролювати навики усного та писемного мовлення по даному матеріалі. У процесі розробки системи завдань і вправ використовувались елементи функціонально-комунікативного навчання в іноземній мові, при якій явище мови (лексика і граматика) розглядаються не тільки як система правил і особливостей, але й і як система комунікативних функцій.

Ми живемо у час, коли технологі формують нову реальність, і спеціальність F3 Комп'ютерні науки дає можливість бути творцем цієї реальності.

Lesson 1
Read and translate the text:

From the History of a Computer

The educated man of 200 years ago did not need to know anything about science. But the educated man of today needs to have some significant knowledge about computers.

The computer is no doubt the most amazing achievement of mankind. It is a date storage system created by a man. A human tells the machine what to do, when to do it and how it should be done.

The word *computer* comes from a Latin word which means *to count*.

Nearly one hundred and fifty years ago there were no such things as computers. Knotted ropes, marks in clay, the abacus are all methods of keeping track of numbers.

In 1833 an English inventor and mathematician Charles Babbage, professor of Cambridge University designed the first computer. The mathematical programme for his machine had been composed by Lord Byron's daughter.

The first programme computer which operated successfully was built in 1939 by H. H. Aiken, professor of Harward University.

In our country the first electronic digital computer MACM was constructed by the Ukrainian Academician S. O. Lebedev in 1950.

Such computers as BESM, Minsk, Ural, Razdan-3, M-20, M-220, Nairi-3, Strela, Dnieper were created in our country.

Nowadays computers greatly increase man's thinking capabilities of planning, analyzing, computing and controlling. Millions of computers are already in daily use. They penetrate almost into all spheres of our modern society, from nuclear energy production and missile design to the processing of bank checks, weather forecasting, manufacturing, research and medical diagnoses.

There are three kinds of computers: digital, analogue and hybrid. An analogue computer computes by using physical analogue of numerical measurements. A digital computer computes by using numbers or digits. A hybrid computer is a machine which combines some of the properties of digital and analogue computers.

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

Computers today are running our factories, planning our cities, teaching our children and forecasting our future. The computer solves in seconds the problem generations of mathematicians would need months or years to solve without its help. Computers, like the telephone or electricity have become a common thing of every day used by almost everybody. They have entered our home life. They help to make up the wife's shopping list, remind the husband of important appointments and anniversaries and answer the telephone.

We often hear that the increasing flood of information is one of the problems of the 21st century. The computer may help to solve it too. In a computerized library of the requests for information are answered instantly and as fully as the user wants.

Active Vocabulary:
Amazing achievement of mankind – дивовижне досягнення людства
abacus – рахівниця
knotted ropes – зав'язані на вузол шнурки, шнурові плетіння
clay – глина
to keep track of – слідкувати
an inventor – винахідник
to compose – складати
to construct – конструювати, створювати
digital – цифровий
to create – створювати
to increase – збільшувати
thinking – мислячий, розумний
capability – здатність, здібність
to compute – обчислювати
to penetrate – проникати
missile – реактивний снаряд, ракета
to process – обробляти, опрацьовувати
weather forecast – прогноз погоди
manufacturing – виробництво
research – (наукове) дослідження
analogue computer – аналоговий комп'ютер
hybrid – змішаний
numerical – цифровий
measurements (pl.) – вимірювання
steam-engine – паровий двигун
utilization – використання
significance – значення, важливість
to astonish – вражати
to remind – нагадувати
flood of information – потік інформації

Comprehensive Questions

1. Did the educated man of 200 years ago need to know anything about science?
2. Where does the word computer come from?
3. What were the ancient methods of keeping track of numbers?
4. Who and when designed the first computer?
5. Who composed the mathematical programme for that machine?
6. When was the first electronic digital computer MACM created in our country?
7. What do the computers greatly increase?
8. Where do computers penetrate nowadays?
9. What are three kinds of computers? How do they work?
10. What are the greatest achievements of mankind?
11. What do the computers do today?
12. What will the computers help to make up?

13. What is one of the problems of the 21st century?
14. Who will help to solve it?

Text Study

Exercise 1. Read and translate the word-combinations from the text.

To have significant knowledge of science, a date storage system, to operate successfully, the first electronic digital computer, man's thinking capabilities, planning and analyzing, computing and controlling, in daily use, to penetrate into all spheres of modern society, the increasing flood of information, a computerized library.

Exercise 2. Choose the necessary word and put it in the sentence.

1. The educated man of today needs to have … … about computer.
2. It is a … … created by a man.
3. The computer is the most … … of mankind.
4. Nowadays computers greatly … man's thinking capabilities of planning, analyzing, computing and controlling.
5. Millions of computers are already in … .
6. An analogue computer … by using physical analogue of numerical measurements.
7. A hybrid computer … some of the properties of digital and analogue computers.
8. The significance of the computers can be … with the invention of the steam-engine.

1. increase
2. daily use
3. compared
4. amazing achievement
5. compute
6. combine
7. date storage system
8. significant knowledge

Exercise 3. Complete the sentences finding the end in the right column.

1. The educated man of today needs to … .	… will be answered instantly and as fully as the user wants.
2. The computer is … .	… have some significant knowledge of science and about computers.
3. In 1833 an English inventor and mathematician … .	… planning, analizing, computing and controlling.
4. Nowadays computers greatly increase man's thinking capabilities of … .	… running the factories, planning the cities, teaching the children and forecasting our future.
5. There are three kinds of computers … .	… the most amazing achievement of mankind.
6. Computers today are … .	… designed the first computer.
7. The computers will help to … .	… digital, analogue and hybrid.
8. In a computerized library of the	… make up the wife's shopping list,

future request for information … .	remind the husband of important appointments and anniversaries and answer the telephone.

Exercise 4. Tell what sentences are true, what are false.

1. The educated man of 25-30 years ago need to know something about computers.
2. The computer is no doubt the most amazing achievement of mankind.
3. The word *computer* comes from a German word which means *to count*.
4. In 1833 an English inventor and physists Charles Babbage, professor of Harward University designed the first computer.
5. The mathematical program for his machine had been composed by Lord Byron's daughter.
6. The first programme computer which operated successfully was built in 1929 by H. H. Aiken, professor of Cambridge University.
7. In our country the first electronic digital computer MACM was constructed by the Ukrainian Academician S. O. Lebedev in 1950.
8. Hundreds of computers are already in daily use.
9. Invention of electronic computers is one of the greatest achievements of mankind.
10. They can't even enter our home life.

Exercise 5. Translate into English.

1. Я впевнений, що комп'ютер є найдивовижнішим досягненням людства.
2. Важливість комп'ютера можна порівняти з винаходом парового двигуна і використанням атомної енергії. 3. Комп'ютер допомагає вирішувати багато складних питань. 4. Мільйони комп'ютерів проникають у всі сфери нашого сучасного суспільства від прогнозу погоди, виробництва, дослідження до медичних діагнозів. 5. Добре освіченій людині сьогодні необхідно мати значні знання щодо комп'ютера. 6. Мільйони людей по всьому світу використовують комп'ютери. 7. Комп'ютер змішаного типу поєднує деякі властивості цифрового та аналогового комп'ютерів. 8. Мені легко обробляти інформацію та проводити обчислення за допомогою комп'ютера. 9. Комп'ютери сьогодні керують фабриками, навчають наших дітей і передбачають наше майбутнє. 10. Перший комп'ютер був спроектований англійським винахідником та математиком Чарльзом Бейбеджом у 1833 році.

Additional Text
(for individual work)

Read and translate the text.

Computer Evolution

2000 BC (before Christ) – The abacus emerged in Asia. It allowed people to make calculations using moving beads arranged on a rack. 1642 – Blaise Pascal invented the first mechanical adding machine, a numerical wheel called Pascaline.

1833 – Charles Babbage started to build his Analytical Engine, the forerunner of the modern computer. He was helped by Augusta Ada Byron, who is considered

the first computer programmer. *1890* – Herman Hollerith used punch cards in a device which automatically read the US census.

1941 – Konrad Zuse built the first programmable computer, called Z3, working on the binary system.

First generation computers (1945-1954) – The University of Pennsylvania designed ENIAC (UNIVersal Automatic Computer), an electronic computer which used vacuum tubes and was able to calculate at electronic speeds. Those devices were not only bulky, they were also unreliable. The thousands of vacuum tubes emitted large amounts of heat and burned out frequently.

Second generation computers (1955-1964) – Computers used transistors instead of vacuum tubes. So-called second generation computers, which used large numbers of transistors were able to reduce computational time from milliseconds to microseconds, or millionths of seconds. Second-generation computers were smaller, faster and more reliable than first-generation computers. Memories were made of magnetizable cores (the IBM 1401).

Third generation computers (1965-1973) – The first computers using silicon chips went on sale. Intel released the first microprocessor. They could perform many data processing operations in nanoseconds which are billionths of seconds.

Fourth generation computers (1974-2001) – Computers became smaller as more components were squeezed onto microchips. The integrated circuits that are being developed have been greatly reduced in size. This is due to microminiaturization which means that the circuits are much smaller than before; as many as 100 tiny circuits are placed now on a single chip. A chip is a square or rectangular piece of silicon, usually from $^{1/10}$ to ¼ inch, upon which several layers of an integrated circuits are etched or imprinted, after which the circuits is encapsulated in plastic or metal.

1975 – Bill Gates and Paul Allen founded Microsoft and wrote a BASIC compiler for the Altair.

1976 – Steve Jobs and Steve Wozniak founded Apple Computer, Inc. The first minicomputer was sold.

1981 – IBM sold the IBM PC, a model that became the standard in personal computers. MS-DOS was the operating system for IBM PCs and compatibles.

1984 – Apple produced the Macintosh, the first computer with a mouse and a grapfic user interface (GUI).

1995 – Microsoft launched Windows 95 and Sun Microsystems created Java language.

2001 – Intel launched the Pentium 4 running at 2G Hz.

Fifth generation computers – Fibre optics and optical disks revolutionize the world computers. Artificial Intelligence and voice recognition are incorporated into computer applications; experts start making tiny, superfast computers known as nanocomputers. Some are electronics, others are biochemical, working with bio-chips made of millions of molecules.

Answer the questions to the text.

1. When did the abacus emerge?

2. Who designed ENIAC (UNIVersal Automatic Computer), an electronic computer which used vacuum tubes and was able to calculate speeds?
3. What did the second generation computers use?
4. What could the third generation computers perform?
5. Why did fourth generation computers become smaller in size?
6. What did revolutionize the world of computers?

Lesson 2
Read and translate the text:

Do You Want to Be a Computer Programmer?

In the future, I may enjoy being a computer programmer because I am keen on trying computer techniques and working with computers is always fun and exciting for me.

People with jobs in the career field of IT use computers, software, networks, servers, and other technology to manage and store data. There is growing demand in various jobs in the field of information technologies nowadays.

It is important to understand that the work of the programmer can be different: some of them work for a small agency, some for a huge company; others are freelance or have their own business. I'd like to work for a big company.

In order to be a successful IT specialist you must possess some skills and personal qualities. The most important ones are the following: being able to think logically, love to solve problems, persistence and patience. A computer programmer must be able to find the most efficient way to solve the problem.

I want my future job be interesting and well-paid. People say that money isn't everything, but it certainly does help because it gives independence and freedom. I'd like to combine a good satisfying job with a high paying salary.

What are pros and cons of being an IT specialist?

The advantages of being an IT specialist are the following:

- relatively high wage level
- growing demand on the labor market
- constant learning; companies often welcome professional growth of their employees and pay for trainings, conferences and courses
- good working conditions; it is usually quiet and comfortable in an office
- the work is often creative; solving non-standard tasks using wit is exactly what programmers are paid for
- can work remotely; it allows to choose a comfortable place to live and work.

The negative sides are:

- sedentary work in front of computer screen
- the work can be boring
- there is not much communication
- in small projects, you have to be a jack-of-all-trades person

Taking into consideration all pros and cons I came to the conclusion that the profession of a computer programmer offers great opportunities, because the future of

our society is connected with the development of information technologies. I am sure I will reach my goal if I keep working hard.

Active Vocabulary
To be keen on – захоплюватися
software – програмне забезпечення
network – мережа
server – сервер
to manage data – управляти даними
to freelance – працювати на себе
high salary – висока зарплатня
employee – найманий робітник
wit – розум
persistence – наполегливість
work remotely – працювати віддалено
sedentary work – сидяча робота
jack-of-all-trades – майстер на всі руки

Comprehensive Questions
1. What do the people with jobs in the field of IT work with?
2. Where can you work being programmer?
3. What skills and personality qualities must programmer possess to be successful?
4. What are the advantages of being the programmer?
5. Why should you learn constantly?
6. Is the work of programmer creative?
7. Can the programmer work remotely? What does this mean?
8. Is it healthy to have sedentary work?
9. Who is jack-of-all-trades?
10. Have you taken into consideration all pros and corn while choosing your profession?

Exercise 1. **Find English equivalents.**
Бути комп'ютерним програмістом, комп'ютерна техніка, весело і захоплююче, використовувати програмне забезпечення та інші технології, управляти та зберігати дані, галузь інформаційних технологій, працювати на невелике агентство або величезну компанію, працювати на себе, мати власний бізнес, володіти певними навичками та особистими якостями, думати логічно, любити вирішувати проблеми, наполегливість та терплячість, знаходити найефективніший спосіб, цікава та добре оплачувана, давати незалежність та свободу, поєднувати хорошу роботу із високою зарплатнею, ринок праці, постійне навчання, вітають професійний ріст, оплачують різні тренінги та курси, гарні умови праці, вирішення нестандартних завдань, працювати віддалено, обрати зручне місце для життя та роботи, сидяча робота перед монітором, мало спілкування, майстер на всі руки, брати до уваги усі переваги

та недоліки, прийти до висновку, пропонувати великі можливості, розвиток інформаційних технологій, досягти своєї мети.

Exercise 2. Say if the sentences are true or false.

1. People with jobs in the career field of IT use computers, software, networks, servers, and other technology to manage and store data. 2. In order to be a successful IT specialist you mustn't possess some skills and personal qualities. 3. A computer programmer must be able to find the most efficient way to solve the problem. 4. Money isn't everything, but it certainly does help because it gives independence and freedom. 5. The programmer has relatively high wage level. 6. Companies often don't welcome professional growth of their employees and pay for trainings, conferences and courses. 7. The programmer can't work remotely and choose a comfortable place to live and work. 8. The programmer has sedentary work in front of a computer screen. 9. You have to be a jack-of-all-trades person in small projects. 10. The future of our society is connected with the development of information technologies.

Exercise 3. Translate into English.

1. Я хочу стати комп'ютерним програмістом, тому що я захоплююся роботою з різною комп'ютерною технікою. 2. Програміст може працювати у невеличкій агенції, величезній компанії, працювати на себе або мати свій власний бізнес. 3. Необхідно бути наполегливим та терплячим, мислити логічно і любити розв'язувати різні задачі щоб досягти успіху у галузі інформаційних технологій. 4. Дуже хотілося, щоб робота була добре оплачуваною, оскільки гроші дають незалежність і свободу. 5. Звичайно, професія програміста має свої переваги та недоліки. 6. Компанії зазвичай вітають професійний ріст своїх найманих працівників і оплачують тренінги та курси. 7. Ця професія дозволяє працювати віддалено, обираючи зручне місце для життя та роботи. 8. Головним недоліком цього фаху є сидяча робота перед монітором, що дуже шкодить здоров'ю. 9. Виконуючи невеликі проекти ти повинен вміти виконувати різні завдання, тобто бути майстром на усі руки. 10. Розглянувши усі переваги та недоліки професії програміста я ще раз переконався у правильності свого вибору.

Lesson 3

Read and translate the text:

Computer Literacy

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

There was a time when only privileged people had an opportunity to learn the basics, called the three R's: reading, writing, and arithmetics. Now, as we are

becoming an information-becoming society, it is time to restate this right as the right to learn reading, writing and computing. There is little doubt that computers and their many applications are among the most significant technical achievements of the century. They bring with them both economic and social changes. "Computing" is a concept that embraces not only the old third R, arithmetics, but also a new idea — computer literacy.

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

Here is the description of jobs in computing.

System analyst studies methods of working within an organization to decide how tasks can be done efficiently by computers. He makes a detailed analysis of the employer's requirements and work patterns to prepare a report on different options for using information technology. This may involve consideration of the hardware as well as software. He either uses standard computer packages or writes a specification for programmers to adapt existing software or to prepare new software. He may oversee the implementation and testing of the system and acts as a link between the user and the programmer.

Software Engineer/Designer produces the programs which control the internal operations of computers. He converts the system analyst's specification to a logical series of steps. Software Engineer translates these into the appropriate computer language. He often compiles programs from libraries or sub-programs, combining them to make up a complete systems program. He designs, tests, and improves programs for computer-aided design and manufacture, business applications, computer networks and games.

Computer Systems Support Person. Systems support people are analyst programmers who are responsible for maintaining, updating and modifying the software used by a company. Some of them specialize in software which handles the basic operation of the computers. This involves the use of machine codes and specialized low-level computer languages. Most of them handle application software. They may sort out problems encountered by users. Solving problems systems support people may involve amending an area of code in the software, retrieving files and data lost when a system crashes and a basic knowledge of hardware.

Computer System Analyst Programmer creates the software programs used by computers. He may specialize in the internal operating systems using low level computer language or in application programs. He also may specialize in one aspect of the work, e.g. programming, systems design, systems analysis or cover them all. He may support the system through advice and training, providing user manuals and by helping users with any problems that arise.

Hardware Engineer researches, designs and develops computers or parts of computers and the computerized element of appliances, machines and vehicles. He also involves in their manufacture, installation and testing.

Professions and organizations. As the use of computers has spread throughout society, there are an increasing number of careers involving computers. Following the theme of hardware, software and firmware, the brains of people who work in the industry are sometimes known irreverently as wetware or ”meatware”.

Computer-related professions. Hardware-related: Electrical engineering, Electronics engineering, Computer engineering, Telecommunications engineering, Optical engineering, Nanoscale engineering.

Software-related: Human-computer interaction, Information technology, Software engineering, Scientific computing, Web design, Desktop publishing.

The need for computers to work well together and to be able to exchange information has spawned the need for many standards organizations, clubs and societies of both a formal and informal nature.

Active Vocabulary

Computer literacy — комп’ютерна грамотність
be aware of — розуміти, усвідомлювати
basics — основи
to restate — переглянути, переосмислити
significant — значний
computing — обрахування; рахунок; робота на комп’ютері
to embrace — охоплювати
dimension — вимір
to direct the operation — направляти роботу
subscription magazine — журнал по підписці
store manager — директор магазину
system analyst — системний аналітик
consideration — аналіз, розгляд
computer package — комплект обчислювального обладнання
software designer — розробник програмного забезпечення
to compile — компілювати
computer-aided design — автоматизоване проектування
business application — прикладна система для підприємств, торгівельної сфери; застосування комп’ютерів для вирішення економічних та комерційних завдань
computer system support person — спеціаліст з підтримки комп’ютерної системи
to encounter — зіткнутися з труднощами
computer system analyst programmer — системний програміст
hardware engineer — спеціаліст з розробки апаратного забезпечення
irreverently — неввічливо
wetware /”meatware” — забезпечення користувача
engineering— проектування, конструювання
to spawn — породжувати

Comprehensive Questions

1. What does "a computer-literate person" mean?
2. Why should we be aware of the potential of computers?
3. What do the people mean by "the basics"?
4. What is the role of computers in our society?
5. What changes do computers bring?
6. What is “computing”?
7. What does system analyst use? And what may he oversee?
8. What does software engineer do?
9. In what do systems support people specialize? And what may they involve solving problems?
10. What does computer system analyst programmer create? And what may he support?
11. In what does hardware engineer involve?
12. Why are there an increasing number of careers involving computers?
13. What has spawned the need for many standards organizations, clubs and societies of both a formal and informal nature?

Text Study

Exercise 1. Give Ukrainian equivalents of the following.

An information-dependent society; a computer-literate citizen; an everyday problem-solving device; to influence the quality of life; to learn the basics; the most significant technical achievements; to be on the way of becoming computer-literate; to have much in common; to bring both economic and social changes; the employer's requirements; work patterns; to prepare a report on different options; to oversee the implementation and testing of the system; to act as a link; to control the internal operations of computers; to convert the system analyst's specification to a logical series of steps; to handle the basic operation of the computers; the use of machine codes; to provide user manuals.

Exercise 2. Give English equivalents of the following.

Стежити за виконанням та випробовуванням системи; керувати операціями комп’ютера; інформаційно-залежне суспільство; вивчати основи; бути на шляху становлення комп’ютерно-грамотної особистості; мати багато спільного; приносити як і економічні так і соціальні зміни; принципи роботи; комп’ютерно-грамотний громадянин; вимоги роботодавця; пристрій, що вирішує щоденні проблеми; впливати на якість життя; готувати доповідь з різноманітних питань; перетворювати специфікацію системного аналітика у логічну послідовність дій; використання машинного коду; найбільш значне технічне досягнення; діяти як сполучна ланка, керувати внутрішніми операціями комп’ютера; керувати основними операціями комп’ютера; забезпечувати інструкцією з експлуатації.

Exercise 3. Tell what sentences are true and what are false.

1. Informed citizens of our information-dependent society should be computer-literate, which means that they should be able to use computers as everyday problem-solving devices. 2. There was a time when only poor people had an opportunity to learn the basics, called the three R's: reading, writing, and arithmetic. 3. "Computing" is a concept that embraces not only the old third R, arithmetic, but also a new idea — computer literacy. 4. All of us are not already on the way to becoming computer-literate. 5. Software Engineer produces the programs which control the external operations of computers. 6. Hardware engineer researches designs and develops computers, or parts of computers and the computerized element of appliances, machines and vehicles.

Exercise 4. Make up pairs or groups of words close in meaning.

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

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

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

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

Exercise 5. Fill in the gaps with the words from Vocabulary Notes in the appropriate form.

Significant/ computing/ to encounter/ system analyst/ to spawn/ software designer

1. … is a necessity for educated citizens. 2. Developing the new hardware they … with difficulties. 3. This error … system crash. 4. The latest application software was … . 5. … studies his employer's requirements to prepare a report for using new computer technologies. 6. … has developed new business application for their corporation.

Exercise 6. **Choose the right answer.**

1) Informed citizens of our information-dependent society should be … .

a) computer-literate;

b) illiterate;

c) polite.

2) If you buy something with a bank credit card or pay a bill by check, … help you to process the information.

a) a store manager;

b) computers;

c) policeman.

3) Many actions relate to some aspect of … system.
a) computer;
b) application;
c) a data processing.
4) System analyst studies methods of working within an organization to decide how tasks can be done efficiently by … .
a) a store manager;
b) computers;
c) policeman.
5) Software Engineer/Designer produces the programs which control the … operations of computers.
a) internal;
b) external;
c) local.
6) Some of computer system support people specialize in … which handles the basic operation of the computers.
a) hardware;
b) software;
c) firmware.
7) Computer System Analyst Programmer may specialize in the internal operating systems using … or in application programs.
a) high-level computer language;
b) low-level computer language;
c) different kinds of computer languages.
8) Hardware Engineer researches designs and … computers.
a) trades with;
b) assesses;
c) develops.
9) The brains of people who work in the computer industry are sometimes known irreverently as … .
a) ”meatware”;
b) systems analyst;
c) designer.

Exercise 7. Complete the sentences.

1. Informed citizens of our information-dependent society should be computer-literate, which means that they should be able to use computers as … . 2. There was a time when only privileged people had an opportunity to learn the basics, called the three R's: … . 3. "Computing" is a concept that embraces not only … . 4. All of us are already on the way to becoming … . 5. System analyst makes a detailed analysis of … . 6. Software engineer designs, tests, and … . 7. Systems support people are analyst programmers who are responsible for … . 8. Computer System Analyst Programmer may specialize in … . 9. Hardware Engineer researches designs and develops computers, or parts of computers and … . 10. As the use of computers has spread throughout society, there are … .

Exercise 8. Find as quickly as possible and read out the sentences containing the following important information.

- about a person who is computer-literate;
- system analyst;
- software designer;
- computer systems support person;
- computer system analyst programmer;
- hardware engineer.

Exercise 9. Translate sentences into English using words and word combinations from the Vocabulary Notes.

1. Більшість громадяни нашого суспільства намагаються стати комп'ютерно-грамотними. 2. Ми повинні усвідомлювати важливість роботи з комп'ютером. 3. Студенти нашого коледжу вивчають основи комп'ютерних наук, які також охоплюють автоматизоване проектування та програмування. 4. Розробник програмного забезпечення зіткнувся з проблемою при проектуванні нової прикладної системи для торгівельного підприємства. 5. Спеціаліст з розробки апаратного забезпечення розробив новий бортовий комп'ютер для автомобіля. 6. Системний програміст надав інструкцію з експлуатації нового обладнання.

Lesson 4

Read and translate the text:

A Digital Era. Living with Computers

We are now living in what some people call the digital age, meaning that computers have become an essential part of our lives. Young people who have grown up with PCs and mobile phones are often called the digital generation. Computers help students to perform mathematical operations and improve their maths skills. They are used to access the Internet, to do basic research and to communicate with other students around the world.

Teachers use projectors and interactive whiteboards to give presentations and teach sciences, history and language courses. PCs are also used for administrative purposes – educational establishments use word processors to write letters, and databases to keep records of students and teachers. For examples, a college website allows teachers to publish exercises for students to complete online. Students can also enrol for courses via the website and parents can download official reports.

Mobiles let you make voice calls, send texts, email people and download logos, ringtones or games. With a built-in camera you can send pictures and make video calls in face-to-face mode. New smartphones combine a telephone with web access, video, a games console, an MP3player, a personal digital assistants (PDA) and a GPS navigation system, all in one.

When you do shopping at a supermarket, a computer is used with laser and barcode technology to scan the price of each item and present a total.

Most televisions advertisements and many firms use graphics produced by a computer.

In hospitals, bedside terminals connected to the hospital's main computer allow doctors to type in orders for blood tests and to schedule operations.

In banks, computers store information about the money held by each customer and enable staff to access large databases and to carry out financial transactions at high speed. They also control the cashpoints, or ATMs (automatic teller machines), which dispense money to customers by the use of a PIN-protected card. People use a Chip and PIN card to pay for goods and services. Instead of using a signature to verify payments, customers are asked to enter a four-digit personal identification number (PIN), the same number used at cashpoints; this systems makes transactions more secure. With online banking, clients easily pay bills and transfer money from the comfort of their homes.

Airlines pilots use computers to help them display data control the plane. For example, monitors about fuel consumption and weather conditions. In airport control towers, computers are used to manage radar systems and regulate air traffic. On the ground, airlines are connected to travel agencies by computers. Travel agents use computers to find out about the availability of flights, prices, times, stopovers and many other details.

Active Vocabulary

To access the Internet – мати доступ до Інтернету
interactive whiteboard – інтерактивна дошка
word processor – текстовий редактор, робота у ворд
to keep records – вести облік
to enrol –записуватись
a games console – ігрова консоль
barcode technology – технологія штрих-коду
to present a total – представити загальну суму
advertisement – реклама
to schedule – планувати, складати розклад
to store information – зберігати інформацію
financial transaction – фінансова операція
cashpoint (br.) – банкомат
ATM (automatic teller machines) (am.) – банкомат
to dispense money – видавати гроші
to verify payment – підтвердити оплату
secure – безпечний
fuel consumption – споживання палива
to find out – дізнатися, вияснити
availability – наявність, доступність
stopover – зупинка

Text Study

Exercise 1. Tick the computer uses mentioned in the text.

- home
- hospitals
- engineering
- shopping
- television advertising
- art
- banking
- libraries
- film making
- schools
- travelling

Exercise 2. Match the places in column A with the computer uses in column B.

A	B
banks	control machines
factories	calculate the bills
homes	look after patient records and medicine
hospitals	provide entertainment and information
shops	control our money

Exercise 3. Find equivalents.

Цифрове покоління; стати невід'ємною частиною життя; виконувати математичні дії; вдосконалювати навички; проводити фундаментальні дослідження; вести облік студентів; спілкуватися з іншими студентами в усьому світі; проводити презентації; виконувати вправи онлайн; завантажувати доповіді, логотипи, музику, ігри; записатися на курси через вебсайт; здійснювати відеодзвінки в режимі віч-на-віч; вбудована камера; система навігації GPS; телевізійна реклама; сканувати ціну товару; мати доступ до бази даних; проводити фінансові операції; підтвердитиоплату введенням ПІН коду; оплачувати рахунки та переказувати гроші онлайн; стежити за погодинними умовами; дізнатися про ціну квитків.

Living with computers

A. Computers: friend….

People who have grown up with PCs and microchips are often called the digital generation. This is how some people answered when questioned about the use of computers in their lives.

1. I use an interactive whiteboard, like a large touch screen monitor, at school I find computers very useful in education.

2. Assistive technology, for people with disabilities, has helped me a lot. I can hardly see, so I use a screen reader, a program that reads aloud onscreen text, menus and icons.

3. I have a GPS, Global Positioning System, fitted in my car. With this navigation system I never get lost. And the DVD recorder is perfect for my children's entertainment.

4. This new HMD (head-mounted display) allows me to watch films and enjoy virtual reality, the artificial environment of the latest video games.

5. The upgraded wireless network at my university is great: we can connect our laptops, PDAs and Wi-Fi cell phones to the network anywhere in the campus. Communication is becoming easier and easier.

B. …. or foe?

Our society has developed technological dependence. When computers are down, our way of life breaks down: planes stop flying, telephones don't work, banks have to close.

Computers produce electronic waste, plastic cases and microchips that are not biodegradable and have to be recycled or just thrown away.

They are responsible for health problems, e.g. computer addiction, an inappropriate and excessive use of computers.

Cybercrime, crime committed with the help of computers, is creating serious problems.

Citizens may feel a loss of privacy because of unauthorized use of personal data or receiving unwanted electronic messages.

C. Things we can do on the computer

A secretary: "I use computers to do the usual office things like write letters and faxes, but what I find really useful is email. We are an international company and I send emails to our offices all over the world.

A publisher: "We use PCs to produce all sorts of texts in digital format. We publish e-books (electronic books) and interactive e-learning programs on CD, and we help a local company to design an online newspaper, displayed on the Web".

A bank manager: "We use financial software to make calculations and then generate graphs or charts. We also use a database to store information so that it can be easily searched."

A home user: I like to retouch photos on my computer; I improve them by making a few touches and then save them on a CD. I also enjoy looking at music portals on the Web. I surf the Web every day and I often download files, I copy music files from the Net to my PC

VOCABULARY EXERCISES

Exercise 1. Translate the following word combinations and learn them.

Touch screen monitor; assistive technology; people with disabilities; head-mounted display; upgraded wireless network; Wi-Fi cell phones; to be biodegradable and to be recycled; computer addiction; unauthorized use of personal data; to receive unwanted electronic messages; to store and search information; generate graphs or charts; to retouch photos; surf the Web; download files.

Exercise 2. Complete these sentences with words from A opposite.

1. The is a piece of software that interfaces with your PC and allows you, via keyboard commands, to get any text information read to you in synthetic speech. 2. A – , as popularized by virtual reality, lets the user immerse him/herself in a synthetically generated environment. 3. An is a touch-sensitive device where a special pen or your finger can act as a mouse. 4. Tony Adams is now the proud owner of a dark silver Vogue, complete with leather interior, navigation, and a with LCD TV screens.

Exercise 3. Read B opposite. What problem do these sentences refer to?

1. We are sorry to announce that most flights are delayed or cancelled. 2. He should go to a psychologist. He spends hours surfing the Web. 3. Technology changes so quickly that we have to scrap computers when they become obsolete. 4. I've been getting emails about offers for lots of different products. 5. My computer system has been broken into and some useful information has been destroyed.

Exercise 4 Translate into English.

1. Щоб спілкуватися з іншими студентами в усьому світі потрібно мати доступ до інтернету.
2. Використання інтерактивної дошки та проєктора на занятті дає викладачу багато переваг, щоб зробити заняття ефективнішими і цікавішими для студентів.
3. Перша версія Microsoft Windows включала прості графічні програми, простий текстовий процесор, годинник, блокнот, панель управління, буфер обміну і RAM драйвер.
4. Наш коледж використовує базу даних, щоб вести облік студентів і викладачів.
5. Моя подруга записалась на курси англійської мови та програмування через вебсайт.
6. Мій новий смартфон це телефон з доступом до інтернету, відео, ігрова консоль, MP3 плеєр, все в одному.
7. Комп'ютер з лазером і технологією штрих-коду сканує ціну кожного товару і представляє загальну суму.
8. Банки використовують комп'ютери, щоб зберігати інформацію та виконувати фінансові операції.
9. Комп'ютери контролюють банкомати, які видають гроші споживачам.
10. Я ввела 4-цифровий персональний індентифікаційний номер (пін) і підтвердила оплату.
11. Шкода, але я не змогла дізнатись про наявність рейсу до Парижу о 6 год.
12. Бездротова мережа у нашому коледжі чудова.
13. З вбудованою камерою у моєму телефоні я можу надсилати зображення, робити відеодзвінки в режимі віч-на-віч.
14. Доступ до цього вебсайту допоможе покращити мою англійську.
15. Я сиджу в інтернеті кожен день, використовую комп'ютер для роботи і у вільний час.

Writing

You and computer

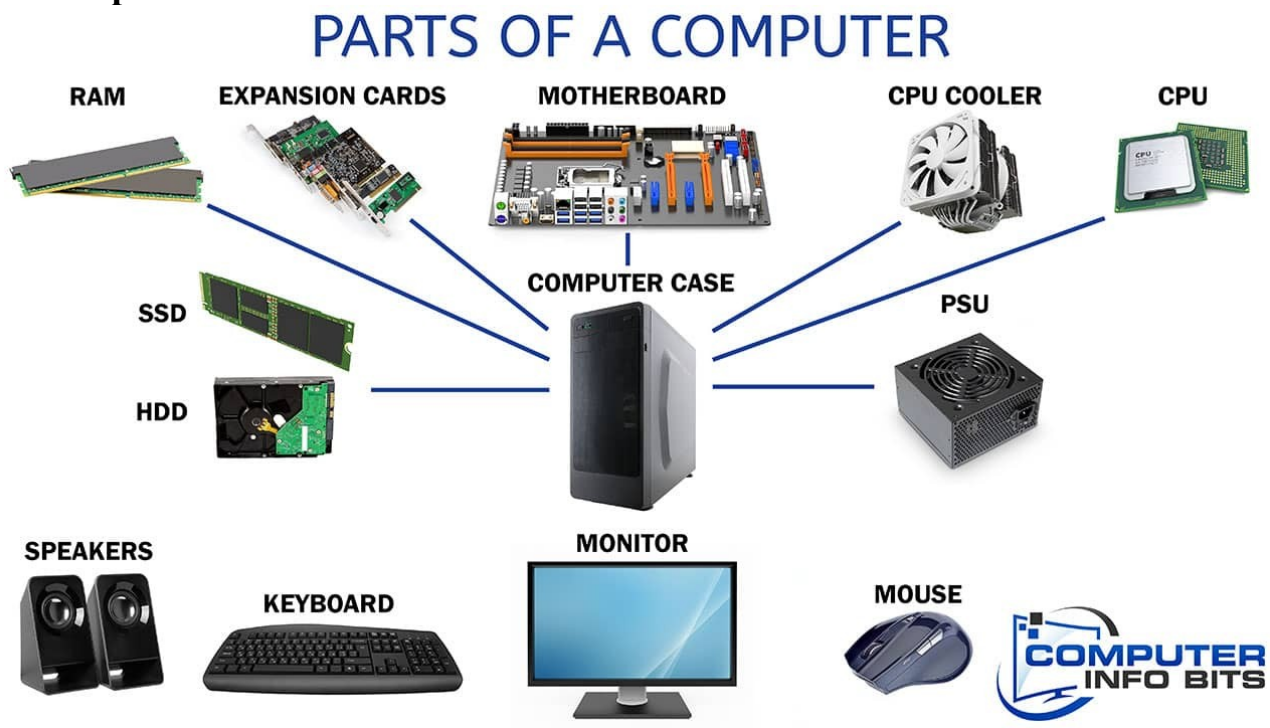
Make a list of the ways you use computers at work and in your free time.

Lesson 5

Read and translate the text:

A Typical PC

A. Computer essentials



B. Parts of a computer

A computer is an electronic machine that accepts processes, stores and outputs information. A typical computer consists of two parts: hardware and software.

Hardware is any electronic or mechanical part of the computer system that you can see or touch.

Software is a set of instructions, called a program, which tells a computer what to do.

There are five basic hardware sections.

1. The **CPU** is the heart of the computer, a microprocessor chip which processes data and coordinates the activities of all the other units. The **central processing unit (CPU)** commonly referred to as the processor is the "brain" of your computer. The CPU solves all the **sophisticated** algorithms and programming your computer does while **running programs** or **applications**.

Nowadays, almost all processors possess multiple CPUs to achieve quicker processing speeds, ensuring **faster response times** when using software or **browsing**

the web. These special processors are called **multi-core processors**, with each CPU **designated** as 1 processing core. For example, the high-end Intel® Core™ i7-12850HX processor has 16 independent cores that work together **to handle computing tasks**, allowing you **to do program-intensive work** without **stressing** your **computer** too much.

2. Graphical Processing Unit (GPU)

When handling graphical operations and **advanced imagery**, the **graphical processing unit (GPU)** is the computer hardware responsible for it. A GPU is required for your computer to read and **reproduce** graphical representations and effects, which are almost present in every form of media today.

Certain top-spec CPUs can also have basic GPUs **embedded** in them, especially premium laptops that focus on **lightweight mobility** and use. However, the finest GPUs are primarily used for video gaming, capable of handling **immense** 3D-graphics loads **to maintain smooth frame rates** and **lag-free experiences**.

When gaming, the CPU and GPU work in tandem. The GPU **manages** the heavy lifting in terms of the on-screen graphics and **fidelity**, while the CPU runs the programming that works behind the scenes, such as data and in-game statistics.

3. The main memory holds the instructions and data which are being processed by the CPU. It has two main sections: **RAM (random access memory)** and **ROM** (read only memory).

A RAM device keeps important **currently-used data** and **codes on standby**, loading them instantly when respective programs or apps are opened. **RAM** is a **volatile type of memory**, meaning all stored memory is refreshed after turning off the PC. This allows the device to quickly **absorb new data** immediately during the next session, **prompting** quicker loading processes.

ROM is an abbreviation for read only memory: a type of computer memory that holds information that can be used but not changed or added to.

Unlike a computer's RAM, the data in ROM is not lost when the computer power is turned off. While the ROM chip is commonly used in the startup operations for the computer, the RAM chip is often used in the **recurrent tasks** of the computer once the OS has been **configured.**

Another difference between ROM and RAM is the amount of space they contain. ROM chips can only store several megabytes (MB) of data, usually amounting to between 4 and 8 MB per ROM chip. RAM chips can store multiple gigabytes (GB); this storage often ranges from 1 to 265 GB per RAM chip. 1 GB is considered to be the equivalent of 1000 MBs. Therefore, RAM displays more extensive memory capabilities.

It is almost impossible to operate a computer using only ROM. RAM is necessary to run useful and changeable programs. Therefore, computers must incorporate both forms of memory.

4. Motherboard

The motherboard provides the structure for all other components and connects them, while also providing a way **to distribute power**, deliver information and connect to devices such as a printer or mouse. It controls how data transfers and what type of

monitor or screen device to use, for example. It houses the CPU, memory and secondary storage devices such as hard drives.
5. Peripherals are the physical units attached to the computer. They include:
Input devices, which let us enter data and commands (e.g. the keyboard and the mouse).
Output devices, which let us extract the results (e.g. the monitor and the printer).
Storage devices, which are used to store information permanently (e.g. hard disks and DVD-RW drives). Disk drives are used to read and write data on disks.
PCs use 2 common types of internal storage devices: **hard disk drives (HDDs**) and **solid-state drives (SDDs).** HDDs are the cheaper option but suffer from slower transfer speeds, while SDDs are their superior counterparts but are more expensive. These devices are attached to your computer using **dedicated SATA cables**, replaced by SAS cables for big servers and workstations.
At the back of a computer there are ports into which we can **plug** external devices (e.g. a scanner, a modem, etc.). They allow communication between the computer and the devices.

Active Vocabulary
Sophisticated – складний
to run a program – запустити програму
application – додаток
faster response time – швидший час відповіді
to browse the web – переглядати веб-сторінки
multi-core processor – багатоядерний процесор
designated – призначений
to handle computing task – виконувати обчислювальне завдання
to do program-intensive work - виконувати інтенсивну програмну роботу
to stress the computer – навантажувати комп'ютер
advanced imagery – передові зображення
to reproduce – відтворювати
embedded – вбудований, вмонтований
lightweight mobility and use – легка мобільність і використання
immense – величезний
to maintain smooth frame rates – підтримувати плавну частоту кадрів
lag-free experiences – робота без затримок
to manage heavy lifting – керувати важкою роботою
fidelity – точність
random access memory – оперативна пам'ять
currently-used data – поточні дані, що використовуються
to code on standby – кодувати в режимі очікування
volatile type of memory – енергонезалежний тип пам'яті
to absorb new data – засвоювати нові дані
to prompt quicker loading processes – пришвидшити процеси завантаження
recurrent task – повторюване завдання
to configure – налаштувати

to distribute power – розподіляти живлення
permanently – постійно
hard disk drive – жорсткий диск
solid-state drive – твердотільний накопичувач
superior counterpart – вищий аналог
dedicated cable – спеціальний кабель
to plug – підключати

Text Study

Exercise 1. Read these quatations and say which computer essential they refer to.

1. "Accelerate your digital lifestyle by choosing a Pentium at 4.3 GHz".
2. "Right-click to display a context-sensitive menu".
3. "You will see vivid, detailed images on a 17th display".
4. "This will produce high-quality output, with sharp text and impressive graphics".
5. "Use it when you want to let the grandparents watch the new baby sleeping".
6. "Press any key to continue".

Exercise 2. Match the terms with their definitions.

1. CD/DVD drive
2. speaker
3. modem
4. port

a) any socket into which a peripheral device may be connected
b) device used to produce voice output and play back music
c) mechanism that reads and/or writes to optical discs
d) device that converts data so that it can travel over the Internet

Exercise 3. Complete the sentences with words from the box.

Functions of a PC: input, processing, output, storage

1. Computer..... is the visible or audible result of data processing - information that can be read, printed or heard by the user.
2. The CPU will process data as instructed by the programs you're running.... includes functions like calculating, sorting, editing, drawing and searching.
3. DVDs are expected to replace CDs as ... devices.

4. As a scanner, the Sigma-100 can be used to... photographs as well as documents into the computer.

Exercise 4. Find English equivalents in the text.

Приймати, обробляти, зберігати та виводити інформацію; набір інструкцій; вирішувати складні алгоритими; запустити програму або додаток; досягти

більшої швидкості обробки; зосередитися на...; зберігати інструкції та дані; читати і записувати дані на диск; процес завантаження; оновити збережену пам'ять; відображати можливості пам'яті; операції запуску; працювати на комп'ютері; включити та виключити комп'ютер; поєднувати два види пам'яті; вміщати процесор; вторинні пристрої запам'ятовування; вводити дані та команди, швидкість передачі; підключати зовнішні пристрої.

Exercise 5. Answer the questions.

1. Give the definition of the computer.
2. What are the main parts of the computer?
3. What is hardware/software?
4. What is any electronic or mechanical part of the computer that you can see or touch?
5. Hardware/software/CPU/ Main memory is a set of instructions, called a program, which tells a computer what to do. Choose the right variant.
6. Name the hardware sections.
7. How many sections does main memory have? What are they?
8. What are the physical units attached to the computer?
9. What are peripherals?
10. Name input/output devices.
11. Explain the difference between RAM and ROM?
12. Why is CPU called the heart or the brain of the computer?
13. Why do we need GPU for our computers?
14. What does motherboard house?
15. Where can you plug external devices?

Exercise 6. Translate into English.

1. Цей багатоядерний процесор дозволяє виконувати інтенсивну програмну роботу не навантажуючи комп'ютер.
2. Графічний процесорний блок відповідає за відтворения зображень.
3. Комп'ютер електронна машина, що приймає, обробляє, зберігає, та виводить інформацію.
4. Центральний процесорний блок комп'ютера. це «серце» і «мозок»
5. Звичайний комп'ютер складається з двох частин: апаратного і програмного забезпечення.
6. Апаратне забезпечения це будь-яка електронна чи механічна частина комп'ютерної системи, яку ти можеш бачити або торкатися.
7. Програмне забезпечення це набір інструкцій, називається програмою, яка говорить комп'ютеру що робити.
8. Ви можете використовувати комп'ютер щоб набирати документи, надсилати електронну пошту, грати ігри, переглядати вебсторінки.
9. Команда розробників дозволяє користувачам комп'ютера запускати програму або додаток з правами адміністратора .
10. Цей лептоп має вмонтований графічний процесор, що використовується для відеогри.

11. Легка мобільність і використання цього планшета. основні характеристики
12. Оперативна пам'ять і постійна пам'ять пам'яті. два види основної
13. Постійна пам'ять це енергонезалежний тип пам'яті, тобто вся збережена пам'ять оновлюється після вимкнення ПК.
14. Пам'ять тільки для читання це тип комп'ютерної пам'яті, що містить інформацію, яку можна використовувати, але не змінювати чи додавати.
15. Материнка забезпечує спосіб розподіляти живлення, доставляти інформацію та під'єднувати до пристроїв таких як принтер та мишка.
16. Периферійні пристрої включають ввідні та вивідні пристрої, зберігаючі пристрої.
Жорсткі диски та твердотільні накопичувачі внутрішніх зберігаючих пристроїв. це два типи
17. Ми можемо підключати зовнішні пристрої в порти на задній панелі ПК.
18. RAM дозволяє швидко засвоювати нові дані та пришвидшити процеси завантаження.
19. Майже неможливо працювати на комп'ютері використовуючи лише один вид пам'яті.

Exercise 7. Retell the text using the following words and word combinations.
Hardware and software; the heart or the 'brain' of the computer, to run programs or applications; multi-core processors; to handle graphical operations; to reproduce graphical representations and effects; to be used for video gaming; to hold the instructions and data; RAM and ROM; volatile type of memory; memory capabilities; to distribute power, input, output, storage devices: disk drive; to plug external devices.

Lesson 6
Read and translate the text:

Types of Computer Systems
From mainframes to wearable computers

A mainframe is the most powerful type of computer. It can process and store large amounts of data. It supports multiple users at the same time and can support more simultaneous processes than a PC. The central system is a large server connected to hundreds of terminals over a network. Mainframes are used for large scale computing purposes in banks, big companies and universities.

A desktop PC has its own processing unit (or CPU), monitor and keyboard. It is used as a personal computer in the home or as a workstation for group work. Typical examples are the IBM PC and the Apple Macintosh. It's designed to be placed on your desk. Some models have a vertical case called a tower.

A **laptop (**also called a **notebook PC)** is a lightweight computer that you can transport easily. It can work as fast as a desktop PC, with similar processors**, memory capacity**, and disk drives, but it is portable and has a smaller screen. Modern notebooks have a **TFT (Thin Film Transistor)** screen that produces very sharp images. Instead of a mouse, they have a **touchpad** built into the keyboard a **sensitive pad** that you can touch to move the pointer on the screen.
They offer a lot of **connectivity options**: USB **(Universal Serial Bus)** ports for connecting peripherals, slots for memory cards, etc.
They **come with battery packs**, which let you use the computer when there are no **electrical outlets available**.

A tablet PC looks like a book, with an LCD screen on which you can write using a special digital pen. You can **fold and rotate the screen** 180 degrees. Your handwriting can be recognized and converted into **editable text**. You can also type at the **detached keyboard** or use **voice recognition.** It's mobile and **versatile.**

A personal digital assistant or **PDA** is a tiny computer which can be held in one hand. The term PDA refers to a wide variety of **handheld devices, palmtops** and pocket PCs.
For input, you type at a small keyboard or use a stylus - a special pen used with a touch screen **to select items**, draw pictures, etc.

Some models incorporate handwriting recognition, which enables a PDA to recognize characters written by hand. Some PDAs recognize spoken words by using voice recognition software.
They can be used as mobile phones or as personal organizers for storing notes, reminders and addresses. They also let you access the Internet via **wireless technology**, without cables.

A **wearable computer** runs on batteries and is worn on the user's body, e.g. on a belt, backpack or vest; it is designed for mobile or hands-free operation. Some devices are equipped with a wireless modem, a small keyboard and a screen; others are **voice-activated** and can access email or voice mail.

Active Vocabulary
Desktop PC – настільний ПК
case – корпус
memory capacity – ємність пам'яті
Thin Film Transistor – тонкоплівковий транзистор
touchpad – тачпад, сенсорна панель
sensitive pad – чутлива подушечка, накладка, пад
connectivity options – параметри підключення
Universal Serial Bus – універсальна послідовна шина
to come with – постачати
battery pack – акумулятор
electrical outlet – електрична розетка
available – наявний, доступний
tablet – планшет
to fold the screen – складати екран
to rotate the screen – повертати екран
editable text – редагований текст
detached keyboard – відокремлена (знімна) клавіатура
voice recognition – розпізнавання голосу
versatile – універсальний
handheld device – портативний пристрій
palmtop – палмтоп, КПК (кишеньковий), ручний комп'ютер, надолонний комп'ютер
to select items – вибирати елементи
wireless technology – бездротова технологія
to be voice-activated – з голосовою активацією

TEXT STUDY

Exercise 1. Which type of computer do these descriptions refer to?

1. a hand-held computer which can be used as a telephone, a web explorer and a personal organizer.

2. a typical computer found in many businesses and popular for home use
3. a large computer used for intensive data processing and often linked to many terminals
4. a small computer that fits into items of clothing
5. a portable computer that can be closed up like a briefcase, but it can be as powerful as a desktop PC
6. a full-function PC, though it only weighs 1.2 kg you can go to a meeting and write your notes oil it, like a paper notepad; its screen mode can be changed from portrait to landscape

Exercise 2. Find English equivalents in the text.

Обробляти і зберігати велику кількість даних; підтримувати декілька користувачів одночасно; легкий портативний комп'ютер; створювати чіткі зображення; рухати курсор на екрані; виглядати як книга; розпізнавати почерк; для зберігання нотаток, нагадувань, адрес; працювати на батареї; оснащений бездротовим модемом.

Exercise 3. Look at the computer advertisement and find this information.

Toshiba Satellite

- Intel Centrino processor
- 1,024 MB RAM, 100 GB hard disk drive
- DVD SuperMulti (+/- R double layer) drive
- 15.4” widescreen TFT active-matrix LCD display
- 85-key keyboard and touchpad
- 2 memory slots, 1 PC Card or PCMCIA slot
- Wireless communication: Wi-Fi compliancy and Bluetooth
- 4 USD ports for connecting peripherals: digital camera, MP3 player, modem, etc.
- 6-cell rechargeable Lithium-ion battery pack

1. What type of computer is advertised?
2. What kind of screen does it have?
3. Which pointing device replaces the mouse?
4. What type of ports does it have for connecting cameras and music players?
5. What sort of power supply does it use?

Exercise 4. Read this interview with Adam Hawkins, an IT manager, and complete it with words from the PDA section.

Interviewer: What are the basic features of a PDA?

Adam: Well, a typical PDA is a (1)... device that runs on batteries and combines computing, phone and Net capabilities.

Interviewer: And how do you enter information?

Adam: For input, you use a (2) or pen to write and make selections on a (3)...; they also have buttons for launching programs. Some models have a small keyboard. They may have a (4)... system that reacts to the user's voice.

Interviewer: Do they need special software?

Adam: Yes, most of them run on Windows Mobile. Palmtops supported by Palm Inc. use Palm OS. Pen-based systems include (5)... so you write on the screen and the computer recognizes your handwriting and inserts the appropriate letters.

Interviewer: What sort of things can you do with a PDA?

Adam: You can store personal information, take notes, draw diagrams and make calculations. Many PDAs can access the Net via (6)... technology.

Speaking

Exercise 5. I. Read the descriptions of the four people and the four computers below. With a partner, choose the most suitable computer for each person. Give reasons for your choices.

Power Mac G4

- PowerPC processor at 933 MHz Pentium III
- 256 MB of RAM expandable to 1.5 GB
- 2 MB of in-line cache on the processor card
- Graphics card with 64 MB of SDRAM
- 80 GB hard disk
- DVD-R and CD-RW Superdrive
- Comes with Apple monitor, sound board, built-pixel in microphone, and stereo speakers
- Mac OS with QuickTime (an extension that lets pointing device you play video and animation on the computer), digital video editing and DVD authoring software. $4,149

Compaq Evo Notebook N200

- Intel's 700 MHz Low Voltage Mobile processor
- 192 MB RAM 20 GB hard drive Optional 1.44 MB diskette drive
- CD-RW DVD-ROM
- 10.4" colour TFT display, high resolution
- Integrated keyboard, touch pad as Integrated mini-PCI modem
- Lithium-ion battery
- Weight: 2.5 pounds Dimensions: 25.15 x 19.8 x 2.11 cm
- Windows comes pre-installed $1,190

Sun workstation

- 900 MHz UltraSPARC processor
- Multiprocessor machine (expandable to two CPUs)
- 8-GB RAM capacity
- 72-GB internal hard drive DVD-ROM
- Supports several graphics formats
- Lets you attach any peripherals and link up to Network
- Allows you to handle your toughest technical, scientific, and business critical applications
- Requires Solaris Operating system
- $5.049

Compaq Presario PC

- 500 MHz Pentium III processor
- 128 MB of RAM expandable to 384 MB
- 19 GB Quantum Bigfoot hard disk
- Built-in Zip drive
- DVD-ROM drive
- JBC speakers, Dolby Digital Surround
- Integrated digital modem Windows
- $700

1. Daniel is a history student. He needs a computer to write essays, assignments and letters. He likes surfing the web.
2. Sarah is the manager of an advertising company. She needs a powerful system which will work with optical disks and multimedia applications, integrating text and pictures with animation and voice annotations. Digitized images and sound occupy a lot of disk space.
3. Andy is a CAD engineer. His job involves computer-aided design, simulations and three-dimensional modelling. These applications require a lot of memory and a large drive.
4. Tanya is a sales representative. She needs a lightweight machine with which she can process orders and communicate with head office while she is on the road.

II. Read the descriptions of these computers again and choose the one that is closest to your ideal. Explain the reason for your choice.

Exercise 6. Translate into English.

1. Настільний ПК призначений для розміщення на столі і не спроектований для портативності.
2. Мейнфрейм найпотужніший комп'ютер, він може обробляти та зберігати велику кількість даних.
3. Цей ноутбук хороший помічник для редагування фото і відео.

4. Які переваги використання планшету?
5. Персональні цифрові помічники дозволяють отримати доступ до інтернету через бездротову технологію, без кабелів.
6. Цей сучасний ПК розпізнає символи написані від руки та вимовлені слова.
7. Прикладами переносних комп'ютерів є смарт годинники, фітнес трекери, розумні прикраси, вебокуляри, гарнітура Bluetooth.
8. Я використовую свій кишеньковий ПК як персональний органайзер для зберігання нотаток, нагадувань, адрес.
9. Цей портативний комп'ютер з голосовою активацією і може мати доступ до електронної і голосової пошти.
10. Ємність пам'яті мого настільного комп'ютера становить 4 ГБ.
11. Стилус це спеціальна ручка, яка використовується з сенсорним екраном, щоб вибирати елементи, малюнки, і т. д. на портативних пристроях.
12. Більшість ноутбуків постачаються з батареями, які дозволяють використовувати комп'ютер, коли немає доступних електричних розеток.
13. Мій планшет мобільний та універсальний.
14. Цей планшет має рідкокристалічний екран, ти можеш складати і повертати його.
15. Твій почерк можна розпізнати і перетворити в редагований текст використовуючи цей планшет.
16. Твій ноут має порти для під'єднання камери і музичного плеєра?
17. Клавіатура і тачпад цього комп'ютера здаються зручними і практичними.
18. Мейнфрейми для використовуються обчислювальних цілей університетах. банках, В великомасштабних великих компаніях,
19. Цей планшет має відокремлену клавіатуру для зручного набору текстів.
20. Ноутбуки пропонують багато параметрів підключення: USB порти для під'єднання периферійних пристроїв, слоти для карт памяті і т. д.

Writing

You and computers

1. Write down two benefits and two limitations of PDAs
2. Explain in a paragraph how laptops can be beneficial to business people.
3. Write three examples of how tablet PCs can be used in the classroom

Lesson 7
Read and translate the text:

Input and Output Devices of the Computers

Keyboard, Mouse, Display and Printers.

A keyboard is a device that converts keystrokes into codes that can be electronically manipulated by the computer. With it, you can enter commands or data into the computer. A personal computer keyboard includes a typewriter layout and a set of keys marked with arrows that control the movement of a visual aid – a cursor – on the display screen. **Cursor keys** move the insertion point, and keys such as Home, End, Page Up, and Page Down which let you move around documents. Some keyboards include a numeric keypad for number-intensive data entry and calculations as well as a set of function keys. These are general-purpose keys that perform special functions, depending on the application. **Function keys** appear at the top of the keyboard and can be programmed to do special jobs, such as Save, Copy, Cut, Paste, Help, etc. **Dedicated keys** are used to issue commands or produce alternative characters. For example: *Ctrl* changes thefunction of other keys; *Caps Lock* sets the keyboard in 'CAPITALS' mode, it only affects letters; *Enter* is pressed to select options from a menu or to start a new paragraph; *Backspace* deletes to the left of your current position.

Keyboards are not the only way to communicate with a computer. Touching the screen with your finger, talking to a computer, writing with an electronic pen, and rolling a mouse or trackball are all alternative input devices.

A mouse is a hand-held pointing device that combines the traditional cursor movements – accomplished by pressing arrow keys — with the means to select an object on the display screen. One or more buttons located on the top of the mouse enable you to choose options. Small portable computers sometimes use a built-in or attachable trackball in lieu of a mouse. Rolling the trackball with your fingertips produces the same results as moving the mouse.

There are three basic types of mice, namely, mechanical, optomechanical and optical. Mechanical mice have a rubber or metal ball that can roll in all directions. Mechanical sensors in the mouse detect the direction of motion of the ball. Optomechanical mice use optical sensors to detect motion. Optical mice, popularly used today, have a laser to detect movement of the mouse. They do not have mechanical moving parts and possess higher performance speeds.

A cordless (wireless) mouse has no cable; it sends data via infrared signals or radio waves.

A display, often called a monitor, is one of the output parts of the system. A display is a device that is used (1) to give you feedback while you operate the computer and (2) to view the computer's output. For example, when you type on the keyboard, the letters are immediately displayed along with the cursor, which indicates where the next letter you type will appear.

The display is often a CRT (cathode ray tube). Flat screens, such as LCDs (liquid crystal displays), are commonly used in portable computers. LCDs are larger versions of the displays found in digital watches and calculators.

A printer is a device that produces paper-copy output from a computer system. One way to classify printers is by the method used to form the printed images.

Dot-matrix printers form characters with a pattern of dots. They print text and graphics and nowdays some ofthem can print up to 500 characters per second (cps);

however, it has two important disadvantages: noise and a relatively low resolution (from 72 to 180 dpi).

An **ink-jet (**also called **bubble-jet**) printers generates an image by spraying tiny, precise drops of inkonto the paper. The resolution ranges from 300 to 1,200 dpi, suitable for small quantities or home use.

Some ink-jet printers can perform more than one task. They are called multi-function printers because they can work as a scanner, a fax and a photocopier as well as a printer. Some units accept memory cards and print photos directly from a camera.

Laser printers create images with a laser beam scanning across an electrically charged drum. As in a copier, toner or ink with an opposite charge sticks to the drum and is then transferred to paper by pressure and heat to create the finished image. Laser printers offer higher speed and quality than conventional printers, their resolution ranges of 1,200 to 2,400 dpi, so they are ideal for business and for proofing professional graphics work. They can mix type styles and sizes as well as graphic images on the same page.

Lasers use a page description language or PDL which describes how to print the text and draw the image on the page. The best-known languages are Adobe PostScript and HP Printer Control Language.

A **plotter** is a special type of printer which uses ink and fine pets held in carriage to draw detailed designs on paper. It's used in compuer-aided design, maps, 3-D technical illustrations,etc.

Printers for personal computers are connected to the computer by a cable through a port — the location through which the computer exchanges information with an external device. A port has a physical connector and an address, so that programs know where to send information. The two basic types of ports are serial and parallel.

Today you can also interact with your computer by voice with a voice-recognition system that converts voice into text, so you can dictate text directly onto your word processor or email program. You can also control your PC with voice commands; this means you can launch programs, open, save or print files. Some systems let you search the Web or chat using your voice instead of the keyboard.

Active Vocabulary

Keystrokes – натискання клавіш
a numeric keypad – цифрова клавіатура
function keys – функціональні клавіши
cursor keys – клавіши управління курсором
dedicated keys – спеціальні клавіши
to issue commands – видавати команди
to manipulate – керувати
a typewriter layout – схема друкарської машинки
a visual aid – візуальна допомога
general-purpose keys – клавіши загального призначення
a hand-held pointing device – ручний вказівний пристрій

dot-matrix printers – матричний принтер
ink-jet (bubble-jet) printer – струменевий (бульбашково-струменевий) принтер
in lieu of – замість
feedback – зворотній зв'язок
fine pen – тонка ручка
carriage – каретка

Comprehensive Questions

1. What is a keyboard designed for?
2. When do you use a numeric keypad?
3. What types of keys do you know?
4. What are other alternative input devices?
5. What is a mouse?
6. What is a display?
7. Can you explain the difference between CRT and LCD displays?
8. What is a printer?
9. In what way are printers classified?
10. What type of printers do you know?
11. What type is the best? Why?
12. How are printers connected to the computer?
13. What is a plotter?
14. How else can you interact with your computer today?

Text Study

Exercise 1. Read and translate the word-combinations from the text.

To convert keystrokes into codes, to enter commands or data into the computer, a typewriter layout, the movement of a visual aid, to perform special functions, to communicate with a computer, touching the screen with your finger, all alternative input devices, small portable computers, to view the computer's output, to create the finished image, to offer higher speed and quality, to mix type styles and sizes, a physical connector and an address.

Exercise 2. Choose the necessary word and put it in the sentence.

1. A keyboard is a device that … keystrokes into codes that can be electronically manipulated by the computer.
2. Some … include a numeric keypad for number-intensive data entry and calculations as well as a set of function keys.
3. A mouse is … … that combines the traditional cursor movements accomplished by pressing arrow keys.
4. A monitor is one of … … parts of the system.
5. … is used to give you feedback while you

1. images
2. keyboards
3. portable computers
4. the output parts
5. converts
6. a physical connector and an address
7. a display
8. a pointing device
9. laser printers
10. paper-copy output

operate the computer and to view the computer's output.
6. Flat screens, such as LCDs are used in … … .
7. A printer is a device that produces … … from a computer system.
8. Laser printers create … with a laser beam scanning across an electrically charged drum.
9. … can mix type styles and sizes as well as graphic images on the same page.
10. A port has … …, so that programs know where to send information.

Exercise 3. Tell what sentences are true, what are false.
1. With a keyboard, you can enter commands or data into the computer. 2. Some keyboards include a numeric keypad for number-intensive data processing and calculations. 3. These are special-purpose keys that perform special functions, depending on the application. 4. Keyboards are the only way to communicate with a computer. 5. Small desktops sometimes use a built-in or attachable trackball in lieu of a mouse. 6. A display, often called a monitor, is one of the output parts of the system. 7. CRTs are larger versions of the displays found in digital watches and calculators. 8. Laser printers create images with a laser beam scanning across an electrically charged drum. 9. Dot-matrix printers offer higher speed and quality than conventional printers. 10. A port is the location through which the computer exchanges information with an external device.

Exercise 4. Translate into English.
1. Клавіатура – це пристрій, призначений для введення в комп'ютер інформації та команд керування. 2. Група цифрових клавіш, призначена для введення чисел. 3. Клавіші зі стрілками керують переміщенням курсора по екрану монітора. 4. Мишка і трекбол використовуються для керування курсором і подання деяких команд. 5. Принтери під'єднуються до комп'ютера за допомогою кабеля через порт. 6. Які екрани вживаються у портативних комп'ютерах? 7. Клавіатура не єдиний шлях спілкування з комп'ютером. 8. Чи знаєш ти, як лазерні принтери створюють зображення? 9. Принтер – це пристрій, призначений для виведення на папір результатів роботи програм. 10. Клавіатура персонального комп'ютера включає схему друкарської машинки і групу клавіш, які контролюють рух курсора на екрані дисплея.

Lesson 8
Read and translate the text:

Scanners and Cameras

Scanners convert optically focused images, such as text, line drawings, or photographs into digital representations that are suitable for processing. When an image is translated into a series of 0s and 1s, it can then be processed like any other digital data.

Scanners trace their roots to several technologies and devices, including magnetic-ink character recognition, bar codes, and optical character recognition. The earliest form of scanner used magnetic-ink character recognition (MICR), a form of character recognition that reads text printed with magnetically charged ink. At the time MICR was developed, optical methods had not yet been developed. MICR is still predominantly used by the banking industry for processing checks. MICR makes check processing faster and more accurate by capturing data directly from their source without a separate transcribing step.

Another form of scanning uses bar codes. Supermarkets use the Universal Product code (UPC), which consists of a series of thick and thin bar codes that represent numbers. Today, bar codes are used in factories and offices.

Optical character recognition (OCR) is the process of examining characters on a printed page and translating them into computer text. OCR was originally designed for input to typesetting machines for the newspaper industry. It was though that relatively untrained typists could retype copy for OCR input and feel it into scanner, thus cutting costs, reducing mistakes, and speeding up the newspaper composition process.

In 1976 Raymond Kurzweil introduced a reading machine to scan printed documents and, using electronic voice output, read them aloud to the blind or visually impaired. This OCR breakthrough technology could be trained to read the different fonts it encountered. Although some problems are still formidable, today there are a wide variety of low-cost OCR software interfaces between scanners and personal computers. These programs use various methods of character recognition to convert scanned text into a file, suitable for import into a word processor, spreadsheet, or database program. They also interlace with most popular scanners; are able to differentiate automatically among graphics, text, and multiple columns; and handle such nuances as regular text versus boldface, italic, or underlined text.

Image recognition. A useful application for scanners is to capture images such as line drawings, illustrations, or photographs, and convert them into digital data that can be manipulated, retouched, cropped or resized, and printed. The resolution of a scanner is measured in dpi or dots per inch Scanner resolution ranges from 75 dots per inch to thousands of dots per inch, but the most common scanner resolution is 720 dots per inch.

Digital cameras

A digital cameras doesn't use film. Photos are stored as digital data (bits made up of 1s and 0s), usually on a tiny storage device known as flash memory card. You can connect the camera or memory card to a PC and then alter the images using a program like Adobe Photoshop, or you can view the images on a TV set. Many printers have a special socket so you can print images directly from a memory card or camera.

Digital video cameras (camcorders) and webcams

Webcams (short of Web cameras) let you send and receive live video pictures through the Internet. They're primarily used for the video conferences – video calls – but they can be used to record photos and video onto your hard disk. The resolution of webcams is expressed in megapixels (million pixels). Webcams connect to the PC via a USB (universal serial bus) or FireWire port; they display video at 24 to 30 frames (pictures) per second. Some include a headset with a microphone and earpiece.

Active Vocabulary

To convert – перетворювати
line drawings – малюнки
to trace the roots – сягати корінням,
magnetic-ink character recognition (MICR) – магнітно-чорнильне розпізнавання символів
bar codes – штрих-коди
optical character recognition (OCR) – оптичне розпізнавання символів
to cut costs – скорочувати витрати
a reading machine – зчитуюча машина
a breakthrough technology – проривна технологія
a font – шрифт
formidable – величезний
a spreadsheet – програма табличних обчислень
to interlace – переплітатися
to handle – обробляти
versus – у порівнянні
boldface – жирний (шрифт)
italic – курсив
to capture images – захоплювати зображення
to retouch – ретушувати
a resolution – розширення, роздільна здатність
a flash memory card – карта флеш-пам'яті
to alter – змінювати
a camcorder – відеокамера
USB (universal serial bus) – універсальна послідовна шина
FireWire port – порт FireWire, послідовна високошвидкісна шина
a headset – гарнітура
an earpiece.- навушник

Comprehensive Questions

1. What is a scanner? Give the definition in your own words.
2. What technology is used in scanners?
3. What was the purpose of developing MICR?
4. Where is MICR still predominantly used by?
5. What are the advantages of MICR application?
6. In what businesses are bar codes used?

7. Who and when introduced a reading machine to scan printed documents?
8. What is OCR? Explain in your own words.
9. What was OCR originally designed for?
10. How is the resolution of a scanner defined?
11. How are photos stored in digital cameras?
12. How are webcams connected to the PC?
13. What are the benefits of using scanners and cameras at home and in business?

Text Study

Exercise 1. Read and translate the word-combinations from the text.

Optically focused images, to be suitable for processing, magnetically charged ink, faster and more accurate, the process of examining characters, to convert scanned text into a file, underlined text, image recognition, cropped or resized, dots per inch, a tiny storage device, to view the images on a TV set, a headset with a microphone and earpiece.

Exercise 2. Choose the necessary word and put it in the sentence.

1. Scanners convert optically focused images into … … that are suitable for processing.
2. The earliest form of scanner used … ... .
3. MICR is still predominantly used by … … .
4. Another form of scanning uses … … .
5. Optical character recognition is the process of … … on a printed page and translating them into computer text.
6. OCR was originally designed for input to typesetting machines for the … … .
7. This OCR … … could be trained to read the different fonts it encountered.
8. There are a wide variety of low-cost … … between scanners and personal computers.
9. These programs use … … of character recognition to convert scanned text into a file.
10. Scanner … ranges from 75 dots per inch to thousands of dots per inch.

1. OCR software interfaces
2. breakthrough technology
3. examining characters
4. various methods
5. digital representation
6. resolution
7. for processing checks
8. bar codes
9. newspaper industry
10. magnetic-ink character recognition

Exercise 3. Complete the sentences.

1. Scanners convert optically focused images, such as text, line drawings, or photographs into digital representations that are … … . 2. When an image is translated into a series of Os and Is, it can then … … . 3. Scanners trace their roots to several technologies and devices, including magnetic-ink character recognition, bar codes, and … … . 4. MICR makes check processing faster and more accurate by … … . 5. Supermarkets use the Universal Product code (UPC), which consists of a series of thick and thin … … . 6. Relatively untrained typists could retype copy for

OCR input and feel it into scanner, thus cutting costs, reducing mistakes, and … … . 7. In 1976 Raymond Kurzweil introduced a reading machine to scan printed documents and, using electronic voice output, read them aloud to … … . 8. These programs use various methods of character recognition to convert scanned text into a file, suitable for import into … … . 9. A useful application for scanners is … … and convert them into digital data … … . 10. Scanner resolution ranges from 75 dots per inch to thousands of dots per inch, but the most common scanner resolution is … … . 11. Many printers have a special socket so you can … … . 12. Webcams let you send and receive live video pictures … … .

Exercise 4. Translate into English.

1. Сканери призначені для введення в комп'ютер графічних об'єктів (малюнків, фотографій та ін.). 2. Принцип дії сканера ґрунтується на перетворенні зображення в електричні сигнали. 3. Основною характеристикою сканера є роздільна здатність, яка визначається кількістю точок на дюйм. 4. Сканери використовуються також для введення текстової інформації. 5. Магнітно-чорнильне розпізнавання символів переважно використовується у баківській промисловості для обробки чеків, яке робить цей процес швидшим і більш точнішим. 6. Сьогодні штрих-коди використовуються на всіх фабриках і заводах. 7. Оптичне розпізнавання символів було винайдене для газетної промисловості, що скоротило витрати, зменшило помилки і пришвидшило процес складання газети. 8. Я не знав, що у найпершій формі сканера використовувалось лише магнітно-чорнильне розпізнавання символів. 9. Сьогодні є величезна різноманітність сканерів з великим розширенням. 10. Яке розширення у твого сканера? 11. Система отичного розпізнавання символів дозволяє сканувати сторінки тексту і зберігати їх у текстовому редакторі. 12. Мені подарували вебкамеру з мікрофоном і навушниками.

Lesson 9

Read and translate the text:

Disks and Drives

Storage provides a place to store data and programs before and after processing. Disks have become the most widely used medium for the storage part of the system. A disk is a circular platter on which a recording surface has been applied. It is coated with the same material found on audiotape, and it can be erased and used over and over.

The most common type of disks are **hard disks**. They can hold a large amount of data and spin at higher speed, so you can store and retrieve information in them. The speed at which a hard drive finds data is called 'access time' – or seek time. The average access time is measured in milliseconds (ms). Most hard drives have an access time of 8 to 14 ms. The transfer rate depends also on the power of your PC.

If you only use word-proccesing programs, you will need less storage capacity than if you use CAD, sound and animation programs. If you need an extra hard drive, you should consider the type of mechanism. There are 'internal' and 'external' drives which are both rigid disks sealed into the drive unit, either within or attached to the computer. Another type of hard drive, known as 'removable', allows you to record data on 'cartridges', which can be removed and stored off-line for security purposes. Some systems allow you to back up your entire PC on one disk. Laptops use pocket-sized drives. Digital cameras and music players use micro drives with special cards.

B. Optical storage

- Optical disks can store information at much higher densities than magnetic disks. Thus, they are ideal for multimedia applications where images, animation and sound occupy a lot of disk space. Besides, they are not affected by magnetic fields. This means that they are secure and stable, e.g. they can be transported through airport metal detectors without damaging the data. However, optical drives are slower than hard drives. While there are hard drives with an average access time of 8 ms, most CD-ROM drives have an access time of 150 to 200 ms.

There are various types of optical drives:

CD-ROM systems offer everything, from shareware programs to dictionaries and encyclopedias, from multimedia databases to 3-D games. A lot of institutions have discovered that CD-ROM is the most economical way of sharing information. In fact, one CD-ROM disk (650 MB) can replace 300,000 pages of text (about 500 floppies), which represents a lot of savings in distributing materials and corporate databases. In addition, CD-ROM drives can play music CDs while you work. Yet CD-ROM technology has one disadvantage: you cannot write anything onto a CD-ROM disk. You can only 'read' it, like a book.

CD-Recorders come in two different forms: CD-R and CD-RW. CD- R machines record on CD-R (write-once) disks, allowing you to create and duplicate CDs. They are used to back up hard disks or to distribute and archive information. In fact, these systems are the modern version of old WORM (write once, read many) disks. CD-RW (rewritable) disks can be erased and re-used, just as you would do with a hard disk.

DVD (digital versatile disk). A DVD-ROM can hold up to 8.5 GB, about 15 times an ordinary CD-ROM. For this reason, it can store a large amount of multimedia software and complete Hollywood movies in different languages. They can also play music CDs and CD-ROMs. However, DVD-ROMs are 'read-only' devices. To avoid this limitation, companies also produce DVD-R and DVD-RW (rewritable disks).

Portable DVD players let you watch movies or TV, play games and listen to music, wherever you are. They usually run on batteries, have a widescreen (rectangular 16:9 format) LCD and support multi-format playback, allowing you access to many file formats including DVD video, JPEG pictures, MP3 music, etc.

They have two built-in stereo speakers, or headphones if you don't want to disturb other people.

C. Removable flash memory

Flash memory is solid-state, rewritable memory; it is non-volatile, so it retains data when the power is turned off. This explains its popularity in small devices.

- Flash memory cards such as CompactFlash or Secure Digital are found in cameras, PDAs and music players.
- Flash drives, also known as thumb or pen drives, are connected to a USB port of the computer. They let you save and transfer data easily.

Active Vocabulary

floppy disk – дискета
blank disk – чистий диск
to be initialized – бути ініціалізованим
to retrieve information – отримувати інформацію
data transfer rate – швидкість передачі даних
word-processing program – програма обробки текстів
Computer Aided Design (CAD) – автоматизоване проектування (САПР)
rigid disk – жорсткий диск
to seal – запечатувати, пломбувати
drive unit – приводний блок
removable hard drive –знімний жорсткий диск
to back up – зробити резервну копію
pocket-sized drive – кишеньковий накопичувач
density – щільність
to be affected by – піддаватися впливу
shareware program – умовно-безкоштовна програма
to distribute materials – поширювати матеріали
rewritable disk – перезаписуваний диск
complete Hollywood movies – повні голлівудські фільми
rectangular – прямокутний
to support multi-format playback – підтримувати багатоформатне відтворення
to retain data – зберігати дані
flash memory card – карта флеш-пам'яті
flash drive – флешка

TEXT STUDY

Exercise 1. Match the terms 1-5 with the explanations a-e

1. backing store
2. floppies

3. disk drive
4. formatting
5. directory

a) a device which spins disks and contains a read write head
b) secondary memory V
c) diskettes
d) initializing: setting tracks and sectors on magnetic disks
e) a catalogue of where each piece of data is stored and how to find it

Exercise 2. Read the sentences and say if they are true (T) or false (F).

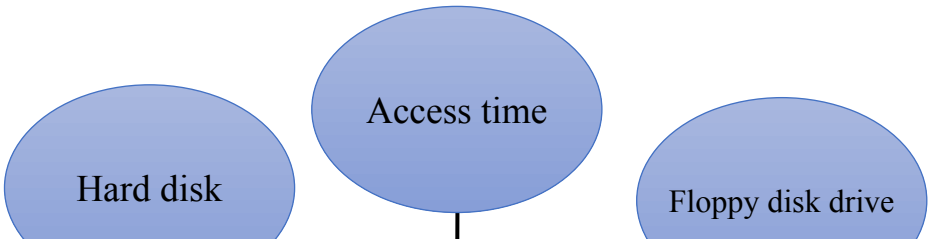
1. Hard drives are faster than floppy drives.
2. Access time' refers to the average time required for the recording heads to move and access data.
3. 'Access time' and 'data transfer rate' mean the same.
4. Hard disks use rigid rotating disks.
5. A hard drive is about 20 times faster than a floppy disk drive.

Exercise 3. Work in groups of three. Using additional information resources, complete the sections of the table.

Medium	Advantages	Disadvantages
Floppy disk		
Fixed hard disk		
Removable hard disk		
CD-ROM disk		
Magnetic optical disk		
Flash drive		

Exercise 4. Read A opposite. Choose a term from this word web to complete the sentences below.

1. The first rule of data storage is to make a ….. of all important files.
2. A ….. is slower than a hard drive and can only hold 1.44 MB disks.
3. The ….. inside your PC is made of aluminum alloy covered with a magnetic coating. This makes the disk itself a right plate, hence its name.
4. The ….. are circles around a disk and the ….. are segments within each circle.
5. This hard disk is a 60 GB IBM model with a fast ….. of 8 ms.



6. The ….. is the rate of transmission of data from the disk to the CPU. This is usually described in megabytes per second.
7. Apple`s iPod music player can double as a ….. for transporting computer data.

Exercise 5. Complete this product description with words from B opposite.
The Panasonic DVD-LS91 is a top-of-the-range (1) ….., which provides pure entertainment wherever you go. It has a big 9 inch built-in (2) ..... LCD, so you can really enjoy movies. The built-in stereo speakers allow you to listen along, or if you want to listen alone, just plug in a pair of (3) ..... . This portable machine provides (4)..... so you can play DVD Audio/Video, CD-R/RW, DVD-RAM, DivX and MP3 files. Its compact design features a built-in rechargeable 6 hour battery pack.
The DVD-LS91 allows 6 hours of playback, and provides a perfect way to entertain yourself and your kids during long trips.

Exercise 6. Find English equivalents in the text.
Обертати диск на високій швидкості; вставити чистий диск у дисковод; зберігати і отримувати інформацію набагато швидше; час доступу або час пошуку; середня швидкість; передавати дані; потужність ПК; ємність зберігання; мультимедійні додатки; займати багато місця на диску, без пошкодження даних; обмін інформацією; поширювати та архівувати інформацію; цифровий універсальний диск; працювати від батареї; вбудовані стереодинаміки і навушники.

Exercise 7. Translate into English.

1. Перед тим, як записати інформацію на дискету, відформатуйте її.
2. Не забудьте зберегти документ на жорсткий диск.
3. Програмне забезпечення дозволяє витягувати аудіо доріжки з CD і зберігати їх на жорсткому диску у цифровій якості.
4. Знімний жорсткий диск чудовий засіб зберегти дані на комп'ютері, які можуть постраждати від збоїв в системі, вірусів, хакерських атак.
5. Як доповнення до техніки, ти можеш подарувати чохол, штатив, карту пам'яті, знімний жорсткий диск.
6. Коли ви зробите це, всі особисті файли, резервні копії яких були зроблені, будуть повернуті на ПК.
7. Оптичні диски не піддаються впливу магнітних полів, вони безпечні і стабільні, їх можна транспортувати без пошкодження даних.
8. Програма поширюється вільно як умовно-безкоштовна, і доступна для завантаження з нашого сайту.
9. CD-R диск використовується щоб зробити резервну копію жорсткого диску, або щоб поширювати та архівувати інформацію.
10. Чи можливо CD-RW диск стерти і повторно використовувати?
11. Цей сучасний портативний DVD-плеер Samsung має широкий екран та підтримує багатоформатне відтворения, працює від батарейки, має два збудовані стереодинаміки і навушники.
12. Як зберігати фотографії на комп'ютер, жорсткий диск, флешку та ділитися ними в режимі онлайн?

Writing

You and computers

Which device or format would be most suitable for storing these things?

1. the operating system and the programs on a home computer;
2. an electronic encyclopedia for children;
3. a movie in digital format;
4. the music tracks by your favorite artist;
5. all the files generated by a company in one day;
6. the photos taken with a digital camera

Exercise 8. Scan-reading: Types of drives. Look at the illustrations and information and find out:

1. the size of a floppy disk
2. the storage capacity of a high density diskette
3. the name of a hard drive on a PC platform
4. the storage capacity of a SyQuest cartridge
5. the system that can hold 10 GB tapes
6. a type of drive used by digital cameras and music players

diskette A high-density (HD) floppy disk can store 1.44 MB of information. A floppy drive uses 3-5-inch disks and it's called drive A.

Hard disk Most PCs have one hard drive, called drive C. It's used to keep software and files organized in a convenient way. A hard disk can hold several gigabytes of data

Removable hard drive Popular drives are the Zip and jaz systems from lomega. A Syquest cartridge can hold 1.5 GB

Tape drive A tape drive stores data on tape cartridges. It's used for backup purposes. A Digital Audio Tape drive can hold up to 10 GB of data.

Pocket-sized drive Ultra portable drives are used with mobile computers. They hold 40 MB disks. The Peerless system can hold 20 GB disks, which allows you to store thousands of MP3s and video games.

Microdrive A Microdrive is the smallest hard drive for digital cameras, laptops, and audio players. It comes in 340 MB and 1 GB capacities. It uses a PC Card adapter.

Text 10

Read and translate the text:

Programming

A computer program is actually just a list of instructions necessary to solve a specific problem, and the creation of this instruction list is computer programming. Programming is the process of producing a set of instructions for a computer to make it perform a specific task. The task can be anything from the solution to a mathematical problem to the production of a graphics package.

If we wish to develop a program we must follow the following steps:

- First, we try to understand the problem and define the purpose of the program;
- Then, we design a flowchart, a digram which shows the successive logical steps of the program.
- Next, we proceed to write the instructions in a high-level language (BASIC, PASCAL, C, etc.). This is called coding.The program is then compiled.
- When the program is written, we test it: we run the program to see if it works and use special tools to detect bugs or errors. Any errors are corrected until it runs smoothly. This is called debugging or bug fixing.
- Finally, software companies write a detailed description of how the program works, called program documentation. They also have a maintenance program. They get reports from users about any errors found in the program. After it has been improved, it is published as an updated versions.

Notes:

Object-oriented programming is based on the interaction between it by exchange of the messages. OOP is based on the usage of the main components that are called paradigm of the OOP. The key concepts of the OOP are:

Abstraction
Inheritance
Encapsulation
Polymorphism

Abstraction provides the usage of abstract models of real-time objects that includes objects characteristics necessary to solve tasks in it.

Inheritance provides the transfer of characteristics from one parents object relevant to other in the process of inheritance. The relevant object inherits all or a part of the parents' object characteristics and besides acquires its own characteristics or changes the inherited. The OOP process of inheritance is designed for developing objects and class hierarchy.

Encapsulation is a process of data hiding designed for access limitation of the other objects to the properties and characteristics of the given objects.

Polymorphism is a property of the objects to react differently the same instructions. This property allows to use the same commands for the interaction with the same objects.

Active Vocabulary

Actually – насправді, фактично
a graphics package – графічний пакет
the set of instructions – пакет інструкцій
particular – даний, конкретний
to implement – виконувати, здійснювати
a flowchart – блок-схема
successive – послідовний, наступний
bug – помилка, вада, дефект
debugging – налагодження
to run smoothly – працювати безперебійно
to proceed – приступити, перейти до чогось
a maintenance program – програма технічного обслуговування
interaction – взаємодія
inheritance – успадкування
property – властивість

Comprehensive Questions

1. What is a computer program?
2. What is programming?
3. What can the task be?
4. What is the first step of developing a program?
5. When do we design a flowchart?
6. What is called coding?
7. When is the program compiled?
8. What is is called debugging or bug fixing?
9. What is is called program documentation?
10. When is an updated versions of the program published?
11. What are the key concepts of the OOP?

Text Study

Exercise 1. Read and translate the word-combinations from the text.

A list of instructions, to solve a specific problem, a specific task, the production of a graphics package, the successive logical steps of the program. to develop a program, to detect bugs or errors, to implement the algorithm, a maintenance program, a particular computer language, the key concepts.

Exercise 2. Choose the necessary word and put it in the sentence.

1. … … is a list of instructions necessary to solve a specific problem.
2. The creation of this instruction list is … … .
3. …. shows the successive logical steps of the program.
4. … … write a detailed description of how the

1. computer programming
2. polymorphism
3. software companies
4. paradigm of the OOP
5. a computer program
6. encapsulation
7. OOP process of inheritance

program works.
5. Any … are corrected until it runs smoothly.
6. . OOP is based on the usage of … … .
7. … provides the transfer of characteristics from one parents object relevant to other.
8. … is a property of the objects to react differently the same instructions.
9. … … is designed for developing objects and class hierarchy.
10. … is a process of data hiding.

8. a flowchart
9. errors
10. inheritance

.

Exercise 3. Complete the sentences.

1. A computer program is actually just a list of … … . 2. Programming is the process of producing a set of instructions for a computer to make it perform … … . 3. The task can be anything from the solution to a mathematical problem to … … .4. We try to understand the problem and define the purpose of the program if we wish to … … .5. We design a flowchart, a digram which shows … … . 6. When the program is written, we test it if it works and use … … . 7. Any errors are corrected until … … .8. Software companies write a detailed description of how the program works, called … … .

Exercise 4. Translate into English.

1. Я впевнений, що ця комп'ютерна програма допоможе мені вирішити цю специфічну проблему. 2. Якщо ми хочемо створити програму, ми повинні дотримуватись певних інструкцій. 3. Ти можеш написати інструкції для цієї програми будь якою мовою програмування. 4. Він не знав, що програмування це процес створення пакету інструкцій для комп'ютера, щоб він виконав певне завдання. 5. Які комп'ютерні мови ти знаєш? 6. Ви можете вже перейти до програмування. 7. Скажи мені, який алгоритм використовується для вирішення цієї проблеми? 8. Це складне обчислення щойно виконали. 9. Вона сказала, що ця комп'ютерна програма не використовується для цього завдання. 10. Можеш ти написати інструкції необхідні для виконання алгоритма на комп'ютерній системі?

Lesson 11

Read and translate the text:

Communication with a Computer: Programming languages

At a superficial level, programming languages and natural languages are similar. Programming languages have grammatical rules that need to be learnt, just as natural languages do. At the same level, computers can "understand" and communicate with" humans through programming languages: such as BASIC, PASCAL, ADA, FORTRAN, ALGOL, COBOL, C, C++, JAVA, DELFI and others,

superficial interaction is possible. However, programming languages are data-free and therefore contain no information in themselves. The information is contained in the data which is processed, but is independent of the language which is used to write the commands to proceed it. The sole purpose of a programming language is to give instructions to a computer, which – providing they are syntactically correct – will be executed. A syntactically correct statement in a programming language has only one interpretation. By definition, it cannot be ambiguous. You cannot jokes in computer languages. Let's have a look at some programming languages.

BASIC (Beginners All-purpose Symbolic Instructional Code) is considered to be one of the easiest programming languages to learn. It is now used almost universally. Visual BASIC is a programming language and an environment developed by Microsoft in 1990. It enables the programmer to quickly create all sorts of applications from small system utilities to database programs and Internet server applications.

PASCAL is an algorithmic general purpose high level programming language. Niklaus Emil Wirth, the Swedish programmer and programming theorist has developed this language and named it after the famous French mathematician, Blaise Pascal. This language teaches a structured approach to programming.

ADA (a government (especially military) computer language) is a high level programming language. It is a PASCAL-based language, but much more comprehensive than PASCAL. It was named after Augusta Ada Byron (1816 – 1852), daughter of the English poet, Lord Byron.

FORTRAN (Formula Translation) is a problem oriented high level programming language for scientific and mathematical use. FORTRAN was the first high level programming language. It was developed in 1956 and was designed to easily express mathematical formulas for computer processing. It is still widely used as a programming language.

ALGOL (Algorithmic Language) was developed as an international language for the expression of the algorithms between individuals as well as a programming language. It was introduced in the early 1960s. ALGOL was originally known as IAL or International Algebraic Language.

COBOL (Common Business-Oriented Language) is internationally accepted programming language developed for general commercial use. The advantages of using COBOL are that it is relatively simple to learn and programs can be quickly written and tested. Programmers can easily understand programs not written by themselves.

JAVA is designed to run on the Web; JAVA applets are small programs that run automatically on web pages and let you watch animated characters, and play music and games.Today Java is a hot technology that runs on any computer.

C developed in the 1970s to support the UNIX operating system. C is a highly portable general-purpose language. C was designed to be a language that would be suitable for writing system's software, like the core parts of an operating system. The code generated by the compiler had to be very efficient if the language was to be used in this way. Anything a compiler would have difficulties with was dropped. Consequently, in some respects the language is simpler than Algol family languages

that have retained the relatively complex nested program structures. If C was to be used for writing things like "device driver code" (the code that actually interacts with the peripheral controllers), then it had to allow the programmer get down the hardware level and manipulate bits in specific registers and in particular memory addresses. This gives the programmer considerable power, and lots of responsibility.

C++ is an object-oriented at all levels programming language based on C.

DELFI is an object-oriented programming language based on PASCAL.

Active Vocabulary

A sole purpose – єдина мета
ambiguous. – неоднозначний
to consider – вважати
universally – в усьому світі
to be named after – називати в ім'я, на честь
comprehensive – обширний
originally – спочатку

Comprehensive Questions

1. Why do men use languages?
2. What computer "languages" do you know?
3. What is the easiest programming language to learn?
4. What is the general purpose of high level programming language?
5. What languge is much more comprehensive than PASCAL?
6. What was the first high level programming language? When was it developed?
7. What programming language was designed to express mathematical formulas for computer processing?
8. What programming language was developed for the expression of the algorithms between individuals? When was it introduced?
9. What programming language was developed for general commercial use?
10. What are the advantages of COBOL?

Text Study

Exercise 1. Read and translate the word-combinations from the text.

To communicate with each other, the easiest programming languages to be used, universally, a general purpose high level programming language, a PASCAL-based language, to be named after, to express mathematical formulas, for scientific and mathematical use, International Algebraic Language (IAL), for general commercial use, to run automatically on web pages, to run on any computer.

Exercise 2. Choose the necessary word and put it in the sentence.

1. … is considered to be one of the easiest programming languages to learn.	1. COBOL
2. … is a general purpose high level programming language.	2. FORTRAN
3. … is a high level programming language.	3. C++
	4. VISUAL BASIC
	5. PASCAL

4. … is a problem oriented high level programming language for scientific and mathematical use.
5. … is a programming language for the expression of the algorithms between individuals.
6. … is internationally accepted programming language developed for general commercial use.
7. … is an object-oriented at all levels programming language based on C.
8. … is an object-oriented programming language based on PASCAL.
9. Today … is a hot technology that runs on any computer.
10. … was designed to be a language that would be suitable for writing system's software,
11. … enables the programmer to quickly create all sorts of applications

6. DELFI
7. C
8. ADA
9. JAVA
10. ALGOL
11. BASIC

Exercise 3. Complete the sentences finding the end in the right column.

1. Men use languages in order … …	… … general commercial use.
2. BASIC is considered … … .	… … Augusta Ada Byron, daughter of the English poet, Lord Byron.
3. PASCAL was named after … … .	… … not written by themselves.
4. ADA was named after … … .	… … the early 1960s.
5. FORTRAN is a problem oriented high level programming language for … .	… … the famous French mathematician Blaise Pascal.
6. FORTRAN was the first … … .	… … a high level programming language.
7. ALGOL was developed as … … .	… … at all levels programming language based on C.
8. FORTRAN was developed in … … .	… … to be one of the easiest programming languages to learn.
9. COBOL is internationally accepted programming language developed for … … .	… … scientific and mathematical use.
10. Programmers can easily understand programs … … .	… … an international language for the expression of the algorithms between individuals.
11. C++ is an object-oriented … … .	… … based on PASCAL.
12. DELFI is an object-oriented programming language … … .	… … to communicate with each other.

Exercise 4. Translate into English.

1. Люди використовують різні мови програмування, щоб спілкуватися один з одним. 2. Я не знав, що найлегшою мовою програмування для вивчення є Паскаль. 3. Паскаль – високорівнева мова програмування загального призначення. 4. Яка високорівнева мова програмування була названа на честь Августи Ади Байрон, дочки англійського поета лорда Байрона? 5. Він не знав, що Коболь – мова програмування для загального комерційного використання. 6. C++ і Делфі є об'єктно-орієнтованими високорівневими мовами програмування. 7. Фортран – проблемно-орієнтована високорівнева мова програмування для наукового та математичного використання. 8. Він сказав, що Коболь – відносно легка мова програмування для вивчення. 9. Які мови програмування ти знаєш? 10. Я не знав, що необхідно уникати старіших мов програмування таких як Фортран і Коболь.11. C була створена в 1970 році, щоб підтримувати операційну систему UNIX. 12. Комп'ютери можуть "розуміти" і "спілкуватися" з людьми через різні мови програмування.

Lesson 12
Read and translate the text:

C++ and Python as Top Programming Languages

Python and C++ are the most popular programming languages. But there's the difference between these two programming languages, why are they in demand, and a huge difference for Python in comparing to other programming languages.

Let's start with the fact that these are two very different languages. There is a table that compares the levels of abstraction between them.

Comparison of Abatraction Levels Between C++ and Python

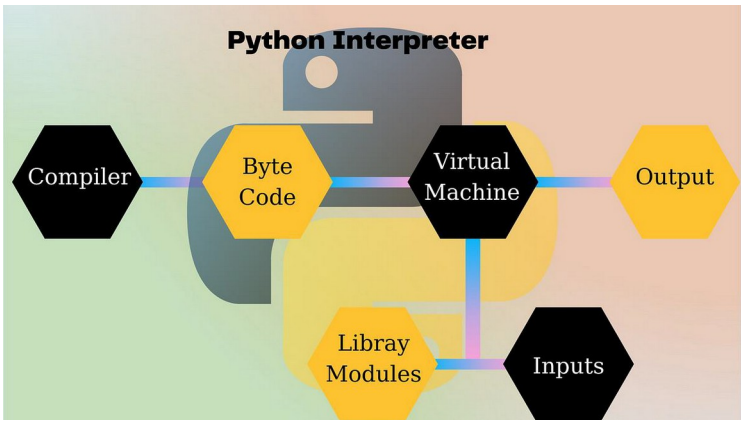
Feature	**C++**	**Python**
Level of Abstraction	Medium (offers both low-level and high-level features)	High (hides most low-level aspects)
Memory Access	Direct access via pointers, manual memory management	Automatic memory management (garbage collection)
Data Types	Support for low-level types (e.g., arrays, pointers)	High-level data types (lists, stings, sets)
Performance	High (but requires manual optimization)	Generally slower due to interpretation
Abstraction approach	Object-oriented and procedural programming	Pure object-oriented, focused on simplicity
Working with system Resources	Allows working with system resources and low-level operations	Hides complexities of system resources via libraries

Abstraction is basically how close the code you write is to the processor and other components of your computer. This affects the capabilities available to you for memory management, as well as the amount of operations (and their complexity) that you need to perform.

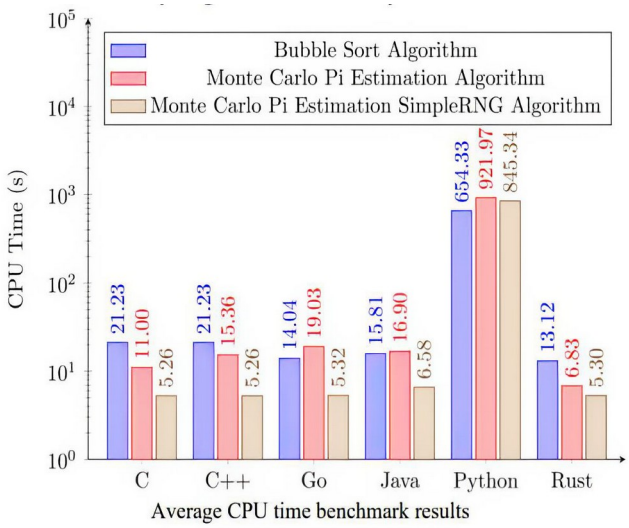
As you can see, C++ offers quite broad capabilities in this regard, but it requires a lot of attention from developers. If something is overlooked, the logic will cause errors, such as crashes or memory leaks. Improper use of these capabilities can also result in poor performance of the final product.

They are also two different type languages. C++ is a compiled language, which means that after making changes to your code, it must be compiled by a compiler (it's a program) into an executable or binary file. This significantly optimizes the program, as the device will run machine code directly executed by the CPU. Because of this, it is also impossible to know the program's functionality in details without source code of it, because after compilation the abstraction in the form of the language in which the program was written is lost. Also, the program will only work for a specific platform due to the differences between them, for example, you can't run an Android app on Windows.

Python is an interpreted language (as you probably have noticed in the table), which means that your abstract code is executed in its original form, with its functionality being handled by the language's interpreter. This makes the program: cross-platform, you can modify the functionality during the execution of the program. This makes the program very slow, especially if it’s something complex (a computer gameor calculation of a huge database).



This example with Python and C++ is a great illustration of why you can't just use one programming language for everything. If everyone wrote in C++, or even in assembly, developing even the simplest programs would take weeks and months, and large and complex projects could take years. If everyone wrote in Python, you would get tired of waiting for the next frame to be rendered in your video game, or for the calculation of the total sales of products and the revenue from them, data about which is stored in a database. That’s



why these languages, as well as similar ones, are used for different tasks, and both have high demand.

Python is typically used for scripts, web applications, chatbots, neural networks, etc. None of these require good performance, you just don't need that for these, which is why Python saves a lot of development time (time is money and other costs as we know).

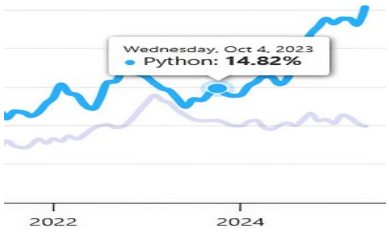
C++ is needed and sometimes irreplaceable when developing games, programs for handling large databases, graphics, drivers, etc. All of these tasks require a lot of time for development, which is fully justified by the need of optimization, due to their complex structure and difficult tasks they should perform.

But why is Python's ratings so different comparing to other languages?

If you look at the graph, you can see that this is significantly influenced by modern trends, including the huge demand in neural networks, for which Python is perfectly suited for development. Now, the goal of every major corporation is competition and development in this area, as there are many opportunities for making money (it's not just ChatGPT or similar stuff). Even NVIDIA shifted its focus from its primary audience, the gamers, to creating GPUs that include technologies for training neural networks.

Additionally, Python has a lower entry threshold due to its simple syntax, a large community, lots of frameworks, it is popular in web development (the second most in-demand field), can be used in a wide range of industries.

C++ in this regard is stagnating, its popularity and demand are mainly maintained by the amount of programs and code that were developed long before I was born. It is considered outdated and without the mentioned problem, it would have been replaced by Rust, which stands out for its memory management safety. The US government even wanted to "disallow to use" it at some moment, but nothing came of it. Also, C++ doesn't have a developer in the form of company; it is mostly handled by the international organization ISO C++ Committee, while Python is actively supported by Python Software Foundation. This doesn’t make C++ bad; at the very least, it is not a narrowly specialized language, unlike assembly.



Both languages deserve the right to exist and both are good for their main tasks. However, if you are looking for a job in Ukraine, you will likely prefer Python, as game development in Ukraine is dead. Moreover, it’s harder to find a well-paid job in C++ in general, because this language is used nowadays in student education, because C++ learning gives you a better understanding of how programming works.

But you will not become programmer without doing mistakes and practices.

Comprehensive Questions

1. What is abstruction?
2. What does it affect?
3. Why does C++ require a lot of attention from developers?
4. What language is Python?
5. What makes Python a cross-platform program?
6. What is Python typically used for?
7. When is C++ needed and sometimes irreplaceable?
8. Why is Python's ratings so different comparing to other languages?
9. What networks is Python perfectly suited for?
10. Where is Python popular?
11. What is popularity and demand of C++ mainly maintained by?
12. Can you use one programming language for everything?
13. What does C++ learning give you?

Active Vocabulary

To overlook – не помічати
manual optimization – ручна оптимізація
a compiled language – скомпільована мова
a binary file – двійковий файл
an interpreted language – інтепретована мова
to be stored in a database – зберігатися у базі даних
irreplaceable – незамінний
neural networks – нейронні мережі
a lower entry threshold – нижчий поріг входу
to disallow to use – заборонити використовувати
to be mostly handled by … - в більшості займатися
to find a well-paid job – знайти добре оплачувану роботу

Text Study

Exercise 1. Read and translate the word-combinations from the text.

the most popular programming languages, to be in demand, direct access via pointers, automatic memory management, to hide complexities of system resources via libraries, to offer quite broad capabilities, a support for low-level types, to know the program's functionality in details, a huge database, a great illustration, to be significantly influenced by modern trends, the execution of the program, to be developed long before, many opportunities for making money, deserve the right to exist, a better understanding, without doing mistakes and practices.

Exercise 2. Choose the necessary word and put it in the sentence.

1. Python and C++ are the most … …
2. … allows working with system resources and low-level operations.
3. … hides complexities of system resources via libraries.
4. C++ offers quite broad capabilities in this regard, but it requires … … .
5. If something is overlooked, … will cause errors.
6. In Python your … … is executed in its original form.
7. is typically used for scripts, web applications, chatbots, neural networks, etc.
8. is needed when developing games, programs for handling large databases, graphics, drivers, etc.
9. Python has a lower … … due to its simple syntax.
10. C++ is mostly handled by … … .

1. C++
2. Python
3. a lot of attention from developers
4. the logic
5. Python
6. entry threshold
7. popular programming languages
8. the international organization
9. C++
10. abstract code

Exercise 3. Complete the sentences.

1. Python and C++ are the most popular programming … . 2. Abstraction is basically how close … you write is to the processor and other components of your computer. 3. C++ offers quite broad capabilities in this regard, but it requires a lot of attention from … . 4. Improper use of these capabilities can also result in poor … of the final product. 5. C++ will only work for a specific … to the differences between them, for example, you can't run an Android app on Windows. 6. Python is an interpreted language, which means that your … is executed in its original form, with its functionality being handled by the language's interpreter. 7. If everyone wrote in Python, you would get tired of waiting for … of the total sales of products. 8. Python is typically used for … , web applications, chatbots, neural networks, etc. 9. C++ is needed and sometimes irreplaceable when developing games, programs for handling large databases, … , … , etc. 10. All of these tasks require a lot of time for development, which is fully justified by the need … , due to their … and difficult tasks they should perform. 11. The goal of every major … is competition and development in the huge demand in neural networks. 12. Even NVIDIA shifted its focus from its primary audience, … , to creating GPUs that include technologies for training neural networks. 13. C++ in this regard is stagnating, its popularity and demand are mainly maintained by the amount of … and … . 14. C++ don't have … in the form ofcompany; it is mostly handled by the international organization ISO C++ Committee. 15. Python is actively supported by Python Software … . 16. Both languages deserve the right to exist and both are good for their … . 17. It’s harder to find a … in C++ in general, because this language is used nowadays in student education. 18. But you will not become programmer without doing … and … .

Exercise 4. Translate into English.

1. C++ та Python – це найпопулярніші мови програмування. 2. Доступ до пам'яті у програмі C++ прямий через покажчики та має ручне управління пам'яттю; а у Python - автоматичне управління пам'яттю. 3. Абстракція впливає на можливості, доступні вам для управління пам'яттю, а також на обсяг операцій, які вам необхідно виконати. 4. C++ - це скомпільована мова, а це означає, що після внесення змін до вашого коду вона повинна бути скомпільована компілятором у виконуваний або двійковий файл. 5. Python - це інтерпретована мова, що означає, що ваш абстрактний код виконується в оригінальній формі, а його функціональність обробляється інтерпретатором мови. 6. В Python ви можете змінювати функціональність під час виконання програми. 7. Python зазвичай використовується для сценаріїв, чат-ботів, веб-додатків, нейронних мереж тощо. 8. C++ потрібен й іноді незамінний при розробці програм для обробки великих баз даних, графіки, ігор, драйверів тощо. 9. Python відмінно підходить для розробки нейронних мереж. 10. Здебільшого C++ займається міжнародна організація ISO C++ Committee, а Python активно підтримується Python Software Foundation. 11. Обидві мови заслуговують на право існування і обидві хороші для своїх основних завдань. 12. Всі вчаться на помилках, тож і ви не станете програмістом, не роблячи помилок і практик.

Lesson 13

Read and retell the text:

XML Takes on HTML

Standard Generalized Markup Language (SGML) is the language that spawned both HTML (HyperText Markup Language) and XML (extensible Markup Language). SGML is not a true language, it is a metalanguage, which is a language from which you can create other languages. In this case, it is the creation of a markup language (a system of encoded instructions for structuring and formatting electronic document elements).

HTML is an application-specific derivation of SGML. It is a set of codes, generally used for webpages, that creates electronic documents according to rules established by SGML. HTML is a language that is all about the presentation of your information, not what the actual data is. You can, therefore, say that HTML is a presentation language.

XML is a subset of SGML, but it is also, like SGML, a metalanguage. XML defines a specific method for creating text formats for data so that files are program independent, platform independent, and support internationalisation (able to read different languages, etc.). In fact, because XML is an extensible language, you don’t

even have to have a browser to interpret the page. Applications can parse the XML document and read the information without any human intervention.

XML, unlike HTML, is concerned with the identity, meaning and structure of data. XML is extensible because it lets website developers create their own set of customised tags for documents. This ability to define your own tags is the main feature of XML, and it is what gives developers more flexibility.

By defining your own markup tags, you can explicitly define the content in the document. This makes XML a more intelligent markup language than HTML. For example, in HTML, you could have a paragraph tag <p> preceding a paragraph about baseball. Your Web browser sees this tag and knows to present the following text as a paragraph. All your browser knows about the text, however, is that it is a text; it doesn't know that it is specifically about baseball. In an XML document, you could define a <BASEBALL> tag to refer specifically to the text in the paragraph in your document. This way, when your XML browser examines the document, the document knows what data it contains, and that makes the content more intelligent. Search engines that make use of XML data can do a better job of finding the pages you are looking for because of the intelligent nature of XML content.

XML, by design, does not deal with how the data is displayed to the end user. Because HTML is a presentation language, XML documents use HTML tags to help handle the visual formatting of the document. Also, you can use XML in your HTML documents to provide metadata, which is data about data in the document.

XML will do to the Web and e-commerce what HTML originally did to the Internet. XML and its associated applications have the potential to blow the roof off the Internet and how we do business.

Active Vocabulary

XML (Extensible Markup Language) – розширенна мова розмітки (гіпертексту), мова XML

HTML (Hypertext Markup Language) – мова гіпертекстової розмітки, мова розмітки гіпертексту, мова HTML

SGML (Standard Generalized Markup Language) – стандартна мова узагальненої розмітки (опису документів), формат та мова SGML

to spawn – створювати

application-specific – пов'язаний з (конкретним) застосуванням, спеціалізований

subset – підмножина

to parse – аналізувати, розбирати

customised – зроблений на замовлення

tag – ТЕГ, керуючий код

search engine – пошуковий механізм, пошукова машина, пошукова служба

explicity – ясно, точно

Comprehensive Questions

1. What languages were derived from SGML?
2. What type of language is used to structure and format elements of a document?
3. Name two metalanguages.
4. What elements of data is XML (but not HTML) concerned with?
5. What is meant by the term “extensible”?
6. What makes XML a more intelligent language than HTML?
7. What does the HTML markup tag <p> indicate?
8. Why are search engines able to do a better job with XML documents?
9. What type of website is particularly likely to benefit from XML?

Text Study

Exercise 1. Read and translate the word-combinations from the text.

Document, code, electronic, information, method, format, file, program, platform, internationalisation, browser, structure, website, tag, paragraph, baseball, visual, Internet, business.

Exercise 2. Give the English equivalents for the following word combinations.

Створювати інші мови; система кодованих інструкцій; елементи електронного документа; створення текстових форматів; інтерпретувати (перетворити) сторінку; детально визначати зміст документа; інтелектуальний мова розмітки; ТЕГ (керуючий код) абзацу; використовувати дані мови XML; знаходження сторінок, які ви шукайте; управляти візуальним форматуванням; надавати дані.

Exercise 3. Match the terms in A with the statements in B.

A	B
1) Metadata	1) Extensible markup language
2) Metalanguage	2) A coding system used for structuring and formatting documents
3) HTML	3) Data about data
4) XML	4) An example of a page presentation language
5) Markup language	5) A language from which you can create other languages

Exercise 4. Agree or disagree with the following statements.

1. HTML is no longer useful for creating webpages.
2. SGML is more complex than XML.
3. XML files can only be used on Unix systems.
4. XML files can only be read by browser programs.
5. HTML is a markup language.
6. Internet searches will be better with XML files.

Exercise 5. Fill in the blanks with the Gerunds from the box.

creating finding formatting (2) structuring

1. It is the creation of a markup language (a system of encoded instructions for … and … electronic document elements).
2. XML defines a specific method for … text formats for data.
3. Search engines can do a better job of … the pages you are looking for.
4. XML documents use HTML tags to help handle the visual … of the document.

Exercise 6. Fill in the table with Participles.

Infinitive	***Participle I***	***Participle II***
to associate		
to customise		
to define		
to encode		
to establish		
to follow		
to precede		
to spawn		
to use		

Exercise 7. State questions to the underlined words.

1. In fact, <u>because XML is an extensible language</u>, you don't even have to have <u>a browser</u> to interpret the page. (2)
2. Applications can <u>parse the XML document and read the information</u> without any human intervention.
3. <u>XML</u> is concerned with <u>the identity, meaning and structure of data</u>. (2)

Exercise 8. Talking point.

1. Advantages of XML over HTML.

Lesson 14

Read and translate the text:

Microsoft Company

Microsoft was started by Paul Allen and Bill Gates in 1975. It is a well-known American company that makes computer programs. For many years, Microsoft has been a leader in the computer software business. It has helped shape the way people use computers today.

Microsoft became successful by creating the MS-DOS operating system in the early 1980s. MS-DOS was used on 90% of IBM and IBM-like computers at the time. This was the first big step for Microsoft in becoming a top technology company. It laid the foundation for their future software innovations.

Microsoft became even more popular with the release of the Windows operating system.Windows made computers easier to use by adding pictures and

icons instead of just text commands. It quickly became the most used operating system in the world. This change made computers more accessible to everyday people.

Microsoft has released many versions of Windows over the years. These include Windows 95 (1995), Windows 98 (1998), Windows Millennium Edition (2000), Windows 2000 (2000) and Windows XP (2001). Later versions are Windows Vista (2007), Windows 7 (2009), Windows 8 (2012), Windows 10 (2015) and Windows 11 (2021). Each version brought new features and improvements for users. Microsoft also created the Microsoft Office programs which include Excel (analyze data with spreadsheets), Word (create professional documents), Access (Craft engaging presentations) and Outlook (manage email and schedules). These programs were first released in 1997, with updates in 2000 and 2002, called Office XP. Newer versions are Office 2010, 2013, 2016, 2019 and Microsoft 365, launched in 2020. These tools have become essential for work, school and personal tasks.

Microsoft provides about 50% of the world's software programs. It controls around 80-85% of the computer software market. With thousands of workers and many products, Microsoft is a strong leader in the technology world. This makes Microsoft one of the most powerful companies in the industry.

Microsoft's 2,89$ trillion market value tops that of Ford, General Motors making it worth more than big companies like Ford and General Motors. Many of its investors are millionaires and the founders, Bill Gates and Paul Allen, are billionaires. This shows how successful Microsoft has become. The company's wealth continues to grow each year. Beyond Software Microsoft does more than just make software. It works in areas like networking, multimedia and book publishing. It also supported the Macintosh computer early on and is still important in the Mac software market. This shows how Microsoft adapts to different parts of the technology world.

Microsoft is still a powerful company in technology. It keeps growing by working on cloud computing and other new technologies. Microsoft has helped shape the future of computers. It remains a key player in making technology better for everyone.

Active Vocabulary

A top technology company – топ-технологічна компанія
to release – випускати
spreadsheets – електронні таблиці
to be accessible to everyday people – бути доступними для звичайних людей
new features and improvements – нові функції та покращення
craft engaging presentations – створювати цікаві презентації
billionaire – мільярдер
cloud computing – хмарні обчислення

Comprehensive Questions

1. What is the best-known American company that makes computer programs?

2. Who and when has founded the company?
3. What does the company produce?
4. What was the first Microsoft operating system that dominated the PC market?
5. When was Windows' 95 released?
6. How many Windows operating systems did Microsoft release?
7. What do the Microsoft Office programs include?
8. What software applications does Microsoft supply?
9. How many percent of the PC software industry does Microsoft control?
10. Why does Microsoft remain a key player in making technology better for everyone?

Text Study

Exercise 1. Read and translate the word-combinations from the text.

a well-known American company, to be a leader in the computer software business, to lay the foundation for their future software innovations, the most used operating system in the world, to be easier to use, to analyze data with spreadsheets, to become essential for work, the computer software market, one of the most powerful companies in the industry, to work in areas like networking, multimedia and book publishing, to adapt to different parts of the technology world, a key player in making technology.

Exercise 2. Choose the necessary word and put it in the sentence.

1. Microsoft is the best-known American company that makes … … .
2. Paul Allen and Bill Gates … the Microsoft Company in 1975.
3. MS-DOS operating system is … … appeared in the beginning of 80s.
4. Windows is the most important and popular … … in the world.
5. Microsoft … Windows' 95 in 1995.
6. Microsoft supplies about 50% of the … … world's.
7. There are three well-known Office Packs which are called … … .
8. Microsoft controls 80-85% of the entire PC … … .
9. Many of the company's … are now millionaires and … are billionaires.
10. Microsoft is a key player in … … better for everyone.

1. released
2. Microsoft Office programs
3. software industry
4. investors, founders
5. software applications
6. making technology
7. founded
8. computer programs
9. operating system
10. the basic software .

Exercise 3. Tell what sentences are true, what are false.

1. Microsoft is the best-known Canadian company that makes computer programs. 2. Paul Allen and Bill Gates founded the Microsoft Company in 1975. 3. Microsoft has been a leader in the computer hardware business. 4. MS-DOS was used on 80% of IBM and IBM-like computers at the time. 5. Microsoft became even more popular

with the release of the Windows operating system. 6. Firstly, Microsoft released Windows' 95 in 1995. 7. The Microsoft Office programs which include Excel, Word, Access and Outlook were first released in 1996. 8. Microsoft provides about 80% of the world's software programs. 9. Microsoft is a strong leader in the technology world. 10. Macintosh remains a key player in making technology better for everyone.

Exercise 4. Translate into English.

1. Майкрософт – добре відома американська компанія, яка була заснована Полом Аленом і Біллом Гейцом в 1975 році. 2. Майкрософт була лідером у бізнесі комп'ютерного програмного забезпечення. 3. Майкрософт стала успішною компанією створивши операційну систему MS-DOS на початку 1980-х. 4. Майкрософт стала ще більш популярною випустивши операційну систему Віндоуз. 5. Віндоуз – найважливіша і найпопулярніша операційна система в світі, яка зараз домінує на ринку. 6. Багато інвесторів компанії Майкрософт є мільйонерами, а ії засновники Пол Ален і Білл Гейц - мільярдери. 7. Майкрософт, найбільша компанія, яка контролює 85% всієї програмної промисловості персональних комп'ютерів. 8. Компанія Майкрософт є також на ринку створення мереж, мультимедійних засобів і навіть книг. 9. Статки компанії продовжують зростати з кожним роком.10. Корпорація Майкрософт залишається ключовим гравцем, який робить технології кращими для всіх.

Lesson 15

Read and translate the text:

Internet and Modern Life

The Internet has already entered our ordinary life. Everybody knows that the Internet is a global computer network, which embraces hundreds of millions of users all over the world and helps us to communicate with each other.

The history of Internet began in the United States in 1969. It was a military experiment, designed to help to survive during a nuclear war, when everything around might be polluted by radiation and it would be dangerous to get out for any living being to get some information to anywhere. Information sent over the Internet takes the shortest and safest path available from one computer to another. Because of this, any two computers on the net will be able to stay in touch with each other as long as there is a single route between them. This technology was called packet switching.

Invention of modems, special devices allowing your computer to send the information through the telephone line, has opened doors to the Internet for millions of people whose number is growing with every day.

Nowadays the most popular Internet service is e-mail. Most of the people use the network only for sending and receiving e-mail messages. They can do it either they are at home or in the internet clubs or at work.

Another common service of the Internet is the Internet Relay Chat, or Chat. Chat allows a group of people, using aliases, to send messages to one another immediately. While used by a variety of age groups, it is especially popular among young people. Once connected, the user is brought into contact with a large number of users from all around the world.

The World Wide Web or the Web is the leading information retrieval service of the Internet. The Web gives users access to a vast array of documents that are connected to each other by means of hypertext or hypermedia links.

Other popular services are available on the Internet too. It is reading news, available on some dedicated news servers, telnet, FTP servers, etc.

In many countries, the Internet could provide businessmen with a reliable, alternative to the expensive and unreliable telecommunications systems its own system of communications. Commercial users can communicate cheaply over the Internet with the rest of the world. When they send e-mail messages, they only have to pay for phone calls to their local service providers, not for international calls around the world, when you pay a good deal of money.

But saving money is only the first step and not the last one. There is a commercial use of this network and it is drastically increasing. Now you can work through the internet, gambling and playing.

However, there are some problems. The most important problem is security. When you send an e-mail, your message can travel through many different networks and computers. The data is constantly being directed towards its destination by special computers called routers. Because of this, it is possible to get into any of the computers along the route, intercept and even change data being sent over the Internet. But there are many encoding programs available. Notwithstanding, these programs are not perfect and can easily be cracked.

Another big and serious problem of the net is control. Yes, there is no effective control in the Internet, because a huge amount of information circulating through the net. It is like a tremendous library and market together. In the future, the situation might change, but now we have what we have.

Active Vocabulary

Packet switching – пакетне переключення
dedicated – спеціально призначений
drastically – швидкий темп
Relay Chat – оперативний обмін текстовими повідомленнями
FTP servers – (File Transfer Protocol) ФТП-сервер
alias – псевдонім
retrieval service – служба доступу до баз даних з підтримкою їх вибірки
to intercept – перехопити (сигнал)
to encode – кодувати, шифрувати
notwithstanding – проте, однак
to crack – зламати

Comprehensive Questions

1. What is the Internet?
2. When and where did the history of Internet begin?
3. Why was the Internet designed?
4. What is modem?
5. Where are most of the Internet host computers?
6. What is the accurate number of Internet users?
7. What is the most popular Internet service today?
8. What are other popular available on the Internet?
9. What is the most important problem of the Internet?
10. Why is there no effective control in the Internet today?
11. Is there a commercial use of the network today?

Text Study

Exercise 1. Read and translate the word-combinations from the text.

A global computer network, a military experiment, to survive during a nuclear war, the shortest and safest path, sending and receiving e-mail messages, unreliable telecommunications systems, drastically increasing, intercept and change data, travel through many different networks, many encoding programs.

Exercise 2. Choose the necessary word and put it in the sentence.

1. The Internet is a … … which embraces hundreds of millions of users.
2. The Internet was … … designed to help to survive during a nuclear war.
3. Information sent over the Internet takes … … available from one computer to another.
4. Nowadays the most popular Internet service is … .
5. Chat allows a group of people, using …, to send messages to one another immediately.
6. … … can communicate cheaply over the Internet with the rest of the world.
7. The commercial use of the Internet is … increasing.
8. You can … and … through the Internet.
9. The most important problem is … .
10. Many encoding programs are available, but they are not … and can be easily … .

1. drastically
2. perfect, cracked
3. a military experiment
4. alias
5. work, play
6. security
7. e-mail
8. a global computer network
9. commercial use
10. the shortest and safest path

Exercise 3. Tell what sentences are true, what are false.

1. The Internet has not entered our ordinary life yet. 2. The Internet emerged in Great Britain in the 1970s. 3. Everybody knows exactly how many people use the Internet

today. 4. People can send or receive e-mail messages only at the internet clubs. 5. Chat allows a group of people, using aliases, to send messages to one another immediately. 6. Chat is especially popular among the adult people. 7. The World Wide Web or the Web is the leading information retrieval service of the Internet. 8. Other popular services are available on the Internet are reading news, telnet, FTP servers, etc. 9. Encoding programs are not perfect and can easily be cracked. 10. The Internet is like a tremendous library and market together.

Exercise 4. Translate into English.

1. Інтернет допомагає користувачам спілкуватися один з одним. 2. Всі знають, що Інтернет – це глобальна комп'ютерна мережа, яка охоплює сотні мільйони користувачів по всьому світу. 3. Комерційне використання Інтернету зростає швидким темпом. 4. Більшість людей використовує мережу для надсилання і отримання електронних повідомлень. 5. Мережа – це величезна бібліотека, де кожен може знайти будь-яку необхідну інформацію. 6. Я впевнений, що Інтернет допоміг би людям вижити в ході ядерної війни, коли б все було забруднене радіацією. 7. Багато незакодованих програм є не бездоганними, і можуть бути зламані. 8. Не можливо уявити сучасне життя без Інтернету. 9. Кількість користувачів Інтернету зростає швидким темпом з кожним днем. 10. Вона не знала, що немає ефективного контролю в Інтернеті через циркуляцію великої кількості інформації.

Lesson 16
Read and retell the text:

Computer Viruses

A computer virus is a malicious program with the purpose of harming your system. But what types of viruses exists? Let's look at some of them.

Companion viruses are a type of malware that do not modify existing files but instead create their own malicious copies with the same name as legitimate programs, using a different file extension. Their key feature is exploiting the way the operating system prioritizes file execution, allowing the virus to run instead of the real program.

What makes companion viruses particularly tricky is that they don't directly infect or alter legitimate files —they mimic them. This makes them harder to detect. While running, they can perform harmful actions such as deleting data, granting unauthorized access, or launching other malware —all without the user's awareness.

A **macro virus** is a type of malicious software that infects documents and uses built-in macros to execute harmful code. These viruses are most commonly found in Microsoft Office files (such as Word or Excel), where macros are small programs written in VBA (Visual Basic for Applications).

A macro virus is activated when a user opens an infected document and allows macros to run. Once triggered, the virus can spread to other documents, send data to

an attacker, or modify file contents. Macro viruses are particularly dangerous because they trick users into running malicious code under the appearance of ordinary documents. These viruses are usually transmitted through phishing emails.

Overwrite viruses are one of the most dangerous types of malware. They infect executable files by overwriting their contents with their own malicious code. Unlike other viruses, they completely destroy the original data, making file recovery impossible.

The danger of these viruses lies in the fact that the infected file loses its original function and becomes a source of further infection. Even antivirus programs are often unable to restore the corrupted files, as the virus replaces them irreversibly. This is why overwrite viruses are considered highly destructive and can cause serious damage to both individual users and corporate systems.

FAT viruses are malicious programs that target the FAT (File Allocation Table) file system, which is used to organize data on hard drives, USB flash drives, and other storage devices. The FAT system itself is a table that stores information about the location and order of file blocks on the disk.

FAT viruses modify or corrupt entries in this table, making files inaccessible or creating "fake files." This can lead to data loss, system malfunctions, and the inability to run programs. Because they attack the structure of data storage, these viruses are considered highly dangerous and can even infect boot sectors.

A **memory virus** is a type of malicious program that fully loads into the computer’s RAM and remains active only until the system is rebooted. These viruses do not write themselves to the hard drive, making them harder to detect with traditional antivirus software.

The key feature of memory viruses is that they exist solely in the temporary storage (RAM). They can intercept system calls, interfere with program operations, steal data, or spread other malicious components—all without leaving traces on the disk. Once the computer is restarted, the virus disappears unless another mechanism is used to reload it.

The danger of memory viruses lies in their stealth and ability to operate in real-time, silently affecting system behavior.

A **boot sector virus**is a type of malicious software that infects the boot sector of a hard drive, USB stick, or other storage device. The boot sector contains the initial code that runs when the computer is powered on, even before the operating system loads.

Boot viruses replace or modify this code to execute malicious actions at the earliest stage of startup. This makes them particularly dangerous, as they gain control over the system before the OS is fully launched. Such viruses can prevent the operating system from booting, infect other devices connected to the system, or hide from antivirus software.

They often spread through infected removable media, especially in systems where booting from USB or disk is enabled. Boot sector viruses are considered among the most stealthy and difficult-to-remove types of malware.

A **directory virus** is a type of malware that does not alter file contents but tricks the operating system by redirecting the path to executable files. Instead of launching the original program, the system runs the virus, which may then hand over control to the actual program to avoid raising suspicion.

The key feature of a directory virus is that it creates its own copies in the same directories as legitimate programs and registers itself in the system PATH ahead of the originals. As a result, when a typical command is run, the virus is executed first.

Directory viruses are dangerous due to their stealthy nature and ability to intercept execution without modifying the original files. They can be used to install other malicious components, steal data, or disrupt system operations.

A **direct action virus**is a type of malware that activates immediately after the infected file is executed. It performs its malicious task – such as infecting other files in the same directory and then terminates, without remaining in memory or deeply integrating into the system.

These viruses are relatively simple but can still cause harm, especially if the user is unaware of the infection. Their main advantage for attackers is speed and stealth.

Web script viruses are malicious programs written in languages commonly used in web development, such as JavaScript, VBScript, or HTML. They are embedded into web pages and executed in the user's browser when a compromised site is opened.

The main danger of these viruses is that they operate on the client side—that is, directly in the victim's browser without requiring the user to download or install anything. A script virus can, for example, redirect the user to a phishing site, steal cookies and session data, perform unauthorized actions on behalf of the user, or inject additional malicious code.

These scripts often find their way onto legitimate websites through security vulnerabilities, especially in outdated CMS platforms or insecure user input handling. Protection against web script viruses involves regularly updating the browser, using reliable antivirus software, and employing script-blocking extensions.

A **multipartite virus** is a type of malware that combines the characteristics of multiple virus types. Unlike most viruses, which typically spread through a single method (such as infected files or boot sectors), a multipartite virus can simultaneously attack several parts of a system-files, boot sectors, memory, and even document macros. Its main distinction is flexibility and adaptability. For example, it might infect the boot sector while also embedding itself into executable files. This makes detection and removal much more difficult: even if one component is found and deleted, another part may restore the virus. Multipartite viruses are considered especially dangerous due to their resilience, multi-level attack capability, and high level of stealth. They pose a serious threat to both home users and corporate systems.

And this list is not full, but then it could be really long. As you can see, viruses are quite unique in their implementations and exists to perform different tasks.

Active Vocabulary
a malicious program – зловмисна програма
companion viruses – віруси-компаньони
a type of malware – тип шкідливого програмного забезпечення
legitimate programs – законні програми
exploiting the way – використання того …
prioritizes file execution – пріоритетність виконання файлів
particularly tricky – особливо складний
to alter legitimate files – змінювати законні файли
to mimic smth. – імітувати шось
to trick users into running malicious code – обманом змушувати користувачів запускати шкідливий код
executable files – файли, які виконцються
to restore the corrupted files – відновити пошкоджені файли
irreversibly – безповоротньо
to be considered highly destructive – вважатися дуже руйнівним
target the file system – націлений на файлову систему
stealth and ability – прихованість і здатність
a boot sector virusis – вірус завантажувального сектора
to gain control – отримати контроль
a directory virus – вірус каталогу
a direct action virusis – вірус прямої дії
employing script-blocking extensions - використання розширень для блокування скриптів
multi-level attack capability – здатність до багаторівневої атаки
to pose a serious threat – становити серйозну загрозу

Comprehensive Questions

1. What is a computer virus?
2. What is the key feature of companion viruses?
3. Where are macro viruses most commonly found in?
4. How is macro virus activated?
5. How do overwrite viruses infect executable files by?
6. Why are overwrite viruses considered highly destructive?
7. What do FAT viruses target?
8. What is the FAT system itself?
9. Why are the FAT viruses considered highly dangerous?
10. How long do the memory viruses remain active?
11. What is the key feature of memory viruses?
12. How do memory viruses affect the temporary storage?

Text Study

Exercise 1. Read and translate the word-combinations from the text.
A malicious program; own malicious copies; a different file extension; harmful actions; user's awareness; a macro virus; built-in macros; the infected file; a source of

further infection; FAT viruses; system malfunctions; the structure of data storage; a memory virus; the temporary storage; a boot sector virusis; the earliest stage of startup; difficult-to-remove types of malware; a direct action virusis; speed and stealth; web development; the user's browser; the main danger; a script virus; legitimate websites; a multipartite virus; flexibility and adaptability; high level of stealth; to be quite unique in implementations.

Exercise 2. Give the English equivalents for the following word combinations.
Шкідлива програма; види вірусів; законні програми; розширення файлу; запускатися замість реальноі програми; надання несанкціонованого доступу; шкідливий код; зловмисник; первісна функція; джерело подальшого зараження; пошкоджені файли; організація даних на жорстких дисках, флеш-накопичувачах USB та інших пристроях зберігання даних; інформацію про розташування та порядок файлових блоків; тимчасове сховище; скритність та здатність працювати в режимі реального часу, мовчки впливаючи на поведінку системи; завантажувальні віруси; самий ранній етап запуску; викрадення даних або порушення роботи системи; зловмисне завдання; віруси веб-скриптів; скомпрометованого сайту; багатосторонній вірус; гнучкість і адаптивність; стійкість та здатність до багаторівневої атаки; серйозна загроза; виконання різних завдань.

Exercise 3. Choose the necessary word and put it in the sentence.

1. Companion viruses are a type of … that do not modify existing files.
2. What makes companion viruses particularly tricky is that they don’t directly infect or alter … - they mimic them.
3. A macro virus is activated when a user opens … and allows macros to run.
4. The FAT system itself is a table that stores information about the location and … on the disk.
5. The key feature of memory viruses is that they exist solely in … .
6. Boot sector viruses are considered among the most stealthy and … types of malware.
7. Web script viruses are malicious programs written in languages commonly used in web development.
8. A script virus can, for example, redirect the user to … , steal cookies and session data.
9. Multipartite viruses are considered especially dangerous due to their resilience, … , and high level of stealth.
10. Viruses are quite unique in their … and exists to perform different tasks.

a. the temporary storage
b. multi-level attack capability
c. web development
d. an infected document
e. malware
f. a phishing site
g. legitimate files
h. implementations
i. order of file blocks
j. difficult to remove

Exercise 4. Translate into English.

1. Комп'ютерний вірус — це шкідлива програма, призначена для завдання шкоди вашій системі. 2. Супутні віруси — це тип шкідливого програмного забезпечення, яке не змінює існуючі файли. 3. Головна особливість супутних вірусів полягає у використанні способу, яким операційна система визначає пріоритет виконання файлів. 4. Макровіруси найчастіше зустрічаються у файлах Microsoft Office 5. Після запуску вірус може надсилати дані зловмиснику, поширюватися на інші документи або змінювати вміст файлів. 6. На відміну від інших вірусів, віруси-перезаписувачі повністю знищують вихідні дані, що унеможливлює відновлення файлів. 7. Навіть антивірусні програми часто не можуть відновити пошкоджені файли, оскільки вірус замінює їх безповоротно. 8. Віруси FAT змінюють або пошкоджують записи в таблиці, яка зберігає інформацію про розташування та порядок файлових блоків на диску, роблячи файли недоступними або створюючи «фальшиві файли». 9. Віруси пам'яті не записуються на жорсткий диск, що ускладнює їх виявлення за допомогою традиційного антивірусного програмного забезпечення. 10. Небезпека вірусів пам'яті полягає в їхній прихованості та здатності працювати в режимі реального часу, непомітно впливаючи на поведінку системи. 11. Завантажувальний сектор містить початковий код, який виконується при ввімкненні комп'ютера, ще до завантаження операційної системи. 12. Такі віруси, як завантажувальні, можуть ховатися від антивірусного програмного забезпечення, заражати інші пристрої, підключені до системи, або перешкоджати завантаженню операційної системи. 13. Замість запуску оригінальної програми система запускає вірус, який потім може передати контроль фактичній програмі, щоб не викликати підозри. 14. Віруси-каталоги можуть використовуватися для порушення роботи системи, встановлення інших шкідливих компонентів або викрадення даних. 15. Віруси прямої дії є відносно простими, але все одно можуть завдати шкоди, особливо якщо користувач не знає про інфікування. 16. Скриптовий вірус може, наприклад, перенаправити користувача на фішинговий сайт, викрасти файли cookie та дані сеансу, виконати несанкціоновані дії від імені користувача або ввести додатковий шкідливий код. 17. Захист від веб-скриптів-вірусів передбачає регулярне оновлення браузера, використання надійного антивірусного програмного забезпечення та застосування розширень для блокування скриптів. 18. Багатокомпонентний вірус — це тип шкідливого програмного забезпечення, що поєднує в собі характеристики декількох типів вірусів.

Lesson 17

Read and retell the text:

Artificial intelligence: A revolution in 21st century science

In the modern world, science is undergoing a real revolution, and one of the main drivers of these changes is artificial intelligence (AI). What seemed like science fiction a few decades ago has become a reality today. AI doesn't just help scientists – it changes the very essence of scientific work, enabling us to reach new heights in our knowledge of the world.

AI is a new scientific tool

Artificial intelligence in science is not just a buzzword. It is a tool that can perform tasks that humans are not always able to handle. Processing terabytes of information, building complex mathematical models, identifying patterns in chaotic data – all of this is made possible by neural networks and machine learning algorithms.

In the past, scientific discoveries could take years or even decades. Today, artificial intelligence reduces this time by several times. For example, instead of many months of calculations, a computer system can model the behaviour of a new molecule or predict the results of an experiment in a few minutes. This accelerates the development of medicine, physics, biology, chemistry, and other fields.

Medical breakthroughs thanks to AI

In medicine, AI is already saving lives. Algorithms analyse medical images faster and more accurately than human radiologists. For example, machine vision systems can detect tumours at early stages when treatment is most effective.

Another important area is the development of new drugs. It used to take years to find a potential active ingredient. Now, neural networks search through millions of compounds in a matter of days, predicting their effectiveness and safety. This makes it possible to significantly speed up the development of medicines, including in the case of pandemics or new viruses.

Space, Genetics, and Climate

Astronomy has also been transformed by AI. Telescopes collect huge amounts of data that can no longer be viewed by humans. Artificial intelligence automatically finds new stars, planets, and cosmic phenomena. Thousands of exoplanets have already been discovered using such technologies.

In the field of genetics, AI helps to decode genomes. This allows for a better understanding of the mechanisms of heredity, detection of genetic diseases, and creation of personalised medicine.

The role of AI in climate research is no less important. Weather and climate change forecasting models are becoming increasingly accurate thanks to deep data analysis and neural networks. This helps to plan measures to reduce the effects of global warming.

Challenges and Ethical Issues

Despite all the benefits, the use of AI in science poses new challenges to humanity. The issue of ethics is becoming increasingly relevant. How to control the processes that a machine performs independently? Who is responsible for artificial intelligence mistakes?

In addition, there are concerns that automation will lead to job losses for scientists. However, most experts believe that AI will not replace humans but will become their assistant, allowing them to focus on creative and strategic tasks.

The Future of Science with AI

Artificial intelligence is becoming an integral part of scientific progress. It allows us to explore what was previously impossible and open up new horizons of knowledge. We are only at the beginning of this journey, but we can already say that AI science is the future that is becoming a reality before our eyes.

Active Vocabulary

a buzzword – модний термін
neural networks – нейромережі
medical breakthroughs – медичні прориви
to detect tumours at early stages – виявляти пухлини на ранніх стадіях
in a matter of days – за лічені дні
the mechanisms of heredity – механізми спадковості
creation of personalised medicine – створення персоналізованої медецини
to plan measures – планувати заходи
to pose new challenges to humanity – ставити нові виклики перед людством
the issue of ethics – питання етики
to become increasingly relevant – стати дедалі актуальнішим
there are concerns – існують побоювання

TEXT STUDY

Exercise 1. Read and translate the word-combinations from the text.

Artificial intelligence; scientific revolution; science fiction; a scientific tool; neural networks; machine learning algorithms; complex mathematical models; chaotic data; scientific discoveries; medical breakthroughs; medical images; early detection of tumours; drug development; active ingredient; space exploration; huge amounts of data; cosmic phenomena; genetic diseases; personalised medicine; climate change forecasting; global warming; ethical issues; automation; creative and strategic tasks; scientific progress; new horizons of knowledge.

Exercise 2. Give the English equivalents for the following word combinations.

Штучний інтелект; наукова революція; науково-фантастичні ідеї; сутність наукової роботи; обробка великих обсягів інформації; машинне навчання; математичні моделі; наукові відкриття; розвиток медицини; медичні зображення; ранні стадії захворювань; розробка нових ліків; безпека та ефективність препаратів; космічні дослідження; відкриття екзопланет; генетичні хвороби; персоналізована медицина; прогнозування клімату; глобальне потепління; етичні питання; автоматизація праці; втрата робочих місць; творчі завдання; науковий прогрес; майбутнє науки.

Exercise 3. Choose the necessary word and put it in the sentence.

1. Artificial intelligence has become one of the main drivers of the scientific …… .	1) Assistant 2) patterns

2. AI can process huge amounts of data and identify ….. in chaotic information. 3. Neural networks and ….. algorithms are widely used in modern science. 4. In medicine, AI analyses ….. faster than humans. 5. Early detection of tumours increases the chances of ….. treatment. 6. AI helps scientists speed up the process of ….. development. 7. In astronomy, AI helps to discover new stars and ….. . 8. In genetics, AI makes it possible to detect ….. diseases. 9. Climate change forecasting models are becoming more ….. thanks to AI. 10. Most experts believe that AI will not replace scientists but will become their ….. .	3) Accurate 4) medical images 5) successful 6) machine learning 7) revolution 8) exoplanets 9) drug 10) genetic

Exercise 4. Read the sentences and say if they are true (T) or false (F).

1. Artificial intelligence was considered science fiction only a few years ago.
2. AI helps scientists process large amounts of data and build complex models.
3. Scientific discoveries still take decades despite the use of artificial intelligence.
4. In medicine, AI can analyse medical images more accurately than human radiologists.
5. Artificial intelligence slows down the development of new drugs.
6. AI is widely used in astronomy to analyse data from telescopes.
7. Artificial intelligence helps decode genomes and detect genetic diseases.
8. Climate change forecasting has become less accurate with the use of AI.
9. One of the main challenges of AI in science is the ethical issue.
10. Most experts believe that AI will completely replace scientists in the future.

Exercise 5. Translate into English.

1. Одним з головних рушіїв змін в науці є штучний інтелект.
2. ШІ не просто допомагає вченим – він змінює саму суть наукової роботи, дозволяючи нам досягти нових висот у наших знаннях світу.
3. Штучний інтелект у науці – це інструмент, який може виконувати завдання, з якими люди не завжди здатні впоратись.
4. Штучний інтелект прискорює розвиток медицини, фізики, хімії, біології та інших галузей.
5. У медицині штучний інтелект вже рятує життя.
6. Штучний інтелект дає можливість значно прискорити розробку ліків, в тому числі у разі пандемії або нових вірусів.
7. Штучний інтелект автоматично знаходять нові зірки, планети та космічні явища.
8. У галузі генетики ШІ допомагає краще зрозуміти механізми спадковості, виявити генетичні захворювання та створити персоналізовану медицину.

9. Незважаючи на всі переваги, використання штучного інтелекту в науці створює нові виклики для людства.
10. Більшість експертів вважають, що штучний інтелект не замінить людей, а стане їхнім помічником, що дозволить їм зосередитись на творчих та стратегічних завданнях.
11. Штучний інтелект стає невід'ємною частиною наукового прогресу.
12. Ми лише на початку цієї подорожі, але ми вже можемо сказати, що наука про штучний інтелект – це майбутнє, яке стає реальністю на наших очах.

Glossary

Access (to sth.) 1) the chance or right to use or have sth.: Do you have access to a personal computer? 2) to find information on a computer: Click on the icon to access a file.

address a series of words and /or numbers that tells you where you can find sth using a computer: What's your e-mail address?

buffer an area in a computer's memory where data can be stored for a short time.
CD-R a CD on which information, sound and pictures can be recorded once only (an abbreviation for "compact disc recordable").
CD-RW a CD on which information, sound and pictures can be recorded and removed more than once (an abbreviation for "compact disc rewritable").
CD-ROM a CD on which large amounts of information, sound an pictures can be stored, for use on a computer (an abbreviation for "compact disc read-only-memory"): The software package contains 5 CD-ROMs.
chat room an area on the Internet where you can join in a discussion.
computer an electronic machine that can store, find and arrange information, calculate amounts and control other machines: The bills are all done by computer *a computer programme * a home/personal computer computer software / games.
computer-literate able to use a computer.
computerize (also –ise) to use computers to do a job or to store information**:** The whole factory has been computerized.
We have now computerized the library catalogue.
computing the use of computers: She did a course in computing.
cybercafé a place with computers where customers can pay to use the Internet.
data facts or information: to gather/collect data * data capture/retrieval (= ways of storing and looking at information on a computer).
database a large amount of data that is stored in a computer and can easily be used, added to, etc.
desktop 1) a computer screen on which you can see icons (= symbols) showing the programmes, information, etc that are available to be used; 2) also desktop computer – a computer that can fit on a desk.
disk drive a piece of electrical equipment that passes information to or from a computer disk.
display words, pictures, etc. that can be seen on a computer screen.
DOS (abbr.) disc operating system.
download to copy a computer file, etc. from a large computer system to a smaller one.
DVD (digital videodisc or digital versatile disc) a disc on which large amounts of information, especially photographs and video, can be stored, for use on a computer or DVD player: Is it available on DVD yet? * a DVD-ROM drive.
e-mail (email) 1) a way of sending electronic messages and data from one computer to another: to send a message by email; 2) a message or messages sent by email: I'll send you an e-mail tomorrow.
FAQ (abbr.) used in writing to mean "frequently asked questions".
fax (fax machine) 1) the machine that you use for sending faxes: Have you got a fax? * What's your fax number?
2) a copy of a letter, etc. that you can send by telephone lines using a special machine: They need an answer today so I'll send a fax. The company contacted us by fax.
file a collection of information or material on one subject that is stored together in

a computer or on a disk, with a particular name: to open/close a file * to create/delete/save/copy a file.

floppy disk (also floppy (pl. floppies) or diskette) a square piece of plastics that can store information from a computer: Don't forget to back up your files onto a floppy disk.

gamer a person who likes playing computer games.

game play the features of a computer game, such as its story or the way it is played, rather than the images or sounds it uses.

gaming playing computer games.

hard disk a piece of hard plastic that is fixed inside a computer and is used for storing data and programmes permanently.

hardware the machinery and electronic parts of a computer system.

icon a small picture or symbol on a computer screen that represents a programme: Click on the printer icon with the mouse.

input 1) the act of putting information into a computer: The computer breakdown means we have lost the whole day's input. 2) to put information into a computer: to input text/data figures.

Internet (usually the Internet (also informal the Net) the international system of computers that makes it possible for you to see information from all round the world on your computer and to send information to other computers: I read about it on the Internet. * Do you have Internet access?

keyboard the set of keys on a piano, computer, etc.

laptop a small computer that is easy to carry and that can use batteries for power: Kate took her laptop to Korea.

log in/on to perform the actions that allow you to start using a computer system: You need to key in your password to log on.

log off/out to perform the actions that allow you to finish using a computer system.

look sth. up to search for information in a book, in the Internet: to look up a word in a dictionary.

megabyte (MB) a unit of computer memory, equal to 220 bytes (= small units of information): a 40-megabyte hard disk.

memory the part of a computer where information is stored: This computer has a 640 k memory/ 640 k of memory.

message a written or spoken piece of information that you send or leave for a person when you cannot speak to them: an email message.

message board a place on a website where a user can write or read messages: I posted a question on the message board.

microprocessor a small unit of a computer that contains all the functions of the Central Processing unit.

modem a piece of equipment that connects two or more computer together by means of a telephone line so that information can go from one to the other.

monitor a machine that shows information or pictures on a screen like a TV: a PC with a 17-inch colour monitor.

mouse a piece of equipment, connected to a computer, for moving around the

screen and entering commands without touching the keys:
Use the mouse to drag the icon to a new position.

mouse mat (US mouse pad) a small piece of material that is the best kind of surface on which to use a computer mouse.

network a number of computers that are connected together so that information can be shared: The network allows users to share files.

online controlled by or connected to a computer or to the Internet: an online ticket booking system * I'm studying French online.

offline not directly controlled by or connected to a computer or the Internet: For offline orders, call this number. * Could you tell me how to write an email offline?

output the information that a computer produces: data output.

password a series of letters or numbers that you must type into a computer or computer system in order to be able to use it:
Please enter your password.

PC (personal computer) a computer that is designed for one person to use at work or at home.

print sth. out to print information from a computer onto paper:
I'll just print out this file.

printer a machine that prints out information from a computer onto paper: a laser printer.

process to deal with information, for example on a computer: It will take about ten days to process your application.

program a set of instructions that you give to a computer so that it will do a particular task: to write a program.

programmer a person whose job is to write programs for a computer.

RAM (random access memory) computer memory in which data can be changed or removed and can be looked at in any order: 32 megabytes of RAM.

retrieve to find information that has been stored on a computer:
The computer can retrieve all the data about a particular customer.

ROM (read-only-memory) computer memory that contains instructions or data that cannot be changed or removed.

scan to pass light over a picture or document using a scanner (= an electronic machine) in order to copy it and put it in the memory of a computer.

scanner an electronic machine that can look at, record or send images or electronic information: I used the scanner to send the document by email.

screen the glass surface of a TV or computer where the picture or information appears.

search engine a computer program that searches the Internet for information.

searcher a program that allows you to look for particular information on a computer.

software the programs, etc. used to operate a computer:
There's a lot of new educational software available now.

spreadsheet a computer program for working with rows of numbers, used especially for doing accounts.

store to keep sth. or a supply of sth. for future use: to store information on a computer.
surf the Net to use the Internet.
telnet a computer system which allows you to use data and programs on another computer; a connection made using this system.
telex 1) an international system of communication in which messages are typed on a special machine and sent by the telephone system; 2) a message sent or received by telex; 3) (informal) a machine for sending and receiving messages by telex; 4) to send a message by telex.
terminal the computer that one person uses for getting information from a central computer or for putting information into it.
type to write sth. using a computer or typewriter: How fast can you type? * Type (in) the filename, then press “Return”.
upload to move data to a larger computer system from a smaller one.
URL (uniform/universal resource locator) the address of a World Wide Web page.
usenet a service on the Internet used by groups of users who email each other because they share a particular interest.
user a person who uses a service, machine, place, computer, etc.: computer software users.
usergroup a group of people who use a particular thing and who share information about it, especially people who share information about computers on the Internet.
username the name you use in order to be able to use a computer program or system: Please enter your username.
VDU (visual display unit) a screen on which you can see information from a computer.
virus instructions that are put into a computer program in order to stop it working properly and destroy information.
virtual made to appear to exist by using a computer: virtual reality.
web (the Web) = World Wide Web: I looked it up on the Web.
webcam a video camera that is connected to a computer so that what it records can be seen on a website as it happens.
weblog (blog) a personal record that smb. puts on their website. In their blogs, people usually write about things that interest them and about other websites that they have visited.
web page a document connected to the World Wide Web, usually forming part of a website, that anyone with an Internet connection can see: We learned how to create and register a new web page.
website (also site) a place connected to the Internet where a company, an organization or an individual person puts information: I found it on their website. * Visit our website to learn more.
Wi-Fi a system for sending data over a computer networks using radio waves instead of wires (the abbreviation for “wireless fidelity”).
window an area within a frame on a computer screen, in which a particular program is operating or in which information of a particular type is

shown: to create / to open a window.

word processor (processing) a type of computer that you can use for writing letters, reports, etc. You can correct or change what you have written before you print it out.

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