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«Кунгурский колледж агротехнологий и управления»



МЕТОДИЧЕСКИЕ РЕКОМЕНДАЦИИ ПО ВЫПОЛНЕНИЮ
ПРАКТИЧЕСКИХ РАБОТ

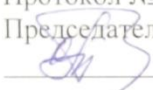
ПО ДИСЦИПЛИНЕ

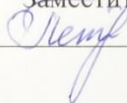
ОГСЭ.04 Иностранный язык

по специальности

09.02.07 Информационные системы и программирование

2023 г.

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Председатель МК
 О.Б.Тихонова

Утверждаю
Заместитель директора
 Л.И.Петрова.

Составитель:

Шубина Татьяна Александровна, преподаватель

Ф.И.О., должность

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ПОЯСНИТЕЛЬНАЯ ЗАПИСКА

Методические рекомендации к выполнению практических работ по дисциплине «Иностранный язык в профессиональной деятельности» предназначены для организации работы студентов 2-4 курсов очного отделения по специальности 09.02.07 Информационные системы и программирование.

Согласно учебного плана обязательная аудиторная учебная нагрузка составляет 168 часов, в том числе 168 часов составляют практические занятия. В связи с практической направленностью дисциплины разработано 42 практические работы, по 4 часа на каждую тему.

Практические работы позволяют закрепить, систематизировать и определить уровень знаний и умений.

В рамках программы учебной дисциплины обучающимися осваиваются умения изнания:

Код ОК	Умения	Знания
ОК 01 ОК 02 ОК 04 ОК 09	общаться (устно и письменно) на иностранном языке на профессиональные и повседневные темы; переводить (со словарем) иностранные тексты профессиональной направленности; самостоятельно совершенствовать устную и письменную речь, пополнять словарный запас.	– лексический (1200-1400 лексических единиц) и грамматический минимум, необходимый для чтения и перевода (со словарем) иностранных текстов профессиональной направленности.

Результаты (основные общие компетенции)	Основные показатели результатов подготовки
ОК 01. Выбирать способы решения задач профессиональной деятельности применительно к различным контекстам	- проявлять интерес к различным сферам профессиональной деятельности, -определять цели деятельности, задавать параметры и критерии их достижения; - выявлять причинно-следственные связи и актуализировать задачу, выдвигать гипотезу ее решения, находить аргументы для доказательства своих утверждений, задавать параметры и критерии решения;

<p>ОК 02. Использовать современные средства поиска, анализа и интерпретации информации, и информационные технологии для выполнения задач профессиональной деятельности</p>	<ul style="list-style-type: none"> - владеть навыками получения информации из источников разных типов, самостоятельно осуществлять поиск, анализ, систематизацию и интерпретацию информации различных видов и форм представления; - оценивать достоверность, легитимность информации, ее соответствие правовым и морально-этическим нормам; - владеть навыками распознавания и защиты информации, информационной безопасности личности
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КРИТЕРИИ ОЦЕНИВАНИЯ

Критерии оценки выполнения фонетических, лексических и грамматических упражнений (тестов)

Отметка «5» Задания выполнены на 90-100%

Отметка «4» Задания выполнены на 75-89%

Отметка «3» Задания выполнены на 50-74%

Отметка «2» Задания выполнены менее чем на 50%

Критерии оценки письменных развернутых ответов

Отметка «5» Коммуникативная задача решена полностью, применение лексики адекватно коммуникативной задаче, грамматические ошибки либо отсутствуют, либо не препятствуют решению коммуникативной задачи

Отметка «4» Коммуникативная задача решена полностью, но понимание текста незначительно затруднено наличием грамматических и/или лексических ошибок.

Отметка «3» Коммуникативная задача решена, но понимание текста затруднено наличием грубых грамматических ошибок или неадекватным употреблением лексики.

Отметка «2» Коммуникативная задача не решена ввиду большого количества лексико-грамматических ошибок или недостаточного объема текста.

Критерии оценки техники чтения

«5» Речь воспринимается легко: необоснованные паузы отсутствуют; фразовое ударение и интонационные контуры, произношение слов практически без нарушений нормы; допускается не более 2-х фонетических ошибок;

«4» Речь воспринимается достаточно легко, однако присутствуют необоснованные паузы; фразовое ударение и интонационные контуры практически без нарушений нормы; допускается от 3 до 5 фонетических ошибок, в том числе 1-2 ошибки, искажающие смысл;

«3» Речь воспринимается достаточно легко, однако присутствуют необоснованные паузы; есть ошибки в фразовых ударениях и интонационных контурах; допускается от 5 до 7 фонетических ошибок, в том числе 3 ошибки, искажающие смысл;

«2» Речь не воспринимается из-за необоснованных пауз; неправильных фразовых ударений и искаженных интонационных контуров И\ИЛИ 8 и более фонетических ошибок.

Критерии оценки перевода текста

Оценка «отлично»

Перевод полный, без пропусков и произвольных сокращений текста оригинала, не содержит фактических ошибок. Терминология использована правильно.

Перевод отвечает системно-языковым нормам и стилю языка перевода.

Адекватно переданы культурные и функциональные параметры исходного текста.

Допускаются некоторые погрешности в форме предъявления перевода.

Оценка «хорошо»

Перевод полный, без пропусков и произвольных сокращений текста оригинала, допускается одна фактическая ошибка, при условии отсутствия потерь информации и стилистических погрешностей на других фрагментах текста.

Имеются несущественные погрешности в использовании терминологии.

Перевод в достаточной степени отвечает системно-языковым нормам и стилю языка перевода.

Культурные и функциональные параметры исходного текста в основном адекватно переданы.

Коммуникативное задание реализовано, но недостаточно оптимально.

Допускаются некоторые нарушения в форме предъявления перевода.

Оценка «удовлетворительно»

Перевод содержит фактические ошибки.

Низкая коммуникативность и плохая «читабельность» текста затрудняют его понимание рецептором.

При переводе терминологического аппарата не соблюден принцип единообразия.

В переводе нарушены системно-языковые нормы и стиль языка перевода.

Неадекватно решены проблемы реализации коммуникативного задания.

Имеются нарушения в форме предъявления перевода.

Оценка «неудовлетворительно»

Перевод содержит много фактических ошибок.

Нарушена полнота перевода, его эквивалентность и адекватность.

В переводе грубо нарушены системно-языковые нормы и стиль языка перевода.

Коммуникативное задание не выполнено.

Грубые нарушения в форме предъявления перевода.

Критерии оценки монологического и диалогического высказываний:

«5»

Соблюден объем высказывания. Высказывание соответствует теме, отражены все аспекты, указанные в задании, стилевое оформление речи соответствует типу задания, аргументация на уровне, нормы вежливости соблюдены.

Адекватная естественная реакция на реплики собеседника. Проявляется речевая инициатива для решения поставленных коммуникативных задач.

Лексика адекватна поставленной задаче и требованиям данного года обучения языку.

Использованы разные грамматические конструкции в соответствии с задачей и требованиям данного года обучения языку. Редкие грамматические ошибки не мешают коммуникации.

Речь звучит в естественном темпе, нет грубых фонетических ошибок.

«4»

Не полный объем высказывания. Высказывание соответствует теме; не отражены некоторые аспекты, указанные в задании, стилевое оформление речи соответствует типу задания, аргументация не всегда на соответствующем уровне, но нормы вежливости соблюдены.

Коммуникация немного затруднена.

Лексические ошибки незначительно влияют на восприятие речи учащегося.

Грамматические незначительно влияют на восприятие речи учащегося.

Речь иногда неоправданно паузирована. В отдельных словах допускаются фонетические ошибки (замена, английских фонем сходными русскими). Общая интонация обусловлена влиянием родного языка.

«3»

Незначительный объем высказывания, которое не в полной мере соответствует теме; не отражены некоторые аспекты, указанные в задании, стилевое оформление речи не в полной мере соответствует типу задания, аргументация не на соответствующем уровне, нормы вежливости не соблюдены.

Коммуникация существенно затруднена, учащийся не проявляет речевой инициативы.

Учащийся делает большое количество грубых лексических ошибок.

Учащийся делает большое количество грубых грамматических ошибок.

Речь воспринимается с трудом из-за большого количества фонетических ошибок. Интонация обусловлена влиянием родного языка.

«2»

Учащийся не понимает смысла задания. Аспекты указанные в задании не учтены. Коммуникативная задача не решена. Учащийся не может построить высказывание. Учащийся не может грамматически верно построить высказывание. Речь понять не возможно.

Практическая работа № 1.

"Tomorrow's Robotics Today"

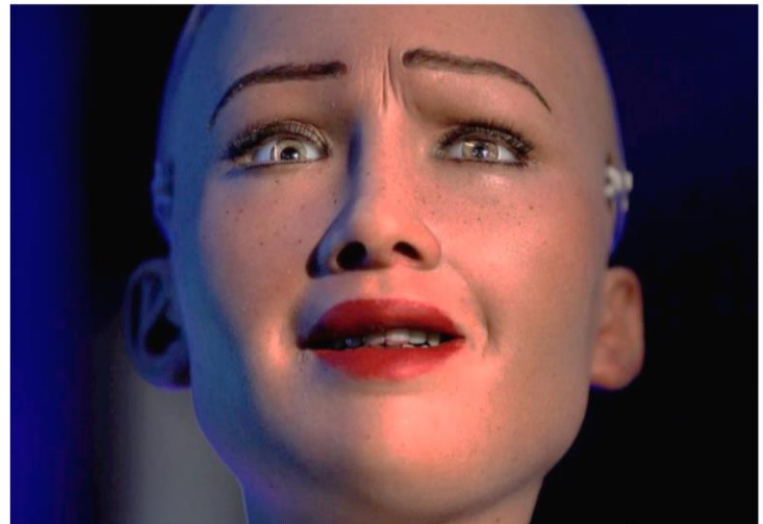
A robot is a machine—especially one programmable by a computer— capable of carrying out a complex series of actions automatically. Robots can be guided by an external control device or the control may be embedded within. Robots may be constructed on the lines of human form, but most robots are machines designed to perform a task with no regard to their aesthetics.

The branch of technology that deals with the design, construction, operation, and application of robots, as well as computer systems for their control, sensory feedback, and information processing is robotics. These technologies deal with automated machines that can take the place of humans in dangerous environments or manufacturing processes, or resemble humans in appearance, behavior, or cognition. Many of today's robots are inspired by nature contributing to the field of bio-inspired robotics. These robots have also created a newer branch of robotics: soft robotics.

Androids

An android is a robot or other artificial being designed to resemble a human, and often made from a flesh-like material. Historically, androids were completely within the domain of science fiction and frequently seen in film and television, but recent advances in robot technology now allow the design of functional and realistic humanoid robots.

Sophia is a social humanoid robot developed by Hong Kong based company Hanson Robotics. Sophia was activated on February 14, 2016, and made her first public appearance at South by Southwest Festival (SXSW) in mid-March 2016 in Austin, Texas, United States. She is able to display more than 60 facial expressions.



Sophia has been covered by media around the globe and has participated in many high-profile interviews. In October 2017, Sophia became a Saudi Arabian citizen, the first robot to receive citizenship of any country. In November 2017, Sophia was named the United Nations Development Programmer's first ever Innovation Champion, and is the first non-human to be given any United Nation title.

Cameras within Sophia's eyes combined with computer algorithms allow her to see. She can follow faces, sustain eye contact, and recognize individuals. She is able to process speech and have conversations using a natural language subsystem. Around January 2018 Sophia was upgraded with functional legs and the ability to walk.

Hiroshi Ishiguro is director of the Intelligent Robotics Laboratory, part of the Department of Systems Innovation in the Graduate School of Engineering Science at Osaka University, Japan. A notable development of the laboratory is the Actroid, a humanoid robot with lifelike appearance and visible behavior such as facial movements.

Ishiguro has made an android that resembles him, called the Geminoid. The Geminoid was among the robots featured by James May in his 5 October 2008 BBC2 documentary on robots Man-Machine in May's series Big Ideas. He also introduced a telecommunication robot called the Telenoid R1. Hiroshi also uses the android to teach his classes at Osaka University of Japan and likes to scare his students by making Geminoid do human-like movements like blinking, "breathing" and fidgeting with his hands. Ishiguro has been listed, in 2011, as one of the 15 Asian Scientists to Watch by Asian Scientist Magazine. In 2018, Ishiguro was interviewed interacting with one of his

robots for the documentary on artificial intelligence.



Whether each of us will have a geminoid in the future remains to be seen. But lifelike androids are already helping Ishiguro and others explore some of the pressing questions in human-robot interaction. What do people expect from robots? What social behaviors should they exhibit? And how do we get their look right? In the coming years, researchers will have to answer these questions to come up with design principles for building the next generation of social robots.

Ishiguro, for his part, believes that robotic telepresence will become a major communication medium over the next decade. Eventually, he speculates, humanlike robots will become truly integrated into society—not just for factory automation or as labor-saving devices but as replacements for someone’s physical presence. A future where androids may become so advanced that we’re unable to distinguish them from ourselves doesn’t frighten Ishiguro.

“Humankind is always trying to replace human abilities with machines. That’s our history,” he says. “I’m doing the same thing. Nothing special”.

Industrial robots

Electronics evolved into the driving force of development with the advent of the first electronic autonomous robots created by William Grey Walter in Bristol, England in 1948, as well as Computer Numerical Control (CNC) machine tools in the late 1940s

by John T. Parsons and Frank L. Stulen. The first commercial, digital and programmable robot was built by George Devol in 1954 and was named the Unimate. It was sold to General Motors in 1961 where it was used to lift pieces of hot metal from die casting machines at the Inland Fisher Guide Plant in the West Trenton section of Ewing Township, New Jersey.

Robots have replaced humans] in performing repetitive and dangerous tasks which humans prefer not to do, or are unable to do because of size limitations, or which take place in extreme environments such as outer space or the bottom of the sea. Industrial robots usually consist of a jointed arm (multi-linked manipulator) and an end effector that is attached to a fixed surface. One of the most common type of end effector is a gripper assembly.

The International Organization for Standardization gives a definition of a manipulating industrial robot in ISO 8373: "an automatically controlled, reprogrammable, multipurpose, manipulator programmable in three or more axes, which may be either fixed in place or mobile for use in industrial automation applications." This definition is used by the International Federation of Robotics, the European Robotics Research Network (EURON) and many national standards committees.

Most commonly industrial robots are fixed robotic arms and manipulators used primarily for production and distribution of goods. The term "service robot" is less well-defined. The International Federation of Robotics has proposed a tentative definition, "A service robot is a robot which operates semi- or fully autonomously to perform services useful to the well-being of humans and equipment, excluding manufacturing operations

Mining robots

Mining robots are designed to solve a number of problems currently facing the mining industry, including skills shortages, improving productivity from declining ore grades, and achieving environmental targets. Due to the hazardous nature of mining, in particular underground mining, the prevalence of autonomous, semi-autonomous, and tele-operated robots has greatly increased in recent times. A number of vehicle manufacturers provide autonomous trains, trucks and loaders that will load material, transport it on the mine site to its destination, and unload without requiring human intervention. One of the world's largest mining corporations, Rio Tinto, has recently expanded its autonomous truck fleet to the world's largest, consisting of 150 autonomous Komatsu trucks, operating in Western Australia. Similarly, BHP has announced the expansion of its autonomous drill fleet to the world's largest, 21 autonomous Atlas Copco drills.

Drilling, longwall and rockbreaking machines are now also available as autonomous robots.[168] The Atlas Copco Rig Control System can autonomously

execute a drilling plan on a drilling rig, moving the rig into position using GPS, set up the drill rig and drill down to specified depths. Similarly, the Transmin Rocklogic system can automatically plan a path to position a rockbreaker at a selected destination. These systems greatly enhance the safety and efficiency of mining operations.

Swarm robots

Inspired by colonies of insects such as ants and bees, researchers are modeling the behavior of swarms of thousands of tiny robots which together perform a useful task, such as finding something hidden, cleaning, or spying. Each robot is quite simple, but the emergent behavior of the swarm is more complex. The whole set of robots can be considered as one single distributed system, in the same way an ant colony can be considered a superorganism, exhibiting swarm intelligence. The largest swarms so far created include the iRobot swarm, the SRI/Mobile Robots CentiBots project and the Open-source Micro-robotic Project swarm, which are being used to research collective behaviors. Swarms are also more resistant to failure. Whereas one large robot may fail and ruin a mission, a swarm can continue even if several robots fail. This could make them attractive for space exploration missions, where failure is normally extremely costly.

A collaborative robot or cobot is a robot that can safely and effectively interact with human workers while performing simple industrial tasks. However, end-effectors and other environmental conditions may create hazards, and as such risk assessments should be done before using any industrial motion-control application. The collaborative robots most widely used in industries today are manufactured by Universal Robots in Denmark.

Rethink Robotics—founded by Rodney Brooks, previously with iRobot—introduced Baxter in September 2012; as an industrial robot designed to safely interact with neighboring human workers, and be programmable for performing simple tasks. Baxters stop if they detect a human in the way of their robotic arms and have prominent off switches. Intended for sale to small businesses, they are promoted as the robotic analogue of the personal computer. As of May 2014, 190 companies in the US have bought Baxters and they are being used commercially in the UK.

Практическая работа № 2.

TOP 10 GREATEST PROGRAMMERS IN THE WORLD OF ALL TIME

These programmers are the explorer in the IT world and have each contributed something that has completely changed the way human's access to information and mass media. Let's start with the lords of the IT world.

Dennis Ritchie

Dennis MacAlistair Ritchie was an American computer scientist who “helped shape the digital era”. He created the C programming language and with long-time colleague Ken Thompson, the Unix operating system. Ritchie and Thompson received the Turing Award from the ACM in 1983, the Hamming Medal from the IEEE in 1990 and the National Medal of Technology from President Clinton in 1999. Ritchie was the head of Lucent Technologies System Software Research Department when he retired in 2007.



Bjarne Stroustrup

Bjarne Stroustrup is a Danish computer scientist, who is most notable for the creation and development of the C++ programming language. . He is a Distinguished Research Professor and holds the College of Engineering Chair in Computer Science at Texas A&M University, a visiting professor at Columbia University, and works at Morgan Stanley.



James Gosling

James Arthur Gosling, OC is a Canadian computer scientist, best known as the founder and lead designer behind the Java programming language. James has also made major contributions to several other software systems, such as NeWS and Gosling Emacs. Due to his extraordinary achievements, Gosling was elected to Foreign Associate member of the United States National Academy of Engineering.



Linus Torvalds

Linus Benedict Torvalds is a Finnish–American software engineer who is the creator and, historically, the principal developer of the Linux kernel. He later became the chief architect of the Linux kernel, and now acts as the project's coordinator. He also created the revision control system Git as well as the diving log software Subsurface. He was honored, along with Shinya Yamanaka, with the 2012 Millennium Technology Prize by the Technology Academy Finland in recognition of his creation of a new open source operating system for computers leading to the widely used Linux kernel.



Anders Hejlsberg

Anders Hejlsberg is a prominent Danish software engineer who co-designed several popular and commercially successful programming languages and development tools. He is the creator of popular programming language C#. He was the original author of Turbo Pascal and the chief architect of Delphi. He currently works for Microsoft as the lead architect of C# and core developers on TypeScript.



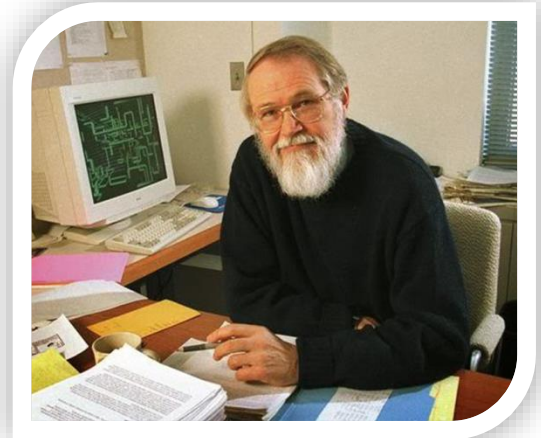
Tim Berners-Lee

Sir Timothy John Berners-Lee OM KBE FRS FREng FRSA FBCS, also known as TimBL, is an English engineer and computer scientist, best known as the inventor of the World Wide Web. He made a proposal for an information management system in March 1989 and he implemented the first successful communication between a Hypertext Transfer Protocol (HTTP) client and server via the Internet. Berners-Lee is the director of the World Wide Web Consortium (W3C), which oversees the Web's continued development.



Brian Kernighan

Brian Wilson Kernighan is a Canadian computer scientist who worked at Bell Labs alongside Unix creators Ken Thompson and Dennis Ritchie and contributed to the development of Unix. He is also coauthor of the AWK and AMPL programming languages. Kernighan's name became widely known through co-authorship of the first book on the C programming language with Dennis Ritchie.



Ken Thompson

Kenneth Thompson commonly referred to as ken in hacker circles is an American pioneer of computer science. Having worked at Bell Labs for most of his career, Thompson designed and implemented the original Unix operating system. He also invented the B programming language, the direct predecessor to the C programming language, and was one of the creators and early developers of the Plan 9 operating systems. Since 2006, Thompson works at Google, where he co-invented the Go programming language.



Guido van Rossum

Guido van Rossum is a Dutch computer programmer who is best known as the author of the Python programming language. In the Python community, Van Rossum is known as a “Benevolent Dictator For Life” (BDFL), meaning that he continues to oversee the Python development process, making decisions where necessary. He was employed by Google from 2005 until December 7th, 2012. Where he spent half his time developing the Python language. In January 2013, Van Rossum started working for Dropbox.



Donald Knuth

Donald Ervin Knuth is an American computer scientist, mathematician, and Professor Emeritus at Stanford University. He is the author of the multi-volume work *The Art of Computer Programming*. Knuth has been called the “father” of the analysis of algorithms. Knuth is the creator of the TeX computer typesetting system, the related METAFONT font definition language and rendering system and the Computer Modern family of typefaces.



Практическая работа № 3.

PROGRAMMING FACTS

Here are some very **interesting programming facts** about computer field and programming languages. Share with your friends for more fun. Let's see the top 10 coding facts!

- The **first computer programmer** was a female, named Ada Lovelace.
- The **first game** was created in 1961. Fun facts are that it didn't earn any money.
- The **first virus** was created in 1983.

- The **first computer “bug”** was identified in 1947 as a dead moth.
- The **first computer** was actually a loom called the Jacquard loom, an automated, mechanical loom, which didn't use any electricity.
- The **first high-level** (very close to real English that we use to communicate) **programming language** was **FORTRAN**. invented in 1954 by IBM's John Backus.
- Computer programming is one of the fastest growing occupations currently.
- The **language name C** because it succeeds another **language called B**.
- Java was called as Oak from the name of that tree that grew outside the window of James Gosling.
- Guido van Rossum was also reading the published scripts from Monty **Python's** Flying Circus”, a BBC comedy series from the 1970s. Van Rossum thought he needed a **name** that was short, unique, and slightly mysterious, so he decided to call the language **Python**.
- JavaScript is not **compiled**.
- Majors related to computer programming are among the highest paying in colleges and universities A programming language is basically a language that allows a human being to communicate with a computer The lifestyle we live today with our tablets, and mobile phones wouldn't be possible without computer programming.
- Did you know **how many total programming languages?** – it's **698**.
- Most people are intimidated by the thought of learning how to program, however as with anything, the more you practice and repeatedly do that task, the easier it gets.
- The Java mascot, 'The Duke' was created by Joe Palrang. Palrang is the same guy who has worked on the Hollywood blockbuster, Shrek. Duke is celebrated at Oracle.
- Four states of programmer progress:
 - a) Complex Programming
 - b) Making Progress
 - c) Slow Progress
 - d) Stuck
- It is not a tool or magic it is the power to create your Imagination in reality.
- Programming can learn you a new way of thinking.
- Perl is sometimes known as the “Swiss-Army knife” of programming languages.
- APIs are like stars, once a class is there everybody will assume it will always be there.
- Did you know first computer bug was named due to a real bug as shown in below pic? Grace Hopper recorded the first computer 'bug' in the book as she was working for the MARK II computer.

Programmers funny facts are

- Programmers will start the count from zero, not one.
- The root is at the top of the tree.
- Programming and coding are not the same.
- Programmer says ‘=’ != ‘==’
- The value of a ‘;’
- Ctrl + C and Ctrl + V have saved more lives than Batman and Robin.
- The Ctrl-Z is better than a time machine.
- That there is one thing called “Constant Variable”.
- Programmers always looking for a girl who can code.
- A parent may kill its children if the task assigned to them is no longer needed.
- Writing cryptic code is deep joy in the soul of a programmer.
- When you format your hard drive, the files are not deleted.
- A coder is a person who transforms cola & pizza to code.
- “Refresh button” of the windows desktop is not some magical tool which keeps your computer healthy.
- The programmers are the main source of income for eye doctors.
- If any programmer orders three beers with his fingers, he normally only gets two.
- Programmers love to code day and night.
- Sleeping with a problem can actually solve it.
- When you format your hard drive, the files are not deleted.
- 1 Mbps and 1 MBps internet connection don’t mean the same thing.
- A programmer is similar to a game of golf. The point is not getting the ball in the hole but how many strokes it takes.
- A programmer is not a PC repairman.

ENGLISH VERBS OF MOVEMENT ON COMPUTERS

Read the following conversation between Peter and Juan about how to add the details from a CV/resume on to a database for candidates applying for job vacancies in their company. From the context, try to guess what the meaning of the words/phrases in **bold** are. Then do the quiz at the end to check if you are right.

Juan: For the vacancy in our department we have to enter all the CV details for the candidates on to the candidates database. Do you know how to do that?

Peter: No, I've never done it before.

Juan: No problem, I'll show you how to complete the form in the database with the details. First of all, you'll need to have both the database and a copy of the CV open on the screen. Now, in the database **click** on the button that says 'new entry' using the mouse. This takes you to a new screen where you can enter the details.

Peter: Ok.

Juan: Now, at the top you'll see a section called 'candidate details'. You have to enter the candidate's name, date of birth, address etc... here. So, to enter the name, click on the text box next to name, then **type in** the name using the keyboard. When you have done that, **tab down** to the next text box for date of birth using the tab key on the keyboard. And type in the date of birth. To move down to the next text box you need to **press** the tab key again. Continue doing that until you've filled all the text boxes in this section.'

Peter: What next?

Juan: To the right of the 'candidate details' section, there's a box called 'photo'. Go back to the copy of the CV and find the candidate's photo. Click on the photo and then **drag** or move the photo from the CV onto the candidate database and put it over the photo box and then **drop** it by taking your finger off the click button on the mouse. Now, the photo has been entered onto the database.

Peter: Is that it?

Juan: No, you have to enter the candidate's job history details. But you don't have to type it in. You can copy and paste it from the CV. But before you do that, you have to go to the 'job history' section on the database. You can't see this section on the screen, because it's at the bottom of the database form. So, you have to **scroll** down the form until this section is on the screen. Here it is. Now, go back to the CV and **highlight** using the mouse all the text from the candidate's job history that you want to copy. You highlight or select the text by clicking on the mouse button and with the mouse button still pressed move the cursor to the end of the text that you want copied. Then **release** the mouse button. To copy the highlighted or selected text, you can either press the right mouse button and click copy in the menu that appears or with the keyboard, **hold down** the control/Ctrl key and press the key 'C'. Then go back to the 'job history' section on the database and paste it into the text box there. After that, save the form and all the information is on the database.

Peter: It seems simple. But how can I access the information on the database when I'm in an interview?

Juan: Well, you can access all the information on the database on an iPad. To open the database on the iPad, you need to **tap** on this icon on the screen using your finger. Then, when the database opens, tap on the text box next to name and type in the candidate's full name and press or tap the enter icon and all the candidate's details will appear on the screen. To move or scroll up and down the details in the database, you just need to **slide** your finger up or down the screen.

Peter: Perfect, thanks.



1. When you press a key or a mouse button for more than 1 second, you _____.
2. To move your finger while still touching the glass on a touch screen tablet/phone, is _____.
3. To move through/down text boxes on an online form by the keyboard, you _____.
4. A more common way to say 'press' a button on a mouse, is _____.
5. When you select/click on an image or photo and then physically move it on the screen, you _____.
6. When you stop holding down a key or mouse button, you _____.
7. A different way to say 'click' or 'press' on a touch screen device (e.g. iPad), is _____.
8. A verb that means to move up or down a web page or document, is _____.
9. After moving/dragging a photo on the screen, to put or place it in its new position, you _____.
10. Another way to say 'enter' or 'write' words or numbers with a computer, is _____.
11. To copy some of the text from a document, you first have to _____.
12. To make the keys on a keyboard write letters, numbers etc., you have to _____.

THE NAMES OF KEYS ON A KEYBOARD



- 1 = Delete Key
- 2 = Backspace Key
- 3 = Tab Key
- 4 = Return Key
- 5 = Caps Lock Key
- 6 = Shift Key
- 7 = Control Key
- 8 = Function Key
- 9 = Alt Key
- 10 = Space Bar
- 11 = Arrow Keys



1. The long key on a keyboard which is used when you want to separate one word from another when writing, is called the _____.
2. The key you press once to write in UPPER-CASE/CAPITAL letters, is called the _____.
3. A key that begins with 'C' that is used for shortcuts (like quickly copying some text) in applications, is called the _____.
4. A key that is used to make multiple spaces/indent in a text document, is called the _____.
5. A key that is used to remove a letter/space which is in front of the cursor on the screen, is called the _____.
6. A group of keys which are used to move (up or down, left or right) on a web page or an app, are called the _____.

7. A key on a laptop/notebook that when pressed with other keys changes the audio volume, is called the _____.
8. A key that when pressed and held down will write letters in UPPER-CASE/CAPITALS, is called the _____.
9. A key that begins with 'A' that is used for shortcuts (to do things quickly) in applications, is called the _____.
10. A key that is used to move to a new line when writing in a document, is called the _____.
11. A key that is used to remove a letter/space which is behind the cursor on the screen, is called the _____.

Практическая работа № 4.

TECHNICAL PROBLEMS BEFORE A MEETING

Read the following conversation between Juan and Peter. Peter is having problems with his laptop before giving a short Power Point presentation in a meeting. From the context, try to guess what the meaning of the words/phrases in **bold** are. Then do the quiz at the end to check if you are right.

Juan: 'What's happening Peter, you look frustrated?'

Peter: 'My laptop won't **turn on**. It was working before, I don't know what's wrong!'

Juan: 'Is it **plugged in**?'

Peter :'Yeah, I have connected it to the mains electricity, but that shouldn't be important because the laptop's **battery** still has charge or power.'

Juan: 'Are you sure that the **socket** in the wall has power? Try to plug it into another socket.'

Peter: 'I've tried that already and the socket has power. I thought that there may be a problem with the power **cable**, but it's working fine with the other laptop here.'

Juan: 'I had a problem with my desktop computer last year where the **wires had come loose** in the power cable. So I had to replace the power cable. You can use my laptop to show it.'

Peter: 'Thanks Juan, but I only saved the presentation to my **hard drive**. So I can't show the presentation on your laptop.'

Juan: 'Can you remember when I had that problem with my laptop in July. When suddenly the screen **froze** and the laptop wouldn't respond when I **pressed** any of the **keys** on the keyboard or when I moved my finger on the **touch pad**. Sometimes it recovered and I could continue to use the application, but other times it **crashed** and stopped working completely. So, I had to **reboot** the laptop. It was so frustrating, because I sometimes lost all of the work I'd been doing. Then the application **didn't**

load at all, so I couldn't even use it then. The IT Engineer told me it was a software **fault** with the application. So she just **reinstalled** the application and it's been working fine.'

Peter: 'I'm happy for you, but I don't have any power to the laptop, so it's not a software fault. It seems like a hardware fault.'



1. Another way to say 'touch' or 'push' a button or a key, is _____.
2. The name of the part of a computer where you save/store your applications and documents, is the _____.
3. When talking about computers, people call an electrical, software or hardware 'problem' a _____.
4. Another way to say 'switch on' or 'start' a computer, is _____.
5. The part of a laptop where you move the cursor on the screen with a finger, is called the _____.
6. A 'lead' or 'wire' which connects a computer to a printer or a power supply, is called a _____.
7. A different way to say 'restart' a computer, is _____.
8. A two word verb that means to connect a 'cable' to a computer or to an electrical power supply, is _____.
9. When you can't move the cursor on the screen, the screen is _____.
10. A possible reason why a cable isn't working, is _____.
11. Another way to say that an application 'doesn't start', is _____.
12. The hole/holes where a cable is connected to , is called a _____.
13. The buttons on a keyboard that have letters or numbers on them, are called _____.
14. When an application/program on a computer is damaged/not working correctly, it normally has to be _____.
15. The name of the power supply for a laptop or a mobile phone, is called the _____.
16. When a computer or application fails or stops working, it _____.

WEB PAGE

The web or internet is now used by the majority of people in the world (both at home and at work). There are now over two trillion individual web pages on 500 million different websites (e.g www.blairenglish.com etc...) on the internet. So, it's important to

know the English vocabulary of both web pages and how to use web pages when looking at them on a computer.

Looking at a web page

In the below photo of a web page, you will find that different parts are surrounded/enclosed by a red line with a number in red. These red numbers are used below the photo to confirm the name of each part (e.g. 1 = Web Browser).

Focus on the names of these different parts and then do the quiz at the end to check that you both understand their meaning and remember them.



- 1 = Web Browser
- 2 = Minimize/Maximize Buttons
- 3 = Menu Bar
- 4 = Tab

- 5 = Back/Forward Buttons
- 6 = Web Address
- 7 = Refresh Button
- 8 = Scroll Bar
- 9 = Navigation Bar
- 10 = Site Search Box
- 11 = Icons
- 12 = Link



1. A part of the web browser where you can move up and down the web page, is the _____.
2. The buttons on a web browser which takes you to previous web pages that you have looked at, are _____.
3. A word or sentence on a web page that takes you to a different web page when 'clicked on' or 'pressed', is a _____.
4. A list of the different sections/parts of a website, is called a _____.
5. The location or 'url' of a web page on the web, is called the _____.
6. The place where you can quickly look for content on a website, is called the _____.
7. When you have multiple web pages open on a web browser, the name of each web page is written in a _____.
8. The two buttons that are used to make a web browser window disappear or make it cover the full screen, are called the _____.
9. Small images on a web page, are called _____.
10. The name of the application used to view/see web pages on a computer, is called a _____.
11. When you want to see the up-to-date content on a web page, you press the _____.
12. To print or change the view in a web browser, you go to the _____.

Практическая работа № 5.

USING COMPUTERS AT WORK

Information Technology (IT) dominates both how we live and work. In most countries, it is impossible to find an office or business that doesn't have any computers. So, it is important to know how to talk about basic office/work IT in English.

Read the following conversation between Jonathan (an operations manager) and Geoff (an external contractor who will be working for two months at the company). Jonathan is explaining to Geoff how to use the computer system in the company. From the context, try to guess what the meaning of the words/phrases in **bold** are. Then do the quiz at the end to check if you are right.

Jonathan: 'This is your first day here. You already know what you have to do with the project. But to do that, you need to have the information that we have on our **computer network**. So, I'll show how to use your **network account** on the computer, so you can do your work.'

Geoff: 'Perfect.'

Jonathan: 'The IT department **set up** your network account last week, so it's ready to use. Here's your user name and password. The first thing that you need to do, is to **log in** to your network account on the computer. So can you type in the user name and password.'

Geoff: 'Ok, done that.'

Jonathan: 'You're logged in ok. After you've logged in, you will always go to this screen where there are icons of all the **applications** you have. For example, there are icons for Chrome, Word, email etc... You also have **access** to the Operations Department Database, which contains data on all the staff and equipment in the company. You don't have access to the Customer Database, but you won't need that to do your job. You also have access to the company's procedures **folder**. It's the icon at the top right. If you click on it, it will take you to a folder containing lots of Word documents about the different procedures we have in the company. If you click on the **file** called 'disaster procedures', you can read the procedures we have in place if there is a fire or explosion in one of our factories.'

Geoff: 'Where should I save files like Word documents or Excel spreadsheets?'

Jonathan: 'It's your choice. You can save them to your **hard drive** on your computer. But you won't be able to access the files from another computer. So it's better to save it to a **network drive**. Your network account has a drive on the network to save files to. It's the L: drive. If you save files there, you can access them from any computer on the company's network. Also, there's a shared folder on the network for our team. It's called

'Operations Shared Folder' and it's this icon on the screen. You should save any file or document here which other people in the team need to have access to. Some of the files here are **password protected**. So you can't open them without a password. If you need to access a file that is password protected, tell me and I'll give you the password. Do you have any questions?'

Geoff: 'Yes, I do. Because I'll be visiting lots of factories to do my job, I'm not sure having a **desktop** computer is the best idea. I can't carry it with me, it's too heavy to move. Would it be possible to have **laptop** instead? They are designed so you can travel with them.'

Jonathan: 'It was stupid of me not to think about that before. I'll **request** a laptop for you from the IT department. It'll take 5 days to come, so you'll have to work on the desktop for now. I'll also request a **docking station** for the laptop, so you can use a normal keyboard and a normal screen when you're using the laptop here at your desk. I forgot to mention that this computer is connected to the **printer** in front of us. So when you print any document, it will go there.'



1. A type of computer that is designed so it can be easily moved, is called a _____.
2. A 'document' on a computer like 'report.doc', is also called a _____.
3. A group of computers connected together, is called a _____.
4. A file/document that needs a password to be opened, is _____.
5. The name of the place where a group of files/documents are stored/saved on a computer is a _____.
6. A machine that makes paper copies of files/ documents, is called a _____.
7. To use a company's computer system, you need to have a _____.
8. The name of the part of a computer where all programs, folders and files are stored, is the _____.
9. A two word verb that means 'to create' and is used with network accounts, is _____.
10. A formal way to say 'to ask for' something new, is _____.
11. Computer 'programs' like Word or Excel, are commonly called _____.
12. A piece of equipment that you enter a laptop into, so you can use the laptop with a normal keyboard and screen, is a _____.
13. A word that means 'the ability to open or read' a file or document, is _____.

14. A computer that is designed to only be used on a desk, is called a _____.
15. To use your network account, you first have to _____.
16. When a person's files and applications are stored on the computer network and not on their local drive/computer, they are on a _____-.

How a computer network works.

Information Technology (IT) is an important part of any business. Companies normally have a lot of computers that are able to communicate between each other. These computers are able to communicate because they are on a 'computer network'. Although most people have heard about computers networks, they don't know or maybe even don't care what they are and what they actually do. But it is good to have a basic knowledge of what a computer network is, especially when there are problems with it.

Read the following conversation between Juan and Peter. Peter is explaining to Juan how the computer network at their office works. From the context, try to guess what the meaning of the words/phrases in bold are. Then do the quiz.

Juan: 'I know that it sounds stupid, but how is it possible that I can open the same word document on any of the **workstations** in the office. It doesn't matter which computer I'm on here, I can still open it.'

Peter: 'That's because all the computers or workstations in the office are connected to each other in a network. For our office, this network is called a **LAN** which is an abbreviation of 'Local Area Network'.'

Juan: 'So every computer I use in the office can access or open any file or document on my computer?'

Peter: 'No, they can't. You can only open files and documents from any computer/workstation you use here, when the file or document is saved on a **server** and not on your computer. A server is basically a powerful computer on the network which is dedicated to doing one thing, like storing files, or connecting to the internet or running an application etc... All the computers or workstations that people use at their desks can connect to these servers. Any application or file which people want to be shared or used by multiple computers are stored or put on to a server.

If you don't want to share a file with anybody, you can save or store it to the **local drive** of your computer or laptop. A local drive is the hard drive on your computer. Keeping a file on only your computer's local drive means that you can't open the file from another computer and if the computer breaks, the file is lost. So it's better to save it to your own personal folders on a **network drive**. This is like a local personal drive

for each user of a network, but all files are stored on a file server, a server dedicated to saving/storing files.

In addition, they are all **backed up** regularly. So even if the file server breaks down, there will always be a copy of all the files or documents stored on a different file server.'

Juan: 'So how does my computer access and open the word document on the file server?'

Peter: 'Well, your computer is connected to the LAN or office's computer network by an **ethernet cable** at the back of the computer. The ethernet cable is used to send and receive all the data from the computer to the server, other computers, the internet etc.'

Juan: 'Like emails or web pages?'

Peter: 'Yes, when you open a document on a server, the ethernet cable sends the request to the file server and the file server sends the data in the file to your computer through the ethernet cable to your computer. This data comes to your computer in what is called **packets**. For example, when a file server sends a word document that is on a network drive to your computer, the document is not sent all together, but is divided into small parts which are then sent one by one. When these small parts or packets reach your computer they are reassembled or joined back together and make the document. Data is sent on computer network in packets to make the network run quicker.'

Juan: 'It sounds complicated. But how does the file server know where to send the document or any type of data?'

Peter: 'Well, every computer, server, printer etc... has its own unique address. This is called an **IP address**. So, that's how a file server knows where to send a word document.'

Juan: 'So, there's a direct ethernet cable from all the computers on the LAN network in the office to the file server?'

Peter: 'No. In most offices, schools etc..., there are too many computers or servers to connect an ethernet cable directly between each one. In our office there are 213 workstations/computers and 13 servers. It would be impossible for each computer to have 225 different ethernet cable. Each computer or server only has one ethernet cable. Those cables connects directly to a device called a **switch**. A switch is an electronic box that is used to direct the data traffic on the network to the correct IP address. All data is sent from a computer or server to it first. It's like a postman, when it receives the data (like an email, file, update) it reads the IP address of where it wants to go to (which is contained in the data) and sends it to the computer, server, printer on the network with that IP address.'

Juan: 'Makes sense. But what happens if I want to send an email to somebody outside the company?'

Peter: 'Well, the email is divided into packets and these packets are sent from your computer through the ethernet cable to the switch. When the switch reads the IP address

in the packets of data and knows that it's not for a computer or server on the LAN network, it sends the packets to the **router** on the LAN network. A router is another piece of **hardware** or device on the network that is used to send or receive data traffic from a LAN network (like in our office) to or from computers or servers which are outside the LAN network (like the internet, other companies or other offices).'

Juan: 'So if I open a web page from the internet on my computer here, the data of the web page comes to my computer from the internet through the router, then the switch, then the ethernet cable and finally to my computer?'

Peter: 'Basically, yes. The router is the first place on the LAN network that receives data from outside of the LAN network. The router often has a **firewall** on it to make sure that any data it receives doesn't contain a virus or words or material which have been banned or prohibited by the company. Some companies ban their staff from accessing some websites and it's this **software** or program on the router that stops the web page.'

Juan: 'Thanks Peter for explaining it.'

Практическая работа № 6.



1. Computers, mobile phone, servers, cables and switches are all types of _____.
2. When a copy of all the data and files of a computer is saved/stored on a different computer, it is _____.
3. A powerful computer that is used on a computer network to store/save other computers' data and files, is called a _____.
4. A device/machine on a computer network that is used to move data between the different computers and servers, is a _____.
5. A type of computer network that is normally used in an office or school, is called a _____.
6. A cable that is used to transport data from one computer to another on a computer network, is called a _____.
7. Computer applications and programs are both types of _____.
8. A 'hard drive' or place on a computer where applications or files are stored/saved, is also called a _____.
9. The 'small parts' which an email is divided into to be transported on the network, are called _____.

10. When a person's files and applications are stored on the computer network and not on their local drive/computer, they are on a _____.
11. The name of the software that stops viruses from entering into a computer network, is called a _____.
12. The 'computers' on computer network are often called _____.
13. A device/machine where all the data entering and leaving a computer network goes through, is called a _____.
14. The unique name/address that every computer in the world has, is called an _____.

Code sign/symbol names.

If you work in any type of Information Technology job (designer/developer/support etc...) you will have to understand how to write or read some type of computer code. In computer code, a lot of different signs and symbols are used. For example, ' ? ' or ' . ' .

People are so used to only having to write these code signs/symbols that they don't actually know what the names of many of these signs/symbols are. For example ' ? ' is called a 'question mark' and ' . ' is called a 'point' or 'dot' with numbers and 'full stop/period' with words. Not knowing these names can be a problem if you are speaking to somebody about computer code.

In the following conversation between two work colleagues, Juan asks Peter what the names are of different signs and symbols used in computer code. The names of the signs and symbols are in **bold**. Focus on the names of these different signs and symbols and then do the quiz at the end to check that you both understand their meaning and remember them.

Juan: "Do you know what one of the biggest problems is with computer code?"

Peter: "No, what?"

Juan: "I can never remember the names in English of some of the signs or symbols that are used in computer code. It's not a problem when writing the symbol, but you look stupid when you have to write or type the symbol when talking to someone, because you don't know its name. For example, what do you call this symbol ' - '? Is it called a dash?"

Peter: "Yes, the ' - ' is commonly called a **dash** in computer code, but it is also called a hyphen when writing in both English and in computer code. And you call this symbol ' _ ', an **underscore**."

Juan: "I knew that. What's the name for the little star symbol?"

Peter: "Do you mean ' * ' this?"

Juan: "Yes."

Peter: "The ' * ' symbol is called an **asterisk**."

Juan: "And the ' @ ' symbol which you use in email addresses?"

Peter: "The ' @ ' symbol is called an **at sign**."

Juan: "Another symbol I have seen, is this ' / '."

Peter: "The ' / ' symbol is called **forward slash**, because its top part is leaning forward."

Juan: "So I suppose the ' \ ' symbol is called **backslash** because the top part is leaning back?"

Peter: "That's right. It's called backslash."

Juan: "And what do you call this symbol ' # '?"

Peter: "It has many names, it's often called the pound sign in America, but everywhere else, ' # ' is called **hash**."

Juan: "And the ' (' and ') ' symbols?"

Peter: "They are called **parentheses**, although they are sometimes called brackets (but not in America). The ' (' symbol is normally called open parenthesis and the ') ' symbol, close parenthesis."

Juan: "I am confused. I thought that the brackets symbols were ' [' and '] '?"

Peter: "They are type of brackets, and although they are sometimes called brackets in America, the ' [' and '] ' symbols are normally called **square brackets**. There are another two types of brackets that are used. ' < ' and ' > ' are called **angle brackets** and ' { ' and ' } ' are normally called **curly brackets**. With all types of brackets, the first bracket is called 'open' and the second bracket is called 'close'. So, for example, ' < ' is called 'open angle bracket' and '] ' is called 'close square bracket'. Does that make sense?"

Juan: "I think so."



1. The sign/symbol that is called a Forward Slash, is _____.
2. The signs/symbols that are called Curly Brackets, are _____.
3. The sign/symbol that is called an Asterisk, is _____.
4. The sign/symbol that is called a Hash, is _____.
5. The signs/symbols that are called Square Brackets, are _____.
6. The sign/symbol that is called an Underscore, is _____.
7. The sign/symbol that is called a Dash, is _____.
8. The signs/symbols that are called Parentheses, are _____.
9. The sign/symbol that is called an At Sign, is _____.
10. The signs/symbols that are called Angle Brackets, are _____.
11. The sign/symbol that is called a Backslash, is _____.

More code signs/symbols names

In the following conversation between two work colleagues, Juan continues to ask Peter what the names are of different signs and symbols used in computer code. The names of the signs and symbols are in **bold**.

Focus on the names of these different signs and symbols and then do the quiz at the end to check that you both understand their meaning and remember them.

Juan: 'There's another symbol that I use all the time, but I don't know what it's called. It's written like this '!'.'

Peter: 'The sign '!' is called an **exclamation mark**.'

Juan: 'Also, is this ''' called a speech mark?'

Peter: 'Yes, it can be. ''' is more commonly called a **quotation mark**. There are two types of quotation marks. ''' is called a double quotation mark because it has two lines. Where a quotation mark has one line, like this ''', it is called a single quotation mark.'

Juan: 'I thought that ''' was called an **apostrophe**?''

Peter: 'It is also called an apostrophe. When the symbol is used in writing to show possession of something (e.g. 'this is John's car') or a contraction of two words into one (e.g. it is, is normally contracted into it's), it is called an apostrophe. But when there are two of them and they are used to close a selection of text or calculation (e.g. 'I like cheese'), then they are called single quotation marks.'

Juan: 'That makes sense. Is this ', ' called a **comma**?''

Peter: 'That's right.'

Juan: 'And this symbol '&'. I have heard people call it 'and'. Is that its name?'

Peter: 'People often call it the 'and symbol/sign', but the actual name for '&' is an **ampersand**.'

Juan: 'And what about this ': '?''

Peter: 'The ': ' symbol is called a **colon**. There is also a similar symbol that instead of having two dots has one dot and a comma below it. It is called a semicolon.'

Juan: 'So, a **semicolon** is written like this '; '?''

Peter: 'That's right. Another symbol that is sometimes used in computer code, is called the **pipe** or vertical bar. It is a vertical line and is written like this '|'

Juan: 'There are two other symbols which I'd just like to check if I am calling them the right names. This '\$' is called the **dollar sign**, isn't it?'

Peter: 'Yes, it is.'

Juan: 'And this '%' is called percent?'

Peter: 'It can be, but '%' is normally called the **percent sign**.'

Juan: 'I know that this isn't a sign or symbol, but when there is a gap between two words or numbers with nothing in it, like ' '. What is it called?'

Peter: 'Where there is a blank space between words or numbers like this ' ', it is called a **space**.'



1. The sign/symbol that is called a Colon, is _____.
2. The sign/symbol that is called a Space, is _____.
3. The sign/symbol that is called a Quotation mark, is _____.
4. The sign/symbol that is called a Percent sign, is _____.
5. The sign/symbol that is called an Exclamation mark, is _____.
6. The sign/symbol that is called a Dollar sign, is _____.
7. The sign/symbol that is called a Comma, is _____.
8. The sign/symbol that is called an Apostrophe, is _____.
9. The sign/symbol that is called an Pipe, is _____.
10. The sign/symbol that is called a Semicolon, is _____.
11. The sign/symbol that is called an Ampersand, is _____.

Практическая работа № 7.

BEST NOSQL DATABASES 2020 – MOST POPULAR AMONG PROGRAMMERS

A database is a collection of information that is organized so that it can be easily accessed, managed and updated. Before starting with the most popular NoSQL databases. You must have to know about NoSQL databases. Most of the programmer doesn't know what it stands for. It's Not Only SQL.

What is NoSQL database?

NoSQL databases (additionally called **Not Only SQL Databases**) are non-relational database systems used for storing and retrieving data. In today's world, we should not store all the data in table format only which has not predefined fixed schemas(fix no of columns). Like User-generated data, GEO location data, IoT generated data, social graphs are examples of real-world data which has been increasing exponentially. These huge amounts of data required lots of processing also. Here, the NoSQL database comes into the picture. Using NoSQL database we can store and retire document, key-value, graph-based data easily & faster. We can easily avoid complex SQL joins operations. Easy to scale horizontally for real-world problems(web and enterprise business applications) using NoSQL DBs. Carlo Strozzi came with NoSQL term in the

1998 year. The motivation of using NoSQL – the simplicity of design, horizontal scaling to clusters of machines which is difficult to achieve in RDMS databases.

NoSQL Database types

- **Document Databases** – These Db usually pair each key with a complex data structure which is called a document. Documents can contain key-array pairs or key-value pairs or even nested documents. Examples of document NoSQL: MongoDB, Apache CouchDB, ArangoDB, Couchbase, Cosmos DB, IBM Domino, MarkLogic, OrientDB.
- **Key-value stores** – Every single item is stored as a Key-value pair. Key-value stores are the most *simple* database among all NoSQL Databases. Examples of Key-value NoSQL – Redis, Memcached, Apache Ignite, Riak.
- **Wide-column stores** – These types of Databases are optimized for queries over large datasets, and instead of rows, they store columns of data together. Examples of Wide column NoSQL – Cassandra, Hbase, Scylla.
- **Graph stores** – These store information about graphs, networks, such as social connections, road maps, transport links. Examples of Graph NoSQL – Neo4j, AllegroGraph.

Best NoSQL Databases 2020

MongoDB

It is an open-source NoSQL database that is document-oriented. MongoDB uses JSON like documents to store any data. It is written in C++.

Cassandra

It was developed at Facebook for an inbox search. Cassandra is a distributed data storage system for handling very large amounts of structured data.

Redis

Redis is the most famous key-value store. Redis is composed in C language. It is authorized under BSD.

HBase

It is a distributed and non-relational database that is designed for the BigTable database by Google.

Neo4j

Neo4j is referred to as a native graph database because it effectively implements the property graph model down to the storage level.

Oracle NoSQL

Oracle NoSQL Database implements a map from user-defined keys to opaque data items.

Amazon DynamoDB

DynamoDB uses a NoSQL database model, which is nonrelational, allowing documents, graphs and columnar among its data models.

Couchbase

Couchbase Server is a NoSQL document database for interactive web applications. It has a flexible data model, is easily scalable, provides consistently high performance.

Memcached

It is an open-source, high-performance, distributed memory caching system intended to speed up dynamic web applications by reducing the database load.

CouchDB

It is an Open Source NoSQL Database which utilizes JSON to store information and JavaScript as its query language.

1. MONGODB



MongoDB is the most well-known among NoSQL Databases. It is an Open-Source database which is Document-oriented. MongoDB is a scalable and accessible database. It is in C++. MongoDB can likewise be utilized as the file system. In MongoDB, JavaScript can be utilized as the query language. By utilizing sharding MongoDB scales horizontally. It is very useful in Popular JavaScript Frameworks. People really enjoying sharding, advanced text searching, gridFS, map-reduce features for the 2020 year. Amazing performance and new features promoted this NoSQL database to 1st place in our list.

2. CASSANDRA



Cassandra was developed at Facebook for inbox search. Cassandra is a distributed data storage system for handling very large amounts of structured data. Generally, these data are spread out across many commodity servers. You can also add storage capacity of your data keeping your service online and you can do this task easily. As all the nodes in a cluster are same, there is no complex configuration to deal with. Cassandra is written in Java. Cassandra Query Language (CQL) is a SQL-like language for querying Cassandra Database. As a result, Cassandra stands 2nd in best open source databases. Cassandra is being used by some of the biggest companies such as Facebook, Twitter, Cisco, Rackspace, eBay, Twitter, Netflix, and more.

3. REDIS



Redis(**R**emote **D**ictionary **S**erver) is a key-value store. Furthermore, it is the most famous key-value store. Redis has support for some C++, PHP, Ruby, Python, Perl, Scala and so forth. Redis is composed in C language. Furthermore, it is authorized under *BSD*. Some fun facts about Redis NoSQL Database – It can handle up to 2^{32} keys and was tested in practice to handle at least 250 million keys per instance. It is an **in-memory** but persistent on-disk database. It means it will store all data in RAM only for backup only use disk(HDD or SSD).

4. HBASE



HBase is a distributed and non-relational database which is designed for the BigTable database by Google. One of the main goals of HBase is to host Billions of rows **X** millions of columns. You can add servers anytime to increase capacity. And multiple master nodes will ensure high availability of your data. HBase is composed in *Java 8*. It's authorized under *Apache*. Hbase accompanies simple to utilize Java API for customer access also.

5. NEO4J



Neo4j is referred to as a native graph database because it effectively implements the property graph model down to the storage level. This means that the data is stored exactly as you whiteboard it, and the database uses pointers to navigate and traverse the graph. Neo4j has both a Community Edition and Enterprise Edition of the database. The Enterprise Edition includes all that Community Edition has to offer, plus extra enterprise requirements such as backups, clustering, and failover abilities.

6. ORACLE NOSQL



Oracle just started NoSQL database with Oracle NoSQL. It's becoming popular in the year 2018. It less popular compare to MongoDB and Casandra databases. Oracle NoSQL Database implements a map from user-defined keys to opaque data items. Although it records internal version numbers for key/value pairs, it only maintains the single latest version in the store. The version of Oracle, 12c, is designed for the cloud and can be hosted on a single server or multiple servers, and it enables the management of databases holding billions of records. Some of the features of the latest version of Oracle include a grid framework and the use of both physical and logical structures. Oracle Database 18c now provides customers with a high-performance, reliable and secure platform to easily and cost-effectively modernize their transactional and analytical workloads either in the Cloud, or on-premises or in a Hybrid Cloud configuration.

7. AMAZON DYNAMODB



DynamoDB uses a NoSQL database model, which is nonrelational, allowing documents, graphs and columnar among its data models. Each DynamoDB query is executed by a primary key identified by the user, which uniquely identifies each item. It also relieves the customers from the burden of operating and scaling a distributed database. Hence, hardware provisioning, setup, configuration, replication, software patching, cluster scaling, etc. is managed by Amazon.

8. COUCHBASE



The focus is on the ease of use, embracing the web. It is a NoSQL document store database. Couchbase Server is a NoSQL document database for interactive web applications. It has a flexible data model, is easily scalable, provides consistently high performance. Couchbase Server, JSON documents are used to represent application objects and the relationships between objects.

9.MEMCACHED



Memcached is an open source, high-performance, distributed memory caching system intended to speed up dynamic web applications by reducing the database load. It is a key-value dictionary of strings, objects, etc., stored in the memory, resulting from database calls, API calls, or page rendering. It is now being used by Netlog, Facebook, Flickr, Wikipedia, Twitter, and YouTube among others.

10.COUCHDB



CouchDB is an Open Source NoSQL Database which utilizes JSON to store information and JavaScript as its query language. It applies a type of Multi-Version Controlling system for avoiding the blockage of the DB file during writing. It is *Erlang*. It's authorized under *Apache*. It is ranked 1st for Best NoSQL Database 2016 list for popularity.

Before we summarize the article we compare the three databases:

Parameter	Cassandra	MongoDB	HBase
Description	High scalability, strong security by lowering overall cost of ownership	Traded in JSON format, Schema-less database	Key-value stores which run on top of HDFS
Data Model	Key Spaces	Flexible Schema	Column-Oriented DB
Implementation Language	Java	C++	Java
Query Language	CQL-Cassandra Query Language	Dynamic Object-Based Language and JavaScript	MapReduce
Performance	More Durable and Slight better among the three of them	Less durable compared to Cassandra	Less durable compared to Cassandra
Security	TLS/SSL Encryption Client Authentication Authorization	Encryption Authentication Auditing Governance	Thrift Server role Authentication Authorization
Replication Methods	Selective Replication Factor	Master Salve Replication	Selective Replication Factor
Competitive Advantage	No chance of Failure and it ensures 100% availability, High-Scalability	Best of Traditional Database, Giant-Ideas	Store Large dataset on top of HDFS, Aggregate and analyze billions of rows in HBase table for online analytics
Application Areas	Used in fraud detection applications. Twitter and Netflix used Cassandra.	Used in a mobile single view, real-time analytics	Used in medical to store the genome sequence, sports, storing match histories for better analytics, Web use Hbase for better customer targetting
Market Metrics	40% of the Fortune Hundred Companies	40 million downloads	7% of the companies in the world

Практическая работа № 8.



Top 10 Programming Languages By Google

Google search trends worldwide from January 2019— December 2019.

Google is the best friend of every developer on the planet. So it is fair to analyse the search trends and find the programming languages developers were the most interested in this year. So based on the following parameters, the top programming languages 2020 for businesses came to be these:

- JavaScript
- Python
- Java
- Go
- Elixir
- Ruby
- Kotlin
- TypeScript
- Scala
- Clojure

1. JavaScript



- Average JavaScript Developer Salary in the US as per Indeed: \$109,462 per year.
- Recognized as the most popular top programming language in the Stack Overflow Developer Survey 2019.
- Most popular programming language on GitHub.
- It seems that JavaScript has gone down in popularity since the past year as per data from Google trends. The language was almost at the peak score with a rating of 91 in January 2019. In December 2019, we saw a dip in popularity and JavaScript scored only 62 out of 100.

2. Python



- Average **Python Developer** Salary in the US as per Indeed: \$117,503 per year.
- Python is one of the top object-oriented programming languages and 2nd in the list of Most loved top programming languages as per Stack Overflow developer survey 2019.
- Also recognized as the most wanted programming language in the StackOverflow Developer survey.
- Second most active programming language on GitHub.

- Python's popularity has significantly dipped since the beginning of 2019. As of December 2019, the language had a rating of 62/100 in Google trends, while it had reached a score of 75 in January.

3. Java



- Average Java Developer salary in the US as per Indeed: \$101,929 per year.
- Java happens to be at the 10th place as one of the most dreaded programming languages in 2019.
- Third-most active top programming language on GitHub.
- Java scored a rating of 89 out of 100 in Google trends as of January 2019. In December 2019, the number dropped down to 59. This decrease could be attributed to widespread use of Python as an alternative and the intense competition between Python Vs Java.

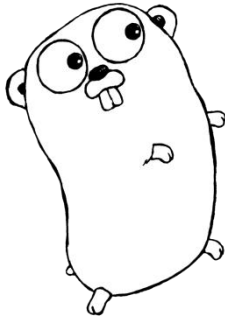
4. C



- As per Indeed, the average salary for a C Programmer in the US is \$104,905 per year.
- As per StackOverflow survey 2019, C happens to be the 4th most dreaded programming language.
- The C programming language is the 8th most active on GitHub, a position it has maintained for two years straight.

- C's popularity reached great heights in 2019, and it maintained a consistently high user interest throughout the year. In fact, the TIOBE Index awarded C as the most popular programming language for 2019.

5. Go



- Average Go developer salary globally: \$109,483 per year. The average salary in the US for this top programming language is \$136K per year.
- Go is the third-most highly paid language globally in the Stack Overflow developer survey 2019.
- The Go programming language is the fourth most active on GitHub.
- The google search popularity for Go has remained constant in 2019.

6. Swift



- The Global average salary for a Swift (iOS) developer is \$59k. As per Indeed, the average salary for the same profile in the US is \$125,252 per year.
- Swift is the 6th most loved programming language as per Stack Overflow developer Survey 2019.
- Swift was 10th most active programming language on GitHub for the year 2019.
- The google search popularity of Swift peaked to a score of 100 in June this year. But it maintained an otherwise consistent search volume throughout the year.

7. Ruby



- Average global salary for development on Ruby: \$76k. The average salary for Ruby developers in the US is \$123k.
- Ruby is the sixth most highly paid language globally as per Stack Overflow developer survey 2019.
- Ruby has maintained the 12th position throughout the year in the list of most active top programming languages in Github.
- The Ruby programming language maintained its peak popularity between January- April 2019. But it started going down since May and its user interest dropped to 57 by December.

8. Kotlin



- Average global salary for development on Kotlin: \$57k. The average salary for Kotlin developers in the US is \$125k.
- Although Kotlin isn't one of the most highly paid languages as of right now, its demand is soaring thanks to Google declaring it as the official language for android app development.
- Kotlin is the 15th most active top programming language on GitHub, having risen by one rank since the last year.
- Kotlin's popularity has mostly remained consistent this year. The user interest on this language peaked during the month of May. This was possibly due to the I/O 2019 and Google's declaration of Kotlin being used as a primary language for android app development.

9. TypeScript

TypeScript

- Average global salary for development on TypeScript: \$60k. The average salary for TypeScript developers in the US is \$115k.
- TypeScript is the 10th most popular top programming language as per Stack Overflow developer survey.
- The Microsoft-nurtured programming language is now the 7th most active on GitHub.
- The popularity of TypeScript as per Google search peaked for some time in June, July, October and the entire month of November in 2019. TypeScript has witnessed a remarkable rise in user interest this year.

10. Scala



- Average global salary for development on Scala: \$78k. The average salary for Scala developers in the US is \$143k.
- As per Stack Overflow annual developer survey 2019, Scala is the highest-paid programming language in the US, and the 4th most highly paid programming language globally.
- Scala's popularity on GitHub has gone down in 2019. It went from being the 12th most active programming language on GitHub in 2018 to the 17th position in the past year.
- Scala's popularity in Google search trends peaked for some time in the months of March and August. However, the user interest on Scala started going down since November 2019.

Практическая работа № 9.

Solving a Customer's Server Problem

People often use funny slang and abbreviations in chats and other social situations. Typically, there is also a more relaxed attitude towards grammar as well. The following is a chat transcript between an account manager and a software engineer working at a web hosting company. They are troubleshooting a server problem that affects one of their customers. Please note that you should not use slang with unfamiliar people. Using slang is not professional and can be taken badly by some people. You have been warned!

Account Manager: TIL that certain web page requests are taking forever to load on some of our servers. One client in particular is really pissed off.

Sysadmin: what is the name of the client?

Account Manager: Svensson Trucking Supply

Sysadmin: brb i need to be afk for 30 minutes

Account Manager: 30 minutes? this guy is a major client and management says we need to fix this issue asap. they told me you were the 1337 alpha geek who could resolve this issue right away.

Sysadmin: lol... 1337 alpha geeks need to eat lunch too :P

Account Manager: LMAO that you would eat lunch right now. Please look into the problem BEFORE lunch!

Sysadmin: okay gimme 5 minutes

Time passes...

Account Manager: Did you find the problem?

Sysadmin: wow did i... imho the site was set up by a total n00b. there is a major security hole in their iis web server. someone set up a warez site on a subdomain and there are 100 leeches sucking up all the bandwidth.

Account Manager: WTF. No wonder their site is so slow

Sysadmin: they are using a really old version of iis server. let me upgrade and patch it for them.

Account Manager: Okay. I will call the client and update them on the status.

Time passes...

Sysadmin: okay the server is patched and running normally. now im gonna go eat... 1337 alpha geek ftw!

Account Manager: Nice work! Thanks a million!!!!

Sysadmin: how about telling management to give me a raise since im the only one who knows how to solve client problems?

Account Manager: Wow that's funny. I'm literally ROTFL

Sysadmin: FU

Account Manager: Hahahaha! I'll pretend I didn't hear that. L8R skater.

A Controversial IT Purchase

People often use funny slang and abbreviations in chats and other social situations. Typically, there is a relaxed attitude towards the rules of grammar. The following is a chat transcript between an older grumpy senior developer and a younger intermediate developer. They are discussing a recent hardware acquisition.

Please note that you should not use slang with unfamiliar people. Using slang is not professional and can be taken badly by some people. You have been warned!

-- The Bunion --: Did you hear what happened? We had to buy some new hardware last month to run that new **killer app** that management thought was so important.

Deadly Avenger: Really? What was wrong with the old hardware?

-- The Bunion --: It was too old to be used anymore, apparently. I told them the hardware requirements for the new CRM system BEFORE they bought it. Now they need to upgrade the whole internal network as well.

DeadlyAvenger: What are they gonna upgrade to?

-- The Bunion --: You won't believe it. A whole truckload of brand new Dell PowerEdge servers with Intel Xeon processors. And a 10 gbps ethernet connection hooking everything together.

DeadlyAvenger: Cool. That sounds like some real **leading edge** stuff.

-- The Bunion --: **Whatever**. We could have saved a lot of money by staying on the old software platform. It was good enough to make any CRM **geek** happy.

DeadlyAvenger: Let me get this straight. You're complaining about management buying new hardware? The old hardware was totally **EOL**.

-- The Bunion --: It's such a **PHB** move to spend so much on replacing a perfectly functioning CRM platform. The CTO probably read a shiny pamphlet at a trade show in San Francisco, had a few drinks over dinner, and then immediately signed the contract.

DeadlyAvenger: You might be stuck in the past, but the **code monkeys** in the developer room will be salivating over the new equipment. Now they can rewrite their **spaghetti code** into more object-oriented goodness.

-- The Bunion --: I don't mean to be a **pita**, but I checked out the user reviews of that new release and people say it's fundamentally **horked**. Newer does not always mean better. It doesn't pay to be an **early adopter**.

DeadlyAvenger: That may well be true. I thought maybe we should have hosted the new application in the cloud. That's what all the **trendsetters** are doing nowadays. And people from remote offices would like that because they would get quicker load times.

-- The Bunion --: The cloud? Are you serious? What about security? You are such a **fanboy** of every new IT fad that comes along.

DeadlyAvenger: At least I am not a **troll**. You are trying to start a **flame** war on the company intranet discussion forum in order to show upper management how much you are trying to save money.

***-- The Bunion --*:** Well, we didn't exactly have a great financial year so far. Now the whole IT department will be busy upgrading instead of solving our customers' true needs.

DeadlyAvenger: Admit it. If it were up to you, we'd all still be on mainframes programming COBOL.

***-- The Bunion --*:** Hahahaha. Yeah I guess you're right. But saving the company money is the only effective way I know of proving I deserve a raise every year.

DeadlyAvenger: Or you could end up proving that you are a cranky old man and get yourself relocated to the Accounting department ;)

***-- The Bunion --*:** **Whatever**. You guys wouldn't last two weeks without me here!

DeadlyAvenger: Maybe you're right. I gotta go now. Bye.

***-- The Bunion --*:** Howdy.

Ten Commandments of Computer Ethics

Created by the Computer Ethics Institute

1. Thou Shalt Not Use A Computer To Harm Other People.
2. Thou Shalt Not Interfere With Other People's Computer Work.
3. Thou Shalt Not Snoop Around In Other People's Computer Files.
4. Thou Shalt Not Use A Computer To Steal.
5. Thou Shalt Not Use A Computer To Bear False Witness.
6. Thou Shalt Not Copy Or Use Proprietary Software For Which You have Not Paid.
7. Thou Shalt Not Use Other People's Computer Resources Without Authorization Or Proper Compensation.
8. Thou Shalt Not Appropriate Other People's Intellectual Output.
9. Thou Shalt Think About The Social Consequences Of The Program You Are Writing Or The System You Are Designing.
10. Thou Shalt Always Use A Computer In Ways That Insure Consideration And Respect For Your Fellow Humans.

Top 15 American IT Companies

For some reason, most of the large IT companies in the world are American. For instance Google, Apple, Microsoft, Facebook, etc. As an IT professional, you are expected to know about big IT corporations, revenue, profits, budgets, and other economic matters. Why?



Because these things affect your capacity to perform your tasks. The economy tends to go in cycles. In an up cycle, you will get resources to build or improve systems. In a cycle you will be pressured to cut spending and possibly even lay off staff. This is business as usual" and nothing to get excited about. Over the span of your career you will experience many up and down economic cycles.

Studying what the big IT companies do right and wrong will help you think of ideas how to improve your own IT department. No matter if you work for a small company, non-profit organization, or a government institution, you will learn quickly that most decisions are based on money. The best way to implement your "great idea" is to argue that it will save time or increase profits. Trying to argue a point without keeping efficiency, profits and budgets in mind will be difficult.

Below is a chart of 15 American IT companies I think are important to know about. The more you know about the business of IT, the better IT professional you will become.

Company	Rank	Revenue	Profit	Products
<u>Adobe</u>	443	5,854	871	Graphic Design Software / Flash Media
<u>Advanced Micro Devices</u>	565	4,272	471	CPU / GPU
<u>Apple</u>	3	215,639	14,013	Computer Hardware / Software
<u>Cisco Systems</u>	60	49,247	7,767	Networking Equipment
<u>Dell</u>	41	64,806	2,635	Computer Hardware
<u>Google</u>	27	90,272	8,505	Search / Software
<u>HP</u>	61	48,238	8,761	Computer Hardware / Services
<u>IBM</u>	32	79,919	14,833	Computer Services / Software / Hardware
<u>Intel</u>	47	59,387	11,464	Microprocessors, Components
<u>Microsoft</u>	28	85,320	18,760	Computer Software
<u>Oracle</u>	81	37,047	6,135	Database Software / Services
<u>NVIDIA</u>	387	6,910	-30	GPU / CPU / chipsets
<u>Western Digital</u>	217	12,994	1,382	Hard Disk Drives / Computer Hardware

Практическая работа № 10.

РЕФЕРИРОВАНИЕ и АННОТИРОВАНИЕ

Аннотирование и реферирование, или процессы информационной обработки текстов, являются одной из самых широко распространенных письменных форм быстрого извлечения информации и ее смысловой обработки. Основой таких видов деятельности является понимание иностранного текста и навыки перевода научно-технической литературы.

Нужно уметь отделять главное от второстепенного, анализировать и обобщать обрабатываемый материал.

Сущность информационной обработки текстов состоит в кратком и обобщенном изложении содержания первоисточника. Целью информационной обработки текста является извлечение полезной и ценной информации по конкретной проблематике.

Термины «первичные» и «вторичные» тексты появились из теории научно-технической информации. Понятия «первичный», «вторичный» используются как основание классификации информационных документов. Вторичные тексты создаются в результате преобразования исходного, первичного, базового текста. Вторичные тексты – это библиографическое описание, аннотация, реферат, конспект, перевод, рецензия.

Библиографическое описание может быть самостоятельным информационным вторичным документом (используется в библиотечных каталогах и библиографических указателях) или частью другого вторичного документа (используется как вводная часть в аннотациях и рефератах). Библиографическое описание дает все необходимые данные о первичном документе и состоит из следующих элементов в определенной последовательности:

Аннотирование – информационный процесс составления кратких сведений о первоисточнике, первое с ним знакомство, которое позволяет судить о целесообразности его более детального изучения в дальнейшем. Аннотация (от лат. *annotatio* – замечание) предельно краткое изложение того, о чем можно прочитать в данном первоисточнике. В аннотации (как вторичный текст) перечисляются главные вопросы, проблемы, изложенные в первичном тексте, а также может характеризоваться его структура.

В отличие от реферата, который дает возможность читателю познакомиться с сутью излагаемого в первоисточнике содержания, аннотация не раскрывает содержание документа, в ней не приводятся конкретные данные, описание оборудования, характеристики, методики и т.д., а она дает лишь самые общие

представление о его содержании. Аннотация помогает найти необходимую информацию по интересующему вопросу.

АЛГОРИТМЫ В ОБУЧЕНИИ АННОТИРОВАНИЮ И РЕФЕРИРОВАНИЮ

Алгоритм – совокупность автоматических действий для решения данной задачи. При аннотировании и реферировании можно рекомендовать следующие алгоритмы:

- а) Прочтите заголовок текста, определите, дает ли он представление о содержании текста.
- б) Просмотрите, делится ли статья на разделы (есть ли подзаголовки).
- в) Если «да», прочтите подзаголовки, определите, о чем они.
- г) Обратите внимание, есть ли рисунки, схемы, таблицы.
- д) Если «да», прочтите подписи под ними.
- е) Если есть аннотация к тексту, то прочтите ее.
- ж) Если «нет», то прочтите первый и последний абзацы текста и по ключевым словам определите о чем текст.

Или, например:

- а) Просмотрите текст с целью получения общего представления о тексте в целом.
- б) Выделите абзацы, содержащие конкретную информацию по теме статьи, методу проведения работы, результатом работы, применению в конкретной области.
- в) Сократите малосущественную информацию в этих абзацах по каждому пункту.
- г) Напишите обобщенную основную в форме реферата в соответствии с планом его написания: тема, метод, результаты, выводы, применения.

III. Или при оформлении библиографического описания аннотации и реферата:

- а) Укажите заглавие реферируемой статьи на русском языке и языке оригинала.
- б) Если есть автор или авторы, напишите их на языке оригинала (помните, что если авторов больше двух, указывается только первый и затем пишется «и др.»).
- в) Затем напишите название источника информации на языке оригинала, год, номер, обязательно страницы.
- г) Только затем пишется текст аннотации или реферата.

Phrases to be used in an annotation

- ✓ The passage is an extract from...
- ✓ The extract I am dealing with is taken from...
- ✓ The text under consideration is taken from...
- ✓ The text I am going to comment on is a story by...
- ✓ This extract presents an act from the play...by the English playwright W.

- Shakespeare.
- ✓ The given passage is an extract from...
- ✓ The plot of the story is concerned with (the upbringing of children...)
- ✓ The subject-matter of the passage is (a description of a certain Mrs. General, a snobbish and pretentious lady...)
- ✓ The story tells of (the tragic fate of a young poet...)
- ✓ The write unfolds the sad story of (a boy who was brought up by distant relatives, cruel and hard-hearted people...)
- ✓ The story gives a deep insight into (the life of the common people, «the little man's» existence...)
- ✓ This play sums up many burning problems of the time, such as...
- ✓ The story shows the drama of (the character s inner world...)
- ✓ The chapter gives a true picture of (contemporary social and family relations in bourgeois society...)
- ✓ The story depicts (the plight of the city poor, and the striking contrast between their miserable existence and the life of the privileged few...)
- ✓ The action takes place in (an old English estate...)
- ✓ The setting for the play is (a lodging house owned by...)
- ✓ The main characters are...
- ✓ The plot is very simple...
- ✓ The plot, as such, is practically eventless...
- ✓ The story is full of events...
- ✓ These are the main facts that make up the plot of the story.
- ✓ This is the gist of the extract.
- ✓ Such is the plot of the extract.

Phrases to be used while working with the text

- ✓ The story is told in the third person narration (this is third person narration; the narrative is the first person).
- ✓ The story is told from the point of one the characters, namely...
- ✓ The narrator (an onlooker who does not take part in the events but whose keen interest in them is quite obvious).
- ✓ The narrator focuses his attention on...
- ✓ The character s perception of the events permeates the whole story and makes it dramatic (appealing, humorous...)
- ✓ In this story we can observe the conventional sequence of compositional elements: an exposition, a gradual mounting of tension, with final climax and denouement.
- ✓ The opening paragraph presents (an exposition to the story...)

- ✓ It is description of..., an account of..., etc.
- ✓ The story opens with a description of...
- ✓ The opening paragraph introduces (the main characters and gives some details of their life...)
- ✓ The first part of the text which presents an exposition to the events is written in the form of the description blended with a dialogue.
- ✓ The atmosphere and details of living are described convincingly (perfectly, exactly as in life).
- ✓ The landscape is not simply the background (it plays a definite role in the development of the plot; highlights certain features of a character...)
- ✓ The description of (the place of action...) gives a deeper insight into the situation. From this description we understand that (the imaginary state of Winnemac is an artistic incarnation of the exacting American states, with their landscape, customs and history).
- ✓ The basic compositional feature of this story is suspense. It is created by a number of relevant details which intensify the tension of the situation. These details include...
- ✓ This part of the text is written in the form of a narration which conveys the dynamic development of the plot.
- ✓ The tense rhythm of the narration is interrupted by / accentuated by (dialogues in which the reader's attention is drawn to a new topic...)
- ✓ The narration is closely interwoven and interlaced with the monologue of the character which gives an insight into (the character's state of mind...)
- ✓ The next paragraph adds some more details to the reader's knowledge of the situation.
- ✓ The episode of the argument (the character's meeting...) is the climax of the story. This scene is (dramatic; solemnly impressive; humorous...)
- ✓ The episode presents the crucial point of the story. The reader understands that...
- ✓ The concluding paragraph presents the denouement. Everything is more clear...
- ✓ The story ends with...
- ✓ Two characters are presented in this extract...
- ✓ The personages are given a profound and true-to-life psychological characterization.
- ✓ The character is presented as (weak-willed; passive, a man lacking in firmness, helpless, gentle, intelligent, cheerful, tactful, honest in dealing with other people, a person with a clear conscience...).
- ✓ The description brings out (the characteristic features of Mr. X's personality, such as his dignity; his yearning for a new life; his splendid calm..).
- ✓ All the details of his appearance (the full ruddy face, the keen look, the mockingly condensing smile...) speak of man's (sanguine temperament, intelligence, confident dignity, composure, devotion to his convictions, remarkable will-power...)

- ✓ Mr. X's personality is revealed to the full through his own words and the remarks of other personages. He is described as a (cruel, hard-hearted, haughty, greedy, tactless, hypocritical, dishonest, narrow-minded, rude, irritable, ill-bred, fussy...) man.
- ✓ His actions enumerated in the narration characterize him as a (good-natured, sensible, stubborn, reliable, resourceful, persistent, shrewd) person.
- ✓ She is characterized by (reserve, reluctance to allow anybody to get an insight into her inner state...)
- ✓ There were certain traits in her character that were alien to her husband such as...
- ✓ All these details underline (the character's social position, her absolute lack of breeding...)
- ✓ The characters are convincing and well-drawn...
- ✓ The characters are typical and authentic and their psychology is well rendered.
- ✓ The mood prevalent in the extract is (cheerfulness, humour, irony, gloom, nervousness, bleakness, melancholy, happiness...).
- ✓ The tone of the extract is tensely dramatic. The author lays bare the spiritual drama of...
- ✓ The story is full of jokes, witticism, and light-hearted jest.
- ✓ The story is distinguished by its cheerful tone.
- ✓ The extract has a tragic ring.
- ✓ The mood of wretchedness, anxiety permeates the text (The story is permeated with...).
- ✓ The story reflects life, and in life everything is mixed up together: the profound with the trivial, the great with petty, the tragic with the comic.
- ✓ Minute details add to the matter-of-fact and logical tone of the narration.
- ✓ The author clearly displays his sympathy for the character. With anger and acrimony he shows the triumph of philistines and brutality.
- ✓ The story is filled with deep sympathy for the poor and a bitter hatred for the rich.
- ✓ The author's message is expressed very clearly. The writer raises his voice in defense of (human dignity...).

Cliches for working with newspaper articles

- ✓ The newspaper under review is...№...1999
- ✓ The article headline reads as follows...
- ✓ The article is published under the rubric...
- ✓ The author of the article is...
- ✓ The subject of the article is...
- ✓ The main idea of the article is...
- ✓ The main idea of the article is in the very headline.

- ✓ The main idea of the article is in the following lines...(words).
- ✓ It's a political commentary.
- ✓ It's an editorial article.
- ✓ The main idea of the article is in the last paragraph.
- ✓ The material is topical.
- ✓ The material of the article is devoted to...
- ✓ The material attracts the reader.
- ✓ The article gives very full attention to this event.
- ✓ The article deals with the problem of...
- ✓ The article carries material on (about)...
- ✓ The opening paragraph conveys the principal item of the article.
- ✓ The 1st paragraph introduces the main idea of the editorial.
- ✓ The next part of the article is devoted to (deals with)...
- ✓ Paragraph 3 discusses...
- ✓ Further, the author dwells on...
- ✓ According to the author...
- ✓ The author speaks in details about...
- ✓ In compressed form...
- ✓ The paper gives figures illustrating...
- ✓ In conclusion the author adds (I should add)...
- ✓ In conclusion I should mention that...

The author:

- remarks
- points out that
- stresses
- underlines
- speaks about ... in details
- also explains that
- describes
- states
- declares

INTRODUCTION

- ✓ The news... provides a front-page story in the paper.
- ✓ The stories... dominate the front page.
- ✓ The main front-page news in the paper is...
- ✓ The paper carries a long/short editorial about...

- ✓ The news...caused a lot of editorial about...
- ✓ The news...gets the attention on the front page.
- ✓ ...provides the leading domestic (international, foreign) news
- ✓ The leading item of foreign news...
- ✓ The editorial is concerned with...
- ✓ The paper comments on...
- ✓ Another big front-page item concerns...

✓

✓ **NEUTRAL**

- ✓ The article draws attention to the fact...
- ✓ The paper finds a good deal to say...
- ✓ In the paper's views...
- ✓ The author brings out the problem...
- ✓ The article describes...
- ✓ The author outlines/points out...
- ✓ The paper cites as proof of...
- ✓ The paper addresses its editorial on the problem...to...
- ✓ The paper comments...
- ✓ The editorial is mainly concerned with domestic affairs...
- ✓ The article ends with the comment...
- ✓ The editorial concludes...
- ✓ The paper focuses its attention on...
- ✓ The article highlights the consequences of...
- ✓ As the paper puts it...
- ✓ In its comment the paper reviews...
- ✓ A four-column article on the inside page sums up...
- ✓ A detailed front-page article summarizes...

FOR

- ✓ The paper finds a good deal to say in support of...
- ✓ The paper finds it significant that...
- ✓ The paper calls for more pressure...
- ✓ The newspaper is confident that...
- ✓ The paper aggress that...
- ✓ The paper strongly believes that...
- ✓ The paper makes a vigorous call for...
- ✓ The paper declares its support for...
- ✓ The paper concludes with a strong appeal for...
- ✓ The paper expresses approval of / support of...

- ✓ The editorial expresses the belief (the conviction, the opinion, the view) that...

AGAINST

- ✓ The author argues that...
- ✓ The author fails to answer the question...
- ✓ The paper accuses...
- ✓ The editorial bitterly attacks...
- ✓ The paper condemns...
- ✓ The editorial is sharply critical of...
- ✓ The article strongly denounced...
- ✓ The editorial disagrees with...
- ✓ The paper expresses alarm (concern, disappointment) at...
- ✓ The paper strongly protects against...
- ✓ Summing up the... the author regrets that...
- ✓ The newspaper strongly rejects the idea of...
- ✓ The paper briefly touches upon...
- ✓ The paper deals with the problem...

TEXTS

Cryptocurrency

Digital currency is a type of currency available in digital form. It exhibits properties similar to physical currencies, but can allow for instantaneous transactions and borderless transfer-of-ownership.

Examples include virtual currencies and cryptocurrencies and central bank issued money accounted for in a computer database. Like traditional money, these currencies may be used to buy physical goods and services, but may also be restricted to certain communities such as for use inside an online game or social network.

In early 2009, an anonymous programmer or a group of programmers under an alias Satoshi Nakamoto introduced Bitcoin. Satoshi described it as a 'peer-to-peer electronic cash system.' It is completely decentralized, meaning there are no servers involved and no central controlling authority. The concept closely resembles peer-to-peer networks for file sharing.

One of the most important problems that any payment network has to solve is double-spending. It is a fraudulent technique of spending the same amount twice. The traditional solution was a trusted third party - a central server - that kept records of the



balances and transactions. However, this method always entailed an authority basically in control of your funds and with all your personal details on hand.

In a decentralized network like Bitcoin, every single participant needs to do this job. This is done via the Blockchain - a public ledger of all transaction that ever happened within the network, available to everyone. Therefore, everyone in the network can see every account's balance. Every transaction is a file that consists of the sender's and recipient's public keys (wallet addresses) and the amount of coins transferred. The transaction also needs to be signed off by the sender with their private key. All of this is just basic cryptography. Eventually, the transaction is broadcasted in the network, but it needs to be confirmed first.

Within a cryptocurrency network, only miners can confirm transactions by solving a cryptographic puzzle. They take transactions, mark them as legitimate and spread them across the network. Afterwards, every node of the network adds it to its database. Once the transaction is confirmed it becomes unforgeable and irreversible and a miner receives a reward, plus the transaction fees.

Cryptocurrencies are so called because the consensus-keeping process is ensured with strong cryptography. This, along with aforementioned factors, makes third parties and blind trust as a concept completely redundant. Many existing digital currencies have not yet seen widespread usage, and may not be easily used or exchanged. Banks generally do not accept or offer services for them.

There are concerns that cryptocurrencies are extremely risky due to their very high volatility and potential for pump and dump schemes. Regulators in several countries have warned against their use and some have taken concrete regulatory measures to dissuade users. The non-cryptocurrencies are all centralized. As such, they may be shut down or seized by a government at any time. The more anonymous a currency is, the more attractive it is to criminals, regardless of the intentions of its creators.

Практическая работа № 11.

Elon Reeve Musk

Elon Reeve Musk - American engineer, inventor and investor. Co-founder of PayPal; founder, co-owner, Chief Executive Officer and chief engineer of SpaceX; Chief Executive Officer and chief inspirer of Tesla; was also a member of the Board of Directors of Solar City. Born and raised in Pretoria, South Africa, Musk moved to Canada when he was 17 to attend Queen's University. He transferred to the University

of Pennsylvania two years later, where he received an economics degree from the Wharton School and a degree in physics from the College of Arts and Sciences.

At the age of ten, Elon received as a gift his first Commodore VIC-20 computer and learned to program on it. At the age of twelve, he sold for \$ 500 his first program – a video game called Blaster. In 1995, Musk and his brother founded Zip2, a company that specialized in software for news companies. In 1999, Zip2 was purchased by Compaq for \$ 308 million. Musk received \$22 million.



In March 1999, Musk was one of the founders X.com. In 2000 X.com has merged with PayPal. Both systems were engaged in providing personal electronic money transfers via e-mail, and the purpose of the transaction was the merger of both payment systems. This impressive success allowed the company to place its shares on the stock exchange in February 2002 In October 2002 PayPal was bought by eBay for 1.5 billion dollars. At the time of sale Musk owned 12 % of the company, which allowed him to gain \$ 180 million.

In May 2002, Musk founded his third company — SpaceX, investing in it 100 million dollars. Elon Musk set a goal — to reduce the cost of space flights by 10 times. In January 2016 at the investment forum in Hong Kong, Musk announced that his company hopes to fly to Mars in 2020-2025.

In 2006, he inspired the creation of SolarCity, a solar energy services company. In 2015, Musk co-founded OpenAI, a nonprofit research company that aims to promote friendly artificial intelligence. In July 2016, he co-founded Neuralink, a neurotechnology company focused on developing implantable brain–computer interfaces.

Tesla - American company, based in Palo Alto, California. The company specializes in electric car and solar panel manufacturing. Musk has envisioned a high-speed transportation system known as the Hyperloop, and has proposed a vertical take-off and landing supersonic jet electric aircraft, known as the Musk electric jet.

Rewards. 2007 American Institute of Aeronautics and Astronautics George Low award for the most outstanding contribution in the field of space transportation. Musk

was recognized for his design of the Falcon 1, the first privately developed liquid-fuel rocket to reach orbit.

In 2008, Esquire magazine included the Musk in the list of 75 most influential people of the XXI century. The world governing body for aerospace records, presented Musk in 2010 with the highest award in air and space, the FAI Gold Space Medal, for designing the first privately developed rocket to reach orbit. In June 2011, he was awarded the Heinlein prize for his achievements in space commercialization of 500 thousand us dollars. In February of the same year, Forbes magazine included the Musk in the list of 20 most influential American CEOs under the age of forty.

In 2012, Musk was awarded the Royal Aeronautical Society's highest award: a Gold Medal. In November 2013, Fortune magazine named him entrepreneur of the year and the Wall Street Journal named Musk CEO of the year. In 2015, he was awarded IEEE (Ай трипли) Honorary Membership. In June 2016, Business Insider named Musk one of the "Top 10 Business Visionaries Creating Value for the World" along with Mark Zuckerberg and Sal Khan.

In December 2016, Musk was ranked 21st on Forbes list of The World's Most Powerful People. In May 2017, Musk was awarded the Oslo Business for Peace Award. For outstanding services to science on May 9, 2018, Elon Reeve Musk was awarded the membership of the Royal society of London.

According to Elon himself, he was greatly influenced by the cycle of science fiction novels "the Foundation" and the views of Isaac Asimov on the development of outer space as the development and preservation of human existence. Musk has stated that the goals of SpaceX, Tesla, and SolarCity revolve around his vision to change the world and humanity. His goals include reducing global warming through sustainable energy production and consumption, and reducing the risk of human extinction by establishing a human colony on Mars.

EXERCISES



Match the verbs with the nouns.

1. recharge	a. digital photos
2. click on	b. faxes
3. dial	c. a number on your mobile phone
4. give	d. a presentation
5. move	e. something with the mouse

6. print out	f. the battery
7. send and receive	g. the mouse
8. take some	h. twenty pages



Choose the best verb.

1. To turn on the computer, _____ the "Start" button.		
a. touch	b. press	c. switch
2. The printer has _____ of ink.		
a. finished	b. ended	c. run out
3. Unfortunately, my scanner isn't _____ at the moment.		
a. working	b. going	c. doing
4. Please _____ the CD ROM.		
a. insert	b. introduce	c. inject
5. The projector isn't working because it isn't _____.		
a. plugged	b. plugged in	c. plugged into
6. The batteries in my digital camera are nearly dead. They need _____.		
a. to change b. exchanging c. changing		
7. I have to _____ a computer screen for eight hours a day.		
a. see	b. look at	c. watch
8. Switch off your computer, and _____ it from the wall socket.		
a. de-plug	b. unplug	c. non-plug

9. I turned off the photocopier and _____ the plug.		
a. pulled out	b. extracted	c. took away
10. _____ any key to continue.		
a. Kick	b. Smash	c. Hit



Rearrange the letters to make things which can be part of a workstation.

TUCMEPOR	COMPUTER
TRIRPEN	
NASECNR	
KESD	
HACIR	
NOPELETHE	



Choose the best word.

1. The mouse moves on a _____.		
a. mouse mat	b. mouse carpet	c. mouse table
2. TV and computer screens are usually measured in _____.		
a. feet	b. miles	c. inches
3. Before you start work, _____ the height of your chair		
a. adjust	b. change	c. rearrange
4. To get sound from your computer, plug in a pair of _____.		
a. loudhailers	b. loudspeakers	c. loud voices
22. The computer is connected to the telephone line via a _____.		

a. module	b. modem	c. mod
23. You can increase the functions or performance of a computer with an _____.		
a. extension card	b. exploding card	c. expansion card
24. Mobile phones and PDAs can communicate with computers via _____.		
a. Bluebeard ®	b. Blueberry ®	c. Bluetooth ®
25. There's a spare _____ in the workstation...		
a. electric hole	b. power point	c. electrical opening
26. ...so you can plug in your mobile phone _____.		
a. charger	b. power	c. electrification
27. SD cards can be read in a computer's _____.		
a. storage reader	b. memory reader	c. card reader







How to scan an image

at	connected	file format	handheld
dpi	original	image editing	high
text	low	brightness	contrast
click	adjust	preview (or prescan)	flatbed
OCR software	all-in-one		

1. Make sure the scanner is _____ to the computer.
2. Lift the lid and put the _____ on the scanner glass.
3. For high image quality, scan _____ 300 _____ or higher.
4. The scanning software will automatically do a _____.

5. If the image is too dark or too light, you can _____ the _____ and _____.
6. _____ "scan".
7. If you scanned _____, it can be "read" by _____.
8. If you want to save the image, choose a _____. JPEG is a good choice for photos.
9. The scanned image can be manipulated using _____ software.
10. An _____ printer/scanner can print, scan and copy.
11. Picture A is a _____ scanner.
12. Picture B is a _____ scanner.
13. Picture C is a _____ resolution photograph.
14. Picture D is a _____ resolution photograph.

A	C
	
B	D
	

dpi stands for dots per inch (1 inch = 2.4cm)
OCR stands for Optical Character Recognition
JPEG is pronounced "jay-peg"

Практическая работа № 12.

Study the vocabulary:

Слово	Перевод
to back up	выполнять резервное копирование
to boot	загружать, загружаться
to burn	записывать на оптический диск
to create	создавать
to compile	компилировать
to compress	сжимать (например, архиватором)
to connect	соединять, подключаться
to cut	вырезать в буфер обмена
to debug	отлаживать
to decrypt	расшифровывать
to delete	удалять
to deploy	развертывать (например, приложение на сервере)
to develop	разрабатывать
to disable	отключать, деактивировать
to disconnect	разъединять, отключаться
to display	отображать
to download	загружать, скачивать
to eject	извлекать (устройство)
to enable	включать, активировать
to encrypt	шифровать, зашифровывать
to execute	исполнять
to format	форматировать
to implement	внедрять, реализовывать
to initialize	приводить в исходное состояние, инициализировать
to install	инсталлировать, устанавливать
to integrate	интегрировать, объединять в одну систему
to link to	ссылаться на что-либо
to load	загружать
to paste	вставлять из буфера обмена
to plug in	подключать
to press (a button)	нажимать (кнопку)
to read	считывать
to reboot	перезагружать, перезагружаться
to restore	восстанавливать
to save	сохранять
to scroll up/down	прокручивать вверх/вниз (например, веб-страницу)
to switch on/off	включать/выключать
to uninstall	деинсталлировать, удалять
to update	обновлять
to upgrade	улучшать, модернизировать

to upload	загружать, закачивать
to verify	проверять

Hardware — аппаратное обеспечение

Слово/Словосочетание	Перевод
a bus	шина
a cable	кабель
a central processing unit (CPU)	центральный процессор
a computer case	корпус системного блока
a device	устройство
a fan	вентилятор охлаждения, кулер
a graphics card (display card, display adapter, graphics adapter)	видеокарта (графический адаптер)
a graphics processing unit (GPU)	графический процессор
a hard disk drive (HDD)	жесткий диск
a laptop	ноутбук, портативный компьютер
a light-emitting diode (LED)	светодиод
a motherboard (mainboard)	материнская плата
a network card	сетевой адаптер (сетевая карта, сетевая плата)
a port	разъем, порт
a power supply unit (PSU)	блок питания
a solid-state drive (SSD)	твердотельный накопитель
a sound card (audio card)	звуковая карта
a storage device	запоминающее устройство, накопитель
a touch screen	сенсорный экран
air cooling	воздушное охлаждение
an expansion card	карта (плата) расширения
an optical disk drive	оптический привод
an uninterruptible power source (UPS)	источник бесперебойного питания
random-access memory (RAM)	оперативная память (ОЗУ)
read-only memory (ROM)	постоянное запоминающее устройство (ПЗУ)
removable media	съёмные носители информации
water cooling	водяное охлаждение
output devices: <ul style="list-style-type: none"> • a monitor • a printer • a speaker • headphones 	устройства вывода: <ul style="list-style-type: none"> • монитор • принтер • колонка (акустическая) • наушники
input devices: <ul style="list-style-type: none"> • a keyboard • a mouse 	устройства ввода: <ul style="list-style-type: none"> • клавиатура • мышь

<ul style="list-style-type: none"> • a scanner • a digital camera • a joystick 	<ul style="list-style-type: none"> • сканер • цифровая камера • джойстик
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Software — программное обеспечение

Слово/Словосочетание	Перевод
a compiler	компилятор
a database	база данных
a debugger	отладчик
a desktop application/app	приложение для настольного компьютера
a device driver	драйвер устройства
a graphical user interface (GUI)	графический пользовательский интерфейс
a kernel	ядро (например, операционной системы)
a mobile application/app	мобильное приложение
a plug-in (plugin)	плагин, расширение, дополнительный программный модуль
a programming language	язык программирования
a query	запрос
a scroll bar	полоса прокрутки
a snapshot	снимок состояния системы
a spreadsheet	электронная таблица
a status bar	строка состояния
a template	шаблон
a version control system (VCS)	система контроля версий
a web application/app	веб-приложение
a word processor	текстовый процессор
a text editor	текстовый редактор
a utility	утилита (служебная программа)
acceptance testing	приемочное тестирование
agile methodology	гибкая методология разработки
an algorithm	алгоритм
an array	массив
an encoding	кодировка
an enterprise application	корпоративное приложение
an executable (file)	исполняемый файл

an interpreter	интерпретатор
an operating system (OS)	операционная система
application software	прикладное программное обеспечение
aspect-oriented programming (AOP)	аспектно-ориентированное программирование
binary data	двоичные данные
commercial software	платное программное обеспечение
data	данные, информация
data processing	обработка данных
extreme programming	экстремальное программирование
firmware	прошивка, микропрограмма
freeware	бесплатное программное обеспечение
incremental development	инкрементная модель разработки
integrated development environment (IDE)	интегрированная среда разработки
iterative development	итеративная модель разработки
malicious software (malware)	вредоносное программное обеспечение
object-oriented programming (OOP)	объектно-ориентированное программирование
open source software	программное обеспечение с открытым исходным кодом
prototyping	создание прототипа, прототипирование
rapid application development (RAD)	быстрая разработка приложений (методология)
regression testing	регрессионное тестирование
runtime (runtime environment)	среда выполнения кода
server software	серверное программное обеспечение
spiral development	спиральная модель разработки
spyware	программа-шпион, шпионское программное обеспечение
system software	системное программное обеспечение
unit testing	модульное (блочное, компонентное) тестирование
waterfall model	каскадная модель разработки

Internet — Интернет

Слово/Словосочетание	Перевод
a bookmark	закладка (в браузере)
a bridge	мост
a browser	браузер, обозреватель
a domain	домен
a firewall	брандмауэр, межсетевой экран
a gateway	шлюз
a hyperlink	гиперссылка
a node	узел сети
a packet	пакет
a patch cord	коммутационный кабель, патч-корд
a router	маршрутизатор, роутер
a search engine	поисковая система
a subdomain	поддомен, субдомен
a switch	коммутатор, свитч
a website	веб-сайт, веб-узел
a wireless network	беспроводная сеть
bandwidth	пропускная способность (канала передачи данных)
broadband	широкополосный доступ в Интернет
client-server architecture	клиент-серверная архитектура
cloud computing	облачные вычисления
cloud storage	облачное хранилище данных
dynamic host configuration protocol (DHCP)	протокол динамической настройки узла
domain name system (DNS)	система доменных имен
instant messaging (IM)	обмен мгновенными сообщениями
Internet service provider (ISP)	интернет-провайдер
local area network (LAN)	локальная сеть
latency	задержка, период ожидания
media access control (MAC) address	аппаратный адрес, MAC-адрес
peer-to-peer (P2P)	одноранговая сеть, пиринговая сеть

twisted pair	витая пара
voice over IP (VoIP)	голосовая связь через Интернет, IP-телефония
wide area network (WAN)	глобальная сеть, широкомасштабная сеть

Практическая работа № 13.

COMPUTER SCIENCE

Unit 1 presents introductory information about computers in a comprehensive, straightforward manner and is an attempt to provide information about basic computing concepts. You will also learn some of the basic issues, definitions, and concepts related to computers and their use.

Test Concepts

Computers are everywhere – in our homes, our schools, our shops, offices and hospitals. We use them every day, but what do we know about them? Most machines are designed to do one job. Computers are different: they are general purpose machines. By changing the program instructions, computers can be used to process information in different ways.

Language Material

1. Translate into Russian words-internationals.

to specify, to specialize, specialist, specific, productivity, optimal, problem, logic, logical, operation, program, virus, expert, instruction, differentiation, artificial, defend, method, computer, mathematics, designer, device, manager, calculator, function, algebra, algebraic.

2. Learn by heart the following vocabulary:

addition	сложение	labour	труд
artificial	разумный, искусственный	sorting	сортировка
computer science	информатика	subtraction	вычитание
comparing	сравнение	to concern	рассматривать
device	устройство	to divide	делить, подразделять
differentiation	дифференциация	to improve	улучшать
		to intend	

division	деление	to shorten	намереваться
integrating	интеграция, объединение в одно целое - Σ	as far as	сокращать до;
matching	подборка пары	as well as	насколько
multiplication	умножение	thus	также как
productivity	производительность	in order to	таким образом
selecting	отбор, выбор, подбор, селекция		чтобы

3. Find in the right column the Russian equivalents to English words and expressions:

- | | |
|---------------------------------|--------------------------------------|
| 1. modern technologies | a. программное обеспечение |
| 2. to work out programs | b. отвечать современным требованиям |
| 3. programming language | c. аппаратная часть |
| 4. computer-aided-manufacturing | d. иметь дело (с кем-л., чем-л.) |
| 5. new ways | e. автоматизированное проектирование |
| 6. to defend from viruses | f. защищать от вирусов |
| 7. hardware | g. предлагать решения |
| 8. to offer solutions | h. разрабатывать программы |
| 9. to deal (with) | i. автоматизированное производство |
| 10. to solve problems | j. решать проблемы |
| 11. computer-aided-design | k. язык программирования |
| 12. software | l. современные технологии |
| 13. to meet up-to-date demands | m. новые способы, пути |

4. Find noun in each line.

- | | | | | |
|----|-------------|--------------|-------------------|---------------|
| 1. | a) labour | b) solve | c) concern | d) artificial |
| 2. | a) applied | b) solution | c) shorten | d) divide |
| 3. | a) improve | b) perform | c) multiplication | d) such |
| 4. | a) logical | b) designing | c) defend | d) virus |
| 5. | a) division | b) solve | c) work out | d) know |

5. Find in each line word that is given at the beginning.

science	a) занятие	b) исследование	c) производительность	d) наука
applied	a) накапливать	b) прикладной	c) совместный	d) ловкий
field	a) производство	b) устройство	c) сфера, область	d) труд
knowledge	a) труд	b) исследование	c) сложение	d) знание
to improve	a) применять	b) намереваться	c) улучшать	d) решать
productivity	a) продукт	b) процесс	c) производительность	d) товар
labour	a) труд	b) развитие	c) закон	d) забота
to divide	a) выполнять	b) подразделять	c) рассматривать	d) проявлять

6. A great many words in English have more than one meaning. Note different meanings for words “science” and “combination”.

<i>science</i>	наука	New developments in science and technology are enriched all our lives. Economics is an inexact science .
	естественные науки	Philosophers did not use a distinction between arts and science .
	умение, опыт	They offered me the job because I had a lot of science .
	знание	Science can penetrate many of nature’s mysteries.
<i>combination</i>	соединение, комбинация	His treatment was a combination of surgery, radiation and drugs. She brings to the job a rare combination of youth and experience. The room was decorated in a combination of greens and blues. This combination of qualities is generally supposed to be extremely rare.
	союз, объединение	A combination of internal and external factors caused the company to close down.

7. English has a lot of different words with similar but slightly differing meanings. Look at these words that are synonyms.

goal – aim, object, intention, ambition, destination.

house – building, residence, apartment.

to perform – to do, to act, to achieve, to execute, to accomplish, to fulfill, to complete.

to shorten – to curtail, to reduce, to cut, to retrench.

to concern – to apply to, to consider.

8. Consider antonyms, the words that mean the opposite of the word in bold type.

quick – slow, languid, creeping, crawling, tardy, sluggish, lazy, snail-like.

different – similar, like, alike, correspondent, harmonious, homogeneous, common, same.

important – slight, trivial, light, petty, unimportant, subordinate, nonessential, inconsiderable, shallow, weak, worthless, powerless, insignificant.

to defend – to desert, to abandon, to leave, to forsake, to quit, to resign, to relinquish, to renounce, to vacate, to give up.

9. Consider the grammar:

to defend from – защищать(ся), оборонять(ся) ч.-л. от к.-л.

Thus in order to elaborate up-to-date and inexpensive programs as well as *to defend* them *from* viruses, it is important to know some programming languages.

to suffer from – страдать от ч.-л./ к.-л.

The number of people *suffering from* heart disease has increased.

to protect smb/sth from – защищать к.-л./ч.-л. от ч.-л.

Sun oil can *protect* skin *from* the sun.

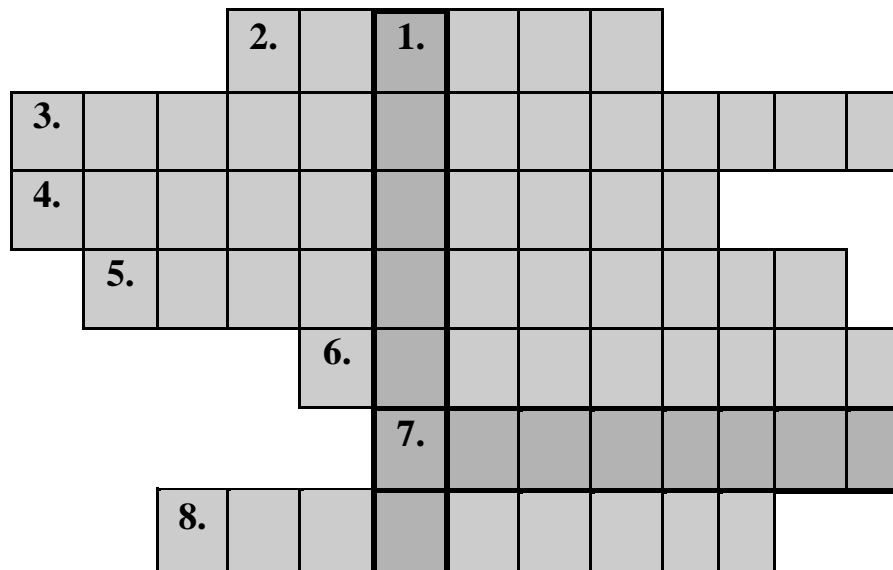
10. Find in each line the word - synonym to the first word.

science	a) sorting	b) product	c) artificial	d) knowledge
device	a) productivity	b) artifice	c) division	d) novice
to perform	a) to solve	b) to support	c) to accomplish	d) to offer
to divide	a) to separate	b) to defend	c) to deal	d) to elaborate
to work out	a) to use	b) to elaborate	c) to store	d) to speed
goal	a) labour	b) software	c) solution	d) aim
to intend	a) to shorten	b) to purpose	c) to concern	d) to improve

11. Find in each line the word - antonym to the first word.

different	a) complex	b) similar	c) distinct	d) diverse
to divide	a) to unite	b) to part	c) to share	d) to execute
complex	a) sluggish	b) definite	c) simple	d) equal
quick	a) unfair	b) instantly	c) thus	d) slow
to elaborate	a) to deform	b) to plain	c) to join	d) to diminish

12. Try and complete the following crossword "Computer science".



1. The study or knowledge which can be made into system and which depends on seeing, understanding and testing facts.
2. A high-level language which is used by students who require a simple language to begin programming.
3. The rate at which a worker, a company or a country produces goods, and the amount produced compared with how much time, working money is needed to produce them.
4. Knowledge or skill which comes from practice rather than books.
5. The study or science of different numbers and calculations; one of the main subjects taught at schools and colleges.
6. The result of education.
7. An electronic device used to process information.
8. An useful thing or idea which produced by scientists for the first time.

13. Word Bingo.

Look at the list of the words given below. Write down any five words. The teacher is going to read the definitions of all the words in random order. If you hear the definition of one of the words you have chosen, cross it out. The first student to cross out all the words he or she has chosen calls out "Bingo" and reads the words to prove his/her claim.

Words: science, mathematics, computer, knowledge, solution, labour, designer, goal, main, help, problem, addition, subtraction, multiplication, division, using, operation.

Word-building

Model 1

Основа глагола + **er/or** → существительное со значением лица, производящего действие или орудие действия

to produce - производить	producer - производитель
to design - конструировать, проектировать	designer - проектировщик, конструктор
to manage - руководить, заведовать	manager - руководитель
to manufacture - производить, обрабатывать	manufacturer - производитель

Model 2

Основа глагола или существительного + **ist** → существительное со значением лица, производящего действие

science - наука	scientist - ученый
final - финал	finalist - финалист
theory - теория	theorist - теоретик
art - искусство	artist - искусствовед

14. Make new words using the models 1-2.

to generate	to work	to invent	to supply
biology	to type	to tour	to terror
to distribute	to operate	to hunt	to incubate
instrumental	fatal	to machine	plural

15. Make your own examples with the models 1-2.

Практическая работа № 14.

Reading Practice

16. Read the text. Try to understand it and be ready to answer the questions.

TEXT 1A

COMPUTER SCIENCE

Computers today are far more than the number crunchers. Today, computers are used to store and manage information in the form of words, numbers, sounds, and pictures.

With the invention of the computer, a few people began to see the potential for faster management of this information flow. Even though computers were at first used mainly for mathematical calculation, it wasn't long before businesses began to understand how their ability to speed the handling of information could be used as a competitive advantage over other companies that had not yet computerized. Soon businesses were racing to convert information into forms that could be managed by computers.

Computer science is the study of computers and how they can be used. Specialists in computer science say that this field of knowledge is very interesting because it deals with computer-aided-design (CAD) and computer-aided-manufacturing (CAM).

Computers are intended to improve the productivity of labour of scientists, designers, engineers, managers, and other specialists, because computers offer quick and optimal solutions. One of the main goals of using CAD/CAM is to shorten the time between designing and manufacturing.

Today, much of the world's information has been computerized and the race has changed to finding new ways to use it. The world's businesses, libraries, governments, and educational institutions now need people who are willing to learn new ways to process information. The end of the twentieth century will mark a new beginning both for computer professionals and for computer users. It will be the period in which we all come to terms with the computer. Computers came in our life and to our houses and now we can solve our everyday problems with their help. We now realize that although computers will affect everyone's life, we won't have to change the way we do things because computer professionals are finding ways to adapt the computer to our needs, instead of the other way around. In fact, as computers take on additional roles in our lives, we may not even realize that we are using a computer. Soon computers, in one form or another, will have a role to play as we use automobiles or public transportation to get to work, as we buy products and services, as we teach, as we learn, as we are entertained, and as we carry out our jobs at every level in every occupation.

Computer can perform many functions: they can do mathematical, and logical operations, mathematical operations including arithmetic and algebraic operations, such as addition, subtraction, multiplication and division, raising to a power, differentiating and integrating. Logical operations include comparing, selecting, sorting and matching.

Computers can be divided into simple and complex devices. Simple computers such as calculators can perform addition, subtraction, multiplication and division. As far as complex computers are concerned they can do different logical operations and some of them even have artificial intelligence.

Thus in order to elaborate up-to-date and inexpensive programs as well as to defend them from viruses, it is important to know some programming languages. There are low-level programming languages such as a machine language and an assembly language and high-level programming languages, for instance, FORTRAN, PASCAL, ADA, C, BASIC, etc.

17. Choose the correct answer.

1. What do specialists in computer science deal with?
 - a. description how computers were first developed, how they evolved, and how they influence our lives today;
 - b. computer-aided-design (CAD) and computer-aided-manufacturing (CAM);
 - c. presentation introductory information about computers.
2. What are the computers used for?
 - a. for improving of the productivity of labour of scientists, designers, managers and other specialists by offering quick and optimal solutions to them;
 - b. for calculations;
 - c. for creating and manipulating text and pictures.
3. What operations can simple devices perform?
 - a. make decisions based on accumulated evidence;
 - b. to display and manage graphics, fonts, and other page design features like lines and boxes, a close representation;
 - c. addition, subtraction, multiplication and division.
4. What operations do complex computers perform?
 - a. different logical operations;
 - b. automate tasks that previously are being carried out by specially trained employees;
 - c. output information in such forms as payroll checks.
5. What are CAD/CAM systems intended to do?
 - a. to elaborate new program languages;
 - b. to perform different calculations such as addition, subtraction, multiplication and division;
 - c. to shorten the time between designing and manufacturing.
6. What high-level programming languages do you know?
 - a. assembly languages;

b. FORTRAN, COBOL, BASIC, ADA;

c. machine languages.

18. Choose the phrases on the right which complete the sentences on the left.

1. Experts in computer science deal with ...	a) manufacturing cars; b) computer-aided-design; c) increasing the productivity of cars.
2. One of the aims of using computers is ...	a) to work out up-to-date demands; b) to shorten the time between designing and manufacturing; c) to construct hardware's.
3. Simple devices can ...	a) do logical operations; b) perform such operations as addition, subtraction, multiplication and division; c) output information in such forms as payroll checks;
4. Complex computers can ...	d) make decisions based on accumulated evidence.
5. High-level programming languages are ...	a) BASIC, FORTRAN, ADA; b) assembly languages; c) machine languages.

Практическая работа № 15.

Writing Practice

19. Translate into English in writing:

В последнее время очень популярна стала информатика, так как невозможно представить нашу повседневную жизнь без компьютера. Компьютеры направлены на увеличение производительности труда ученых, проектировщиков, управляющих, бухгалтеров и т.п. Компьютеры, отвечающие современным требованиям, принимают быстрые и оптимальные решения наших проблем. Информатика - это комплексная научно-техническая дисциплина, занимающаяся изучением структуры и общих свойств информации, информационных процессов, разработкой на этой основе информационной техники и технологий, а также решением научных, инженерных проблем создания, внедрения и эффективного использования

компьютерной техники и технологий во всех сферах общественной практики. Специалисты в области компьютерных исследований занимаются автоматизированным производством и проектированием, одной из задач является сокращение времени между проектированием и производством.

20. Give the main idea of extract "Computer science" in 20 sentences.

21. Read the article below and decide which of the expressions in the box best describe computers.

a miraculous device	communication	calculator
sophisticated	complex	typewriter

TEXT 1B

WHAT CAN COMPUTERS DO?

to encounter - встречаться, сталкиваться

to spring to life - появляться

miraculous - чудный

appropriate - соответствующий, подходящий

gadget – приспособление, устройство, техническая новинка, полезная мелочь

ignition – воспламенение, зажигание, прокаливание

Computers and microchips have become part of our everyday lives: we visit shops and offices which have been designed with the help of computers, we read magazines which have been produced on computer, and we pay bills prepared by computers. Just picking up a telephone and dialing a number involves the use of a sophisticated computer system, as does making a flight reservation or bank transaction.

We encounter daily many computers that spring to life the instant they're switched on (e.g. calculators, the car's electronic ignition, the timer in the microwave, or the programmer inside the TV set), all of which use chip technology.

What makes computer such a miraculous device? Each time you turn it on, it is a tabula rasa that, with appropriate hardware and software, is capable of doing anything you ask. It is a calculating machine that speeds up financial calculations. It is an electronic filing cabinet which manages large collections of data such as customers' lists, accounts, or inventories. It is a magical typewriter that allows you to type and print any kind of document – letters, memos or legal documents. It is a personal communicator that enables you to interact with other computers and with people around the world. If you like gadgets and electronic entertainment, you can even use your PC to relax with computer games.

22. Read the translation of the third paragraph given below. Compare it with the original and say if everything is right.

Что делает компьютер таким чудесным устройством? Общеизвестно, что каждый раз как вы включаете компьютер с соответствующим оборудованием и мягким обеспечением, вы можете выполнить все, что ни попросите. Это калькулятор, который ускоряет финансовые расчеты. Это кабинет, заполненный электроникой, которая управляет большим количеством данных, таких как списки покупателей, счета или изобретения. Это магическая печатная машинка, которая позволяет вам напечатать любой документ - письма, заметки или юридические документы.

23. Find the answers to these questions in the text.

1. Name some types of devices that use “computers on a chip”.
2. What uses of handheld computers are mentioned in the text?
3. What are the benefits of using computers with the following items?
 - a) Security systems
 - b) Cars
 - c) Phones
4. What smart devices are mentioned in the text?
5. What are smart cards used for?
6. What are the advantages of multimedia?
7. What can medical expert systems do?
8. How can computers help the disabled?
9. What types of computing systems are made available to people in remote locations using electronic classrooms or boardrooms?
10. What aspects of computing can people power determine?

Практическая работа № 16.

TEXT 1C

COMPUTERS MAKE THE WORLD SMALLER AND SMARTER

The ability of tiny computing devices to control complex operations has transformed the way many tasks are performed, ranging from scientific research to producing consumer products. Tiny

“computers on a chip” are used in medical equipment, home appliances, cars and toys. Workers use handheld computing devices to collect data at a customer site, to generate forms, to control inventory, and to serve as desktop organisers.

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

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

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

Multimedia systems are known for their educational and entertainment value, which we call “edutainment”. Multimedia combines text with sound, video, animation, and graphics, which greatly enhances the interaction between user and machine and can make information more interesting and appealing to people. Expert systems software enables computers to “think” like experts. Medical diagnosis expert systems, for example, can help doctors pinpoint a patient's illness, suggest further tests, and prescribe appropriate drugs.

Connectivity enables computers and software that might otherwise be incompatible to communicate and to share resources. Now that computers are proliferating in many areas and networks are available for people to access data and communicate with others, so personal computers are becoming interpersonal PCs. They have the potential to significantly improve the way we relate to each other. Many people today telecommute - that is, use their computers to stay in touch with the office while they are working at home. With the proper tools, hospital staff can get a diagnosis from a medical expert hundreds or thousands of miles away. Similarly, the disabled can communicate more effectively with others using computers.

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

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

24. Reread the text to find the answers to these questions:

a) Match the terms in Table A with the statements in Table B.

Table A	Table B
1. Edutainment 2. Multimedia 3. Expert system 4. Telecommute 5. Information superhighway	a) Software that enables computers to “think” like experts b) Use computers to stay in touch with the office while working at home c) Internet system designed to provide free, interactive access to vast resources for people all over the world d) Multimedia materials with a combination of educational and entertainment content e) A combination of text with sound, video, animation, and graphics

b) Mark the following statements as True or False:

- Desktop organisers are programs that require desktop computers.
- Computers are sometimes used to monitor systems that previously needed human supervision.
- Networking is a way of allowing otherwise incompatible systems to communicate and share resources.
- The use of computers prevents people from being creative.
- Computer users do not have much influence over the way that computing develops.

Oral Practice

25. Put the sentences in the right order.

1. make, or, reservation, transaction, a flight, computers, bank.
2. calculations, speed up, computers, financial.
3. on, produced, read, been, which, magazines, have, we, computer.
4. to interact, computer, people, enables, other, you, around, with, and, computers, with, the, world.
5. pay, bills, by, prepared, we, computers.
6. designed, been, we, shops, visit, and, computers, of, offices, which, have, with, the, help.

7. the, with, type, computer, of, the, you, can, and, help, any, of, print, document, kind.

8. PC, you, games, can, to, use, computer, your, relax, with.

26. Give definitions to the following words and expressions:

science, knowledge, computer-aided-design, computer-aided-manufacturing.

27. Questions for group discussion:

1. Why is the computer science so important in our life nowadays?
2. What problems can computer science solve?
3. What operations can computer perform?
4. Today, the number of jobs that are related to the use of computers or the maintenance of computers is growing steadily. Describe four different computer-related jobs and the skills these jobs require.

Listening Practice

28. Listen to the text and make a list of at least seven tasks done by robots and androids.

29. Refer to the text to find the terms for these definitions.

1. a science field that tries to improve computers and robots with features associated with human intelligence;
2. programs used by computers;
3. stage of mass production in which parts of a product move along for progressive assembly;
4. small devices used for doing various tasks;
5. robots that look like human beings.

Практическая работа № 17.

COMPUTERS AND SOCIETY

Unit 2 focuses your attention on the way computers are used throughout society and how they are affecting our lives. It points out how computers are being utilized in almost every aspect of our lives. In this chapter, you will learn about the following topics:

- the computer and its users;
- computers in the workplace.

Terms Concepts

Today, computers and electronic technologies have been incorporated into almost every aspect of society. Computers now play a role in how we learn, how we spend and take care of our money, and how we are entertained.

Some people are concerned about computer-related health issues such as the effect of radiation from the cathode-ray tube (CRT) technology used in many computer displays and the physical effects of the day-to-day use of computers.

Language Material

1. Consult a dictionary and practise the pronunciation of the following words:

procedure, direct, disease, instantaneously, to forecast, finance, financial, evidence, data, diagnose, technology, knowledgeable, score board, credential, to enhance, to convey.

2. Learn by heart the following vocabulary:

ability	способность, умение	to acquire	приобретать, получать
account	счет, отчет, причина, основание	to carry out	выполнять, осуществлять
capability	способность	to confront	противостоять, стоять лицом к лицу
capacity	емкость, способность, мощность	to convey	перевозить, передавать
credentials	аттестаты, сертификаты	to eliminate	устранять, исключать, уничтожать
database	база данных	to enhance	усиливать, увеличивать, повышать
inventory	оборудование	to install	устанавливать

procedure	операция, процедура	to involve	включать, вовлекать, содержать
simulation	моделирование, имитация	to provide	обеспечивать, принимать меры
society	общество	to require	требовать, нуждаться
stock	запас, акция	to store	хранить, запасать,
variety	разнообразие	to update	улучшать, усовершенствовать

3. Read the words, translate them in writing and learn by heart:

access	currency	to arrive	available
advertisement	development	to create	entire
customer	destination	to use	huge

4. Match the English word combinations in the left-hand column with the Russian equivalents in the right-hand column:

1. dimension	a. стадия производства
2. manufacturing stage	b. отдаленное местоположение
3. patient appointment	c. моделирование, имитация
4. remote location	d. процесс лечения
5. simulation	e. перевозить, сообщать, выражать
6. treatment procedure	f. открывать, обнаруживать
7. to convey	g. вовлекать, включать в себя
8. to detect	h. следить, быть в курсе
9. to enhance	i. измерение, величина
10. to involve	k. совершенствовать, обновлять, увеличивать
11. to keep track	l. прием пациентов
12. to update	m. повышать, увеличивать

5. Note additional meanings for word "way".

the way путь, дорога

There is **a way** between the two cities.

сторона, направление	Look both ways before crossing the road.
расстояние	You came all this way to see us?
поведение, характер	It was not his way to admit that made a mistake.
метод, средство, способ	Personal computers have given teachers new ways to individualize instruction.
образ жизни	The computer has changed the way we work, the way we learn, the way we communicate, the way of our living .
область, сфера	He is in computing way .
обычай, привычка	It is not in his way to communicate.
состояние	The computer is in a bad way .

6. Consider the grammar:

to rely on/upon – полагаться, доверять, быть уверенным в ч.-л, к.-л.

You may *rely on* modern computer technologies, they are high reliable.

Around the world, investment brokers, financial advisors, and the stock exchanges themselves *rely on* huge databases of information about world financial markets.

to depend on – зависеть от ч.-л.

- "What time will you arrive?"

- "I don't know. It depends on the traffic."

to congratulate on – поздравлять к.-л. с ч.-л.

I *congratulated* her *on* her success in the exam.

to insist on – настаивать на ч.л.

I wanted to go alone but they *insisted on* coming with me.

to spend on – тратить на ч.-л.

How much money do you *spend on* food each week?

to act on / upon sth. – влиять, действовать на ч.-л.

Why didn't you *act on* her suggestion?

7. Learn the synonyms:

to arrive – to come, to reach, to attain, to land, to visit, to appear.

entertainment – amusement, enjoyment, fun, pleasure, recreation, banquet, merrymaking.

to maintain – to support, to hold, to uphold, to defend, to content, to carry, to keep, to confirm.

prediction – prognostication, announcement, foretelling, preannouncement, soothsaying, fortune-telling, prognosis, forecast.

transaction – doing, proceeding, business, act, matter, action, event, deal, sale, selling, buying, purchase, purchasing, performance, execution.

to store – to keep, to save, to hold, to maintain, to support.

8. Notice the antonyms:

ability – incompetence, ignorance, weakness, dullness, stupidity, inability, limitation.

advantage – disadvantage, loss, drawback, hindrance, handicap, obstruction, barrier, restriction.

to create – to destroy, to demolish, to wreck, to frustrate, to blast, to blight, to ruin, to fail.

to develop – to curtail, to shorten, to conceal, to hide, to narrow, to lessen, to compress.

to send – to give, to get, to receive, to hold, to keep, to retain, to secure, to maintain, to hide.

9. Which of the listed below terms have Russian equivalents?

analysis, to analyze, broker, capability, company, credit, graphics, technology, technophobia.

10. Find in each line word that is given at the beginning:

to acquire	a) сканировать	b) следить	c) выражать	d) приобретать, достигать
to enhance	a) перевозить	b) вовлекать	c) проверять	d) расширять, увеличивать
to mean	a) превращать	b) причинять	c) означать	d) моделировать
to provide	a) создавать	b) обновлять	c) делать	d) запасать, обеспечивать
to require	a) описать	b) достигать	c) требовать	d) вовлекать
message	a) сообщение	b) мера	c) мерить	d) имитация

11. Give definitions to the following using the vocabulary:

education, medicine, feedback, advertisement, library, manufacturing.

12. Find in each line the word – synonym to the first word.

capability	a) energy	b) honesty	c) opportunity	d) assembly
variety	a) monotony	b) difference	c) sameness	d) parteciple
to manage	a) to govern	b) to mismanage	c) to bungle	d) to misdirect
to transmit	a) to invent	b) to supply	c) to transfer	d) to appear

13. Find in each line the word – antonym to the first word.

to change	a) to barter	b) to exchange	c) to alter	d) to remain
to combine	a) to deny	b) to blush	c) to separate	d) to praise
extensively	a) frosty	b) intensively	c) hardly	d) recently
rapidly	a) quickly	b) slowly	c) speedily	d) expressly
significant	a) prominent	b) meaningful	c) unimportant	d) grave

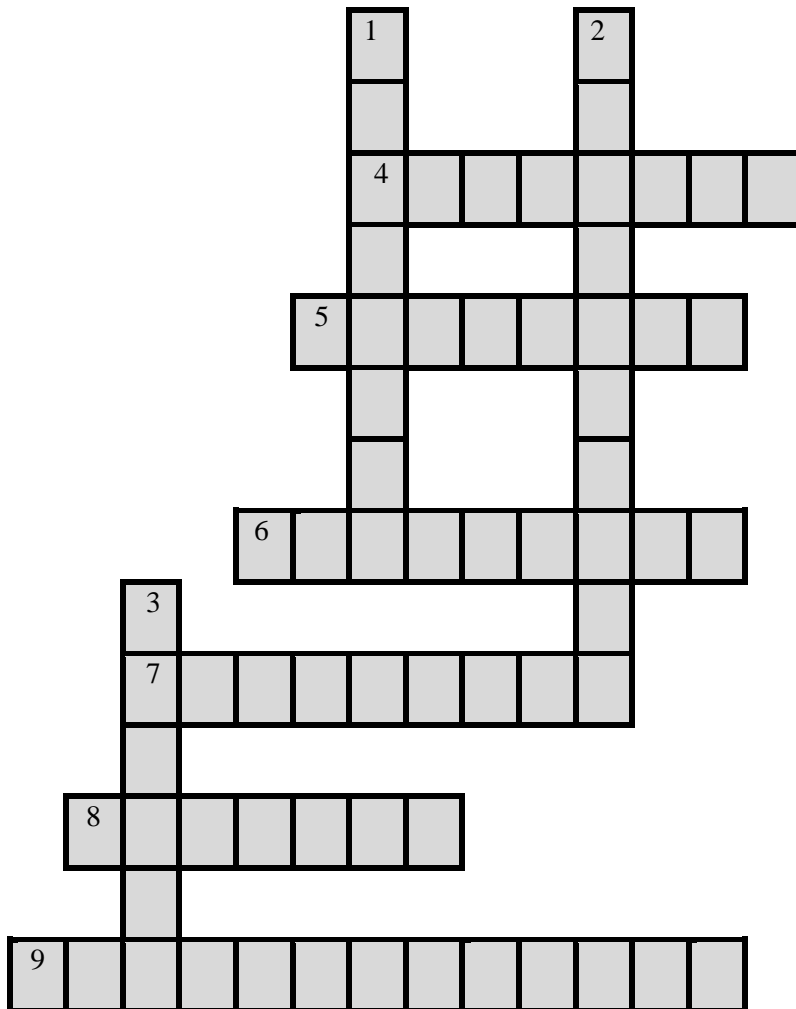
14. Read and translate the following expressions.

computer tomography (CAT)	to maintain information	banking transaction
magnetic resonance imaging (MRI)	tissue chemistry	to detect problem
computerized learning program	teaching credential	health care system
large amounts of data	electric appliance	product delivery
cash and checks	financial advisor	at high speed

15. Try and complete the following crossword.

1. An electronic device used to process information.
2. A form of amusement and enjoyment; way of spending free time.
3. The arrangement of the parts in any man-made product, such as a machine or work of art, as this influences the product's practical usefulness, artistic quality.
4. The science of treating and understanding illness.
5. The activity of buying and selling goods and services.
6. A process of promoting, selling and distributing of product or service.

7. The process by which a person’s mind and character are developed through teaching, or through formal instruction at a school or at college.
8. A room or building containing the books that can be looked at or borrowed by members of the public or by members of the group or organization that owns the collection.
9. To make or produce by machinery, etc.



16. Word Bingo.

Look at the list of the words given below. Write down any five words. The teacher is going to read the definitions of all the words in random order. If you hear the definition of one of the words you have chosen, cross it out. The first student to cross out all the words he or she has chosen calls out “Bingo” and reads the words to prove his/her claim.

Words: banking, body, business, computer, communication, device, education, e-mail, entertainment, evidence, image, fax machine, feedback, finance, library, medicine, message, phone, science, society, system, text, transaction.

Практическая работа № 18.

Word-building

Model 4

Основа глагола + **tion/sion/ion** → существительное

to include - включать	inclusion - включение
to continue - продолжать	continuation - продолжение
to produce - производить	production - производство
to consider - рассматривать	consideration - рассмотрение

Model 5

Основа глагола + **ment** → существительное

to assess - оценивать	assessment - оценка
to move - двигать	movement - движение
to establish - устанавливать	establishment - создание, установление
to replace - заменять	replacement - замена

Model 6

Прилагательное → глагол

clean - чистый	to clean - чистить
dirty - грязный	to dirty - грязнить
empty - пустой	to empty - опустошать
free - свободный	to free - освобождать

17. Make new words using the models 4-6.

to animate	to communicate	to construct	to create	to destine	to decide
to advertise	to astonish	to argue	to develop	to depart	to enforce
to examine	to inform	to instruct	to institute	to locate	to limit
light	close	dolly	faint	hollow	invalid

to engage	to environ	to entertain	to fulfill	to govern	to improve
to oppose	to predict	to prepare	to reproduce	to represent	to simulate
to invest	to judge	to manage	to settle	to pay	to treat

18. Read the text and define the parts of speech of the words in a bold type. Name their meaning. Translate the text.

to consume - потреблять

dispenser – распределитель, раздаточное устройство

stopover – остановка в пути

Computers can help students to perform mathematical **operations** and solve difficult **questions**. They can be used to access the Internet, teach courses such as computer-aided design, language learning, programming, mathematics, etc.

PCs are also used for administrative purposes: for example, schools use databases and word **processors** to keep records of students, teachers and materials.

Race **organizers** and **journalists** rely on computers to provide them with the current **positions** of **riders** and teams in both the particular stages of the race and in the overall **competition**.

Workstations in the race buses provide the timing system and give up-to-the-minute timing **information** to TV **stations**. In the press room several PCs give real-time information on the state of race. Computer databases are also used in the drug-detecting tests for **competitors**.

Computers store information about the amount of money held by each client and enable staff to access large databases and carry out financial **transactions** at high speed. They also control the automatic cash **dispensers** which, by the use of a personal coded card, dispense money to clients.

Airline pilots use computers to help them control the plane. For example, **monitors** display data 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 computer. Travel agents use computers to find out about the availability of flights, prices, times, **stopovers**, and many other details.

Reading Practice

19. Write a list of as many uses of the compute, or computer applications, as you can think of.

20. Now read the text below and underline any applications that are not in your list.

Практическая работа № 19.

TEXT 2A

COMPUTERS IN OUR LIVES

We use computers and computerized devices every day. Today's "personal" computers fit nicely on our desktops. Today, computers can be carried in a briefcase or even in a pocket and new, easier-to-use computer programs make them easier to use. In a few short years, the computer has changed the way we work, the way we learn, and the way we communicate.

The computer becomes more involved in our daily lives, and for many it has meant a change in how we do our jobs. As we carry out our daily tasks, we now confront computers everywhere - in our banking transactions, to detect problems with our automobiles, to program our VCRs (video cassette recorders) and our microwave ovens, even to check the prices of our groceries at the supermarket.

Education

In education, personal computers have given teachers new ways to individualize instruction. New types of computerized learning programs can combine text, graphics, and even on-screen digitized video to give students more realistic, motivational lessons. Today, schools and universities provide a variety of courses about using computers. Many high schools and colleges are now requiring all students to take at least one course on using computers and some states now require all teachers to be knowledgeable about computers and computer programs before they can acquire teaching credentials.

Medicine

Computers are now so widely used in medicine. They are changing the structure of our society's health care system. They are used extensively for basic tasks such as keeping track of patient appointments, but they are now also widely used for both diagnosis and treatment procedures. Laboratory tests on blood and tissue chemistry have become dependent on computer analysis. In addition, such computer-based technologies as computer tomography (CAT) scans and magnetic resonance imaging (MRI) can provide direct evidence of disease. Computers are being used in this way to enhance the physician's capability to see what is going on inside the human body.

Science

Because science is involved in the analysis of large amounts of data, scientists were among the first computer users. Computers are used to construct simulations of real objects and environments in order to analyze and make predictions. They are used for analysis of many different types of statistical data. And now, new graphics capabilities are providing scientists, with the ability to create computer-enhanced analyses of many different types of images including the analysis of images that are transmitted from spacecraft visiting other planets.

Communication

In the last few decades, computer-based technologies led to a redesign of our telephone systems, and new technologies have created new ways to convey information. FAX machines and computers that can communicate with FAX machines now quickly send copies of documents across the country or across the world. Computers are now used to prepare memos, letters, and business information. Electronic mail (e-mail) systems provide individual computer users with an "address" to which computer messages can

be sent. Once sent by the computer, the e-mail message will arrive almost instantaneously at its destination, where it will be stored until the addressee uses a computer to access it.

Business

Almost every business, whether large or small, has “computerized”. And every aspect of business - from sales to product delivery - now involves the use of a computer. In marketing, the computer is used to maintain information about customers and accounts. In manufacturing, the computer is used to keep track of raw materials, production, and inventory. And most large businesses now have a special department to manage the computers and the flow of computerized business information.

Banking and Finance

The computerized system is rapidly eliminating the need for cash and checks in our society. Computers now give banks a way to electronically transfer funds from one account to another without the need for paperwork. The customers can use credit and debit cards at remote locations. Computers are also used extensively in the world of stocks and investments. Around the world, investment brokers, financial advisors, and the stock exchanges themselves rely on huge databases of information about world financial markets. This computerized financial network has created a global market for currencies and financial instruments.

Entertainment and Recreation

Computers can be found throughout the entertainment industry. Computers are used to create the special effects used in television advertisements, the colourful displays on the score boards at sports arenas, and the cards that are displayed on the screen. Computer games are becoming more and more lifelike as the computer’s capability to portray graphics is constantly improved. In the motion picture industry, the time required to create animation has been greatly reduced through the use of computers and special graphics software. The movie industry also uses computers routinely for a variety of special effects and specialized computer programs have even made it possible to “colourize” old black-and-white films. Musicians are also taking advantage of advances in technology by using computerized electronic synthesizers to store, modify, and access a wide variety of sounds.

Homes

Our private homes represent one of the last places in our society to be significantly changed by the computer. Today, there are already computerized security systems in many homes. Some home builders have installed systems in houses that use a computer to control the lights, the heat, and even the electric appliances. In some homes, these computerized systems can be controlled by calling the house from any phone and typing in number sequences using the phone’s numbered dialing buttons.

Libraries

The computer has long been a powerful tool for libraries providing patrons access to bibliographic information on all of the materials that are available for their use. Now the greater storage capacities of CD-ROM disks are being used to give library users full-page access to such materials as journals, catalogs, and encyclopedias. Online catalogs provide constantly updated information about which books and other library resources are available and whether or not they are currently checked out.

Product Design and Manufacturing

Companies that are in the business of manufacturing products have found new ways to use computers in every aspect of product development. Many companies now use computers in the entire product development and production process, from the design stage to the manufacturing stage. Computer-aided design (CAD) software provides product designers with a way not only to develop a representation of the product, but also test the product design in a variety of simulated environments.

21. General understanding:

How were computers used in your school?

What other areas of study would benefit from the instruction of computers?

22. When you read texts like these, you don't always need to understand every word. But there are words which you can guess from the context. Look at these words. Are they nouns (n), verbs (v) or adjectives (adj)?

- | | | | | |
|----------------|----------|--------------|---------------|-----------------|
| 1. instruction | 2. data | 3. perform | 4. install | 5. transaction |
| 6. financial | 7. store | 8. connected | 9. capability | 10. communicate |

Now find the words in the text and match them with the meanings below.

a information	<input type="checkbox"/>	f linked	<input type="checkbox"/>
b execute (do)	<input type="checkbox"/>	g put a new program into a computer	<input type="checkbox"/>
c connected with money	<input type="checkbox"/>	h act of buying or selling	<input type="checkbox"/>
d keep (save)	<input type="checkbox"/>	i detailed information on how to do or use sth	<input type="checkbox"/>
e exchange information or ideas	<input type="checkbox"/>	j the abilities or qualities necessary to do sth	<input type="checkbox"/>

23. Choose the statements which correspond to the contents of the text.

1. Nothing epitomised modern life better than computer. For better or worse, computers have infiltrated every aspect of our society.

2. Although there are many new developments in computers that are blurring the lines between these types, we can still place computers generally into four categories.

3. Computerized telephone switching centres play traffic cop to millions of calls and keep lines of communication untangled; and automatic teller machines let us conduct banking transactions from virtually anywhere in the world.

4. The basic job of the computer is the processing of information. Computers accept information in the form of instruction called a program and characters called data to perform mathematical and

logical operations, and then give the results. The data is raw material while information is organized, processed, refined and useful for decision making. Computer is used to convert data into information. Computer is also used to store information in the digital form.

5. Today computers do much more than simply compute: supermarket scanners calculate our grocery bill while keeping store inventory.

6. The powerful capabilities of today's high-resolution colour graphics hardware and new types of graphics programs are changing the way many artists do their work.

24. Find in the text passages about the computer usage in science and translate them into Russian.

25. Find in the text and put down 10-12 words or word combinations which can be used to speak about the computer usage in education.

26. Read the translation of the first two paragraphs given below. Compare it with the original and say if everything is right.

Наши дома представляют собой одно из последних мест в нашем обществе, которые значительно изменены компьютерами. Сегодня же во многих домах установлена компьютеризованная система охраны.

Если технологии телевидения, компьютеров и электронных игр объединить, то они обеспечат новую форму интерактивных видеоразвлечений. Они могут принять форму продолжительного телевизионного вещания, которое может сохраниться внутри компьютерного развлекательного центра, позволяя вам определять, что и когда вы хотите посмотреть.

В некоторых домах установлены системы, которые контролируют свет, тепло, и даже электрические приборы. В некоторых домах эти компьютерные системы могут контролироваться звонком с любого телефона и ввода последовательности чисел, используемых на телефонном диске.

Некоторые работники боятся, что могут быть заменены компьютерами. Но внедрение компьютеров в работу не влияет на безработицу. Многие из нас боятся изменений до тех пор, пока мы не научимся с ними работать.

27. Give the main idea of the extract "Computers in our lives" in 25 sentences.

Listening Practice

28. Listen to these people talking about how they use computers at work and write each speaker's job in the table.

electrical engineer	secretary	librarian	composer
Speaker	Job	What they use computers for	
1			
2			
3			
4			

29. Now listen again and write what each speaker uses their computer for. Note different meanings for word “to communicate”.

30. Mike Hartley is a director of the Adaptive Technology Project for the Blind in Washington, DC. Listen to this interview with him in which he discusses the needs of blind computer users and make notes.

- Work he's involved in:
- Minimum configuration required to meet the needs of these workers:
 Processor:
- RAM:
- Expansion slots:
- Specific technologies (input/output devices):
- Companies that are developing adaptive equipment:

31. Compare your notes in pairs.

32. Listen again and complete your notes.

Практическая работа № 20.

33. Read and translate the text.

TEXT 2B

COMPUTERS IN THE WORKPLACE

to be responsible - быть ответственным за ч.-л.

previously - предыдущий

on the other hand - с другой стороны

skill - умение

phobia - страх, боязнь

wrist pain - боль в пояснице

Almost everyone recognizes the presence of computers in today's work places. What computers have often caused is a need for people to be retrained so they can fill the jobs that have been created by computers and new related technologies.

Most users find that many of the skills that were previously learned as part of their jobs can be applied to learning about the new tools made available by the computer. In most cases job-related skills rather than computer skills are found to be most important to worker productivity.

Fear of technology is known as technophobia. Many people feel that as new generations grow up with computers and learn to use them in a variety of environments they will feel more comfortable with the technology and will not suffer from the discomfort of this transitional period.

Telecommuting

Some people are working in their homes. These workers can communicate with the office and access information from the company's computer system. If employees have to work overtime, at least they can do so in the comfort of their own home. Parents can be available for their children at home and still get some work done. By telecommuting, employees can do the work when they are most productive. As a result, because the computer never sleeps, night owls can work all night.

Worker Health

Many people are concerned about the effect of radiation from the cathode-ray tube (CRT) technology used in many computer displays. Computer display technology is being improved to reduce the amount of radiation that is emitted. There is also some evidence that spending too much time looking at a computer screen may cause headaches and vision problems. Filters have now been developed to reduce the amount of glare coming off of computer screens.

On the other hand, too much time is engaged in repetitive motion while using a computer can cause problems. For example, computer users who spend too much time sitting in one position while using a computer can develop back problems. And many people who spend long hours typing on a computer keyboard can develop wrist pain.

34. Choose a passage and read it aloud (The approximate time of reading is 1-2 minutes).

35. Look through the text again to find two facts which were quite new to you and two facts which were already known to you.

36. Give the main idea of the extract "Computers in the workplace" in 20 sentences.

Writing Practice

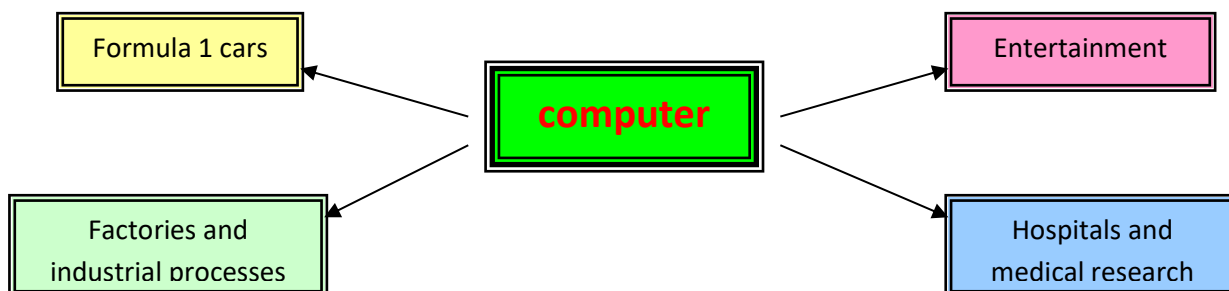
37. Write a letter to Mike Hartley asking for information about computers for the disabled. Make sure you include the following points.

- Begin by saying why you're writing:
I am writing to ...
- Ask for information about specific input/output equipment for deaf, blind and motor-disabled workers:
I would like to know ...
- Ask for a free handbook about how to add adaptive technology to personal computers:
I would be very grateful if...
- End the letter appropriately:
I look forward to hearing from you soon.

Yours sincerely ...

Oral Practice

38. In small groups, choose one of the areas in the diagram below and discuss what computers can do in this area.



Useful words

Formula 1: racing car, car body, design, mechanical parts, electronic components, engine speed.

Entertainment: game, music, animated image, multimedia, encyclopedia.

Factories: machinery, robot, production line, computer-aided manufacturing software.

Hospitals: patients, medical personnel, database program, records, scanner diagnose, disease, robot, surgery.

Useful constructions

Computers are used to ...

A PC can also be used for ...

Computers can help ... manage ... measure ...

make ...	give ...	test ...
control ...	perform ...	provide ...
store ...	keep ...	provide access to ...

39. Now write a short paragraph summarizing your discussion. Then ask one person from your group to give a summary of the group's ideas to the rest of the class.

Examples

In the business, computers are used for financial planning, accounting and specific calculations.

In the office, computers are used to write letters and e-mails, and keep records of clients, suppliers and employees.

40. Discussion.

More and more people begin using computers in their work. Some of them cannot imagine their life without this invention of the 20th century. Children find computer games very interesting. Are computers one of the greatest or the most dangerous inventions?

Say whether you use a computer in your work or for playing computer games. Do you use your computer in any other way or for any other purposes?

a) Read the following arguments. Think of some more.

<i>Computers are one of the greatest inventions</i>	<i>Computers are one of the most dangerous inventions</i>
1. They save a lot of time.	1. They are dangerous for your health.
2. They can do calculations and other things which are not interesting for people to do.	2. People waste a lot of time playing computer games.
3. They help you to process information.	3. You can lose the results of your work if something goes wrong with the computer.
4. You can learn many things using a computer as a tutor.	4. Some people live in a virtual reality not in the real world.
5. You can relax playing computer games.	5. Children cannot do the simplest arithmetic sums because they rely on computers.

b) Discuss the problem in groups of 3-5 students in order to make decision.

Практическая работа № 21.

THE HISTORY OF COMPUTING

This unit takes you back in time and introduces you to the technological developments that have evolved over time into the complex computer systems we use today. By understanding the connections between these early developments in the history of computers, you can see insight into the processes of technological evolution that continue today. In this chapter you will learn about the following topics:

- the evolution of computers;
- next-generation computers.

Terms Concepts

Despite the fact that today's computers are much smaller and much cheaper than their predecessors, they are far more flexible and powerful. Integrator and Calculator (**ENIAC**) is now seen as the first electronic computer. The first really successful computer was produced by Mauchley and Eckert and was named the **UNIVAC 1**.

New methods of programming the first generation of computers evolved with the hardware development. **Fortran** is generally seen as the first high-level programming language. Special-purpose **microprocessors** were produced in the early 1970s and in 1974 Intel produced their new 8-bit processor with 64,000 operations per second.

Language Material

1. Consult a dictionary and practise the pronunciation of the following words:

progress, importance, project, to succeed, efficiency, minuscule, artificial, versatility, feature, cumbersome, enormous, demand, sensitive, quartz, scientist, ultra-large, icon.

2. Learn by heart the following vocabulary:

experience	опыт	to consume	потреблять, съедать
equation	уравнение	to contain	содержать
efficiency	эффективность, действенность	to diminish	уменьшать, ослаблять
feature	черта, особенность	to describe	описывать
onset	начало, натиск	to eliminate	исключать, устранять

semiconductor	полупроводник	to expand	расширять
stride	шаг, успех	to exploit	использовать
trend	тенденция, направление	to hasten	ускорять
versatility	разносторонность	to handle	управлять, обращаться с
cumbersome	громоздкий	to include	включать
distinct	отчетливый, различный	to increase	увеличивать
distinctive	отличительный, различный	to link	связывать(ся)
large-scale	многомасштабный	to resume	возобновлять
reliable	надежный	to share	делить(ся)
sophisticated to shrink	сложный сужать(ся), садиться	to succeed	достигать цели, удаваться
		to squeeze	вмещать, сжимать

3. Read the words; translate them in writing and learn by heart:

sequence	icon	to allow
missile	enormous	to limit
generation	to damage	to move
invention	to fit	to replace
silicon	to consist	to remain

4. Match the English word combinations in the left-hand column with the Russian equivalents in the right-hand column:

1. machine language	a) функция компьютера
2. computer function	b) компьютер с электрическим реле
3. computer engineering	c) электровакуумная лампа
4. the key element	d) ЭВМ
5. vacuum tube	e) компьютерное проектирование / техника
6. a general-purpose computer	f) машинный язык
7. tape storage	g) запустить программу
8. disk storage	h) отвечать любым требованиям

9. stored program	i) ленточный накопитель
10. to run program	j) ключевой элемент
11. to meet any number demands	k) дисковый накопитель
12. an electronic relay computer	l) с хранимой программой

5. Consider the grammar:

to apologise to smb for - извиняться перед к-л., за ч-л.

They *apologized* me for what happened. Go and *apologize to* her. We *apologized to* the passengers *for* the late departure of this flight.

to explain sth to smb – объяснять ч-л. к-л.

Can you *explain* this word *to* me? First, I'll *explain* the rules of game *to* you. It was difficult to *explain* the problem *to* the beginners. The government now has to *explain* its decision *to* the public.

to lead to - приводить к ч.-л.

Eating too much sugar can *lead to* health problems. This has *led* scientists *to* speculate on the existence of other galaxies. The situation is far worse than we had been *led to* believe.

to listen to – слушать ч-л.

We spend the evening *listening to* music. I *listened* carefully *to* her story. None of this would have happened if you'd *listen to* me. Why won't *listen to* reason?

to talk/ speak to smb – разговаривать с к-л.

Who was that man you were *talking to*? Ann and Joe *aren't talking to* each other right now. *Talk to* your doctor if you're still worried. I've *spoken to* the manager about it. Have you *talked to* your parents about the problems you're having?

to write to – писать к-л. ч.-л.

I *wrote to* the hotel complaining about the poor service we had received. She *wrote to* him in France. An error was reported when he tried to *write data to* the file for the first time.

6. Note additional meanings for word "to fit".

to fit	быть в пору	The key does not fit the lock.
	монтировать, устанавливать	They fitted a smoke alarm to the ceiling.
	соответствовать, совпадать	The facts certainly fit your theory.

ПОДХОДИТЬ

His experience **fitted** him to do the job.

7. Match the synonyms:

trend – direction, tendency, orientation, tenor.

intelligent - smart, clever, brilliant, bright.

to contain - to include, to incorporate, to embody, to encompass, to involve, to comprehend.

to diminish – to lessen, to reduce, to decrease, to minimize, to shorten, to cut off.

to impact on – influence on, have an influence on, affect.

to limit - to eliminate, to restrict, to confine.

to squeeze – to hold, to contain, to go into, to compress, to contract.

8. Match the antonyms:

1. to increase	a) simple
2. to develop	b) massive
3. to decode	c) general / common
4. part	d) fast
5. slow	e) to decrease
6. complex	f) weak
7. powerful	g) to encode
8. reliable	h) whole
9. small	i) back
10. specific	j) unreliable
11. toward	k) to shorten

9. Find in each line word that is given at the beginning:

application	a) эффективность	b) уравнение	c) применение	d) направление
icon	a) полупроводник	b) окошечко	c) действенность	d) опыт
silicon	a) уравнение	b) натиск	c) успех	d) кремний

to damage	a) увеличивать	b) повреждать	c) потреблять	d) расширять
to resume	a) описывать	b) содержать	c) возобновлять	d) делить
large-scale	a) большой	b) сложный	c) крупномасштабный	d) громоздкий
distinctive	a) отличительный	b) отдаленный	c) дистанционный	d) длительный

10. Find in each line the word – synonym to the first word:

to increase	a) to expand	b) to handle	c) to raise	d) to diminish
to exploit	a) to succeed	b) to use	c) to include	d) to eliminate
to consist	a) to include	b) to hasten	c) to exploit	d) to diminish
missile	a) generation	b) sequence	c) invention	d) rocket
to link	a) to join	b) to consume	c) to eliminate	d) to squeeze
cumbersome	a) distinct	b) bulky	c) reliable	d) sophisticated

11. Find in each line the word – antonym to the first word:

reliable	a) cumbersome	b) distinctive	c) enormous	d) unstable
the onset	a) end	b) versatility	c) icon	d) invention
to hasten	a) to include	b) to slow	c) to expand	d) to consume
distinct	a) enormous	b) reliable	c) cumbersome	d) same
entire	a) part	b) sophisticated	c) large-scale	d) reliable
demand	a) onset	b) equation	c) supply	d) stride

12. Read and translate the following expressions.

the increasing funding	Electronic Discrete Variable Automatic Computer
a secret code-breaking computer	Automatic Sequence Controlled Calculator
in common (general) use	Electronic Numerical Integrator and Computer
magnetic drum	user-friendly software package
a set of instruction	soldered join
binary-coded program	great deal

quartz clock
energy-efficient
spreadsheet program

solid state
integrated circuit
word processing

13. Give definitions to the following using the vocabulary:

generation, vacuum tube, transistor, integrated circuit, microprocessor, operating system, artificial intelligence, semiconductor.

14. Word Bingo.

Look at the list of the words given below. Write down any four words. The teacher is going to read the definitions of all the words in random order. If you hear the definition of one of the words you have chosen, cross it out. The first student to cross out all the words he or she has chosen calls out “Bingo” and reads the words to prove his/her claim.

Words: computing, history, vacuum tube, transistor, integrated circuit, microprocessor, operating system, generation, the onset, distinct, trend.

Практическая работа № 22.

Word-building

Model 7

Основа прилагательного + **-ly** → наречие

free – свободный

freely – свободно

possible – возможный

possibly – возможно

deep – глубокий

deeply – глубоко

safe – безопасный

safely – безопасно

Model 8

Основа существительного + **-ic** → прилагательное

history – история

historic – исторический

system – система

systematic – систематический

base – основа

basic – основной

Model 9

Основа глагола + **-ing** → существительное

to open – открывать

opening – открытие

to break – разбивать, разрушать

breaking – разрушение

to repair – ремонтировать

repairing – ремонт

to measure – мерить

measuring – мера

15. Make new words using the models 7-9.

accurate

applicable

correct

easy

to build

to buy

to cook

to drive

canon

magnet

opportunist

pantheist

exact

fair

inadequate

indirect

to break

to engineer

to develop

to find

parabola

diplomat

patriot

pedant

legal

loud

objective

real

to help

to keep

to learn

to meet

period

philately

phobia

photograph

simple

successful

to play

to prove

to process

to read

to see

to program

ascent

atom

electron

fatalist

16. Read the text and define the parts of speech of the words in a bold type. Name their meaning. Translate the text.

Early computing machines and inventors

numerical – числовой

wire – провод

vacuum-tube – электровакуумная лампа

counter – счетчик

to connect – соединять

to consider – рассматривать

soldered – припаянный

variety – разнообразие

remarkable – замечательный

capability – способность

power – мощность

In the late 1800s, a variety of mechanical devices were designed to carry out numerical **calculations**. But the first real computers came during World War II when **governments** needed better and faster calculating systems. The earliest computers were designed to facilitate weapons **management**, code **breaking**, and wartime **recordkeeping**.

In the late 1930s, Howard Aiken at Harvard University was working with a \$500,000 grant from IBM to develop an automatic calculating machine. The machine, which came to be known as the Mark 1, was completed in 1944. It used **electrically** powered mechanical **counters** to store the results of **arithmetic calculations**. It contained 500 miles of wire, had 3 million electrical **connections**, and required about 6 seconds to carry out each multiplication task.

At about the same time, at Iowa State University a computing device that incorporated an advanced design was built by John Atanasoff and Clifford Berry. Although the device was not designed for large-scale **processing**, it was the first to be based on vacuum-tube technology and was therefore the first **fully electronic** computing device. Completed in 1942, it became known as Atanasoff-Berry Computer, or the ABC **computer**.

At the University of Pennsylvania, J. Presper Eckert and John W. Mauchley were working on a much larger device. They designed a **completely electronic** device that could be used for a variety of calculating tasks. They called it the **Electronic Numerical Integrator and Calculator**, or ENIAC. Unveiled in 1944, it is now considered to be the first large-scale, general-purpose electronic computer. Although it was very slow and very limited in capability as compared to today's computers, it represented a remarkable **advancement** in computing power for the time. The ENIAC contained 19,000 vacuum tubes and 5 million soldered electrical connections. It could perform up to 5,000 additions per second, but it consumed much power.

None of the early computers could be programmed. In the middle 1940, John von Neumann joined Eckert and Mauchley. His ideas for **designing** a programmable computer were to form the basis for the types of stored-program computers we still use today. These stored programs are now known as software (in contrast to the computer's physical devices, known as hardware).

Практическая работа № 23.

Reading Practice

17. Read the text. Try to understand it and be ready to answer the questions.

FIVE GENERATIONS OF MODERN COMPUTERS

As important as computers are to today's businesses, hospitals, and educational institutions, they haven't been in general use very long.

The computer is often described as having gone through five distinct generations. Each of these generations is based on the type of technology used during the period.

First Generation (1945-1956)

With the onset of the Second World War, governments sought to develop computers to exploit their potential strategic importance. This increased funding for computer development projects hastened technical progress. By 1941 German engineer Konrad Zuse had developed a computer, the Z3, to design airplanes and missiles. The Allied forces, however, made greater strides in developing powerful computers. In 1943, the British completed a secret code-breaking computer called Colossus to decode German messages. The Colossus impacts on the development of the computer industry. Colossus was not a general-purpose computer; it was only designed to decode secret messages. American Howard H. Aiken (1900-1973) succeeded in producing an all-electronic calculator by 1944. The Harvard-IBM Automatic Sequence Controlled Calculator, or Mark I for short, was an electronic relay computer. It used electromagnetic signals to move mechanical parts. The machine was slow (taking 3-5 seconds per calculation) and inflexible (in that sequences of calculations could not change); but it could perform basic arithmetic as well as more complex equations. Another computer development was the Electronic Numerical Integrator and Computer (ENIAC), consisting of 18,000 vacuum tubes, 70,000 resistors and 5 million soldered joints, the computer was such a massive piece of machinery that it consumed 160 kilowatts of electrical power. Developed by John Presper Eckert (1919-1995) and John W. Mauchly (1907-1980), ENIAC, unlike the Colossus and Mark I, was a general-purpose computer that computed at speeds 1,000 times faster than Mark I. Integrator and Calculator (**ENIAC**) are in now seen as the first electronic computer.

In the mid-1940s John von Neumann (1903-1957) joined the University of Pennsylvania team, initiating concepts in computer design that remained central to computer engineering for the next 40 years. Von Neumann designed the Electronic Discrete Variable Automatic Computer (EDVAC) in 1945 with a memory to hold both a stored program as well as data. This “stored memory” technique allowed the computer to be stopped at any point and then resumed, allowed for greater versatility in computer programming. The key element to the von Neumann architecture was the central processing unit which allowed all computer functions to be coordinated through a single source. In 1951 the UNIVAC I (Universal Automatic Computer), built by Remington Rand, became one of the first commercially available computers to take advantage of these advances.

First generation computers were characterized by the fact that operating instructions were made-to-order for the specific task for which the computer was to be used. Each computer had a different binary-coded program called a machine language that told it how to operate. This made the computer difficult to program and limited its versatility and speed. Other distinctive features of first generation computers were the use of vacuum tubes and magnetic drums for data storage.

Second Generation Computers (1956-1963)

The invention of the transistor greatly changed the computer’s development. The transistor replaced the large cumbersome vacuum tube in televisions, radios and computers. As a result, the size of electronic machinery has been shrinking ever since. The transistor was at work in the computer by 1956. Coupled with early advances in magnetic-core memory, transistors led to second generation computers that were smaller, faster, more reliable and more energy-efficient than their predecessors. The first large-scale machines taken advantage of this transistor technology were early supercomputers, produced by IBM and LARC by Sperry-Rand. These computers could handle an enormous amount of data, a capability much in demand by atomic scientists. Second generation computers replaced machine

language with assembly language, allowing abbreviated programming codes to replace long, difficult binary codes. These second generation computers (Burroughs, Control Data, Honeywell, IBM, Sperry-Rand) were also of solid state design, and contained transistors in place of vacuum tubes. They also contained printers, tape storage, disk storage, memory, operating systems, and stored programs. One important example was the IBM 1401. The stored program concept meant that instructions to run a computer were held inside the computer's memory, and could quickly be replaced by a different set of instructions for a different function. More sophisticated high-level languages such as COBOL (Common Business-Oriented Language) and FORTRAN (Formula Translator) came into common use during this time. New types of careers (programmer, analyst, and computer systems expert) and the entire software industry began with second generation computers.

Third Generation Computers (1964-1971)

Transistors still generated a great deal of heat which damaged the computer's sensitive internal parts. The quartz clock eliminated this problem. Jack Kilby, an engineer with Texas Instruments, developed the integrated circuit (IC) in 1958. The IC combined three electronic components onto a small silicon disk which was made from quartz. Scientists later managed to fit even more components on a single chip called a semiconductor. As a result, computers became ever smaller as more components were squeezed onto the chip. Another third-generation development included the use of an operating system that allowed machines to run many different programs at once with a central program that monitored and coordinated the computer's memory.

Fourth Generation (1971 - Present)

After the integrated circuits, the only place to go was down - in size, that is, large scale integration (LSI) could fit hundreds of components onto one chip. By the 1980s very large scale integration (VLSI) squeezed hundreds of thousands of components onto a chip. Ultra-large scale integration (ULSI) increased that number into the millions. The ability to fit so much helped diminish the size and price of computers. It also increased their power, efficiency and reliability. The Intel 4004 chip, developed in 1971, took the integrated circuit one step further by locating all the components of a computer (central processing unit, memory, and input and output controls) on a minuscule chip. Now one microprocessor could be manufactured and then programmed to meet any number of demands. These minicomputers came complete with user-friendly software packages most popularly word processing and spreadsheet programs. In 1981, IBM introduced its personal computer (PC) for use in the homes, offices and schools. Computers continued their trend toward a smaller size, working their way down from desktop to laptop computers to palmtop. In direct competition with IBM's PC was Apple's Macintosh line, introduced in 1984. The Macintosh offered an operating system that allowed users to move screen icons instead of typing instructions. Users controlled the screen cursor using a mouse, a device that mimicked the movement of one's hand on the computer screen. As smaller computers became more powerful, they could be linked together, or networked, to share memory space, software, information and communicate with each other. As opposed to a mainframe computer which was one powerful computer that shared time with many terminals for many applications, networked computers allowed individual computers to form electronic co-ops. A global web of computer circuitry, for example, the Internet links computers worldwide into a single network of information.

Fifth Generation (Present and Beyond)

Computers have come from nowhere 50 years ago and are rapidly catching in capability with the human brain. We can expect human machine equivalence by about 2015. But after this, computers

will get smarter. There is a noticeable positive feedback loop in technology development with each generation of improved computers giving us more assistance in the design and development of the next.

Ultimately, they will design their offspring with little or no human involvement. This technology development will push every field of knowledge forwards, not just computing.

But we will never get far unless we can solve the interface problem. In the near future we may have electronic pets, with video camera eyes and microphone ears, linked by radio to the family computer. With voice and language recognition we will have easy access to all that the Internet can provide. We can tell the pet what we want and it will sort it out of us. It will be impossible to be technophobic about such an interface, and the only IT skill needs will be to speak any major language.

However, new computer programs and new methods of programming computers will have to be design and put into operation before we can be said to be fully engaged in this latest generation of computing.

18. General understanding:

1. What is the relationship between devices like EDVAC and the device that is the modern computer?
2. What was the name of the first electronic computer and what computing principles did it introduce?
3. On what electronic component was based the first generation of computers? Name a computer that reprimands this generation.
4. What new methods of programming were introduced with the first generation of computers?
5. What new invention is associated with the second generation of computers?
6. Contrast the second and third generations of computers by describing hardware and software development that emerged during each period.
7. Contrast how microcomputers are used with the way second and third generation computers?
8. What are some of the names used to refer to a small computer, a microprocessor?

19. Choose the correct answer. Watch this section and tick the right answers below.

1. The history of computing has gone through ...	a) four distinctive generations of modern computers; b) five distinct generations, based on the type of technology; c) three main characteristic generations.
2. First generation computers were characterized ...	a) by the use of vacuum tubes and magnetic drums for data storage;

	<p>b) by designing to decode secret messages;</p> <p>c) performing basic arithmetic equations.</p>
3. Second generation computers contained ...	<p>a) vacuum tubes;</p> <p>b) printers, tape storage, disk storage, memory, operating systems, and stored programs;</p> <p>c) long difficult binary codes.</p>
4. Third generation development included ...	<p>a) the quartz clock, integrated circuit;</p> <p>b) the use of an operating system to run many different programs;</p> <p>c) a) and b).</p>
5. The fourth generation computers managed ...	<p>a) to squeeze hundreds of thousands of components onto a chip;</p> <p>b) to increase power, efficiency and reliability of a computer;</p> <p>c) a) and b)</p>
6. The main characteristic feature of the fifth generation computers is ...	<p>a) artificial intelligent;</p> <p>b) the use of visual input;</p> <p>c) the ability to translate a foreign languages.</p>

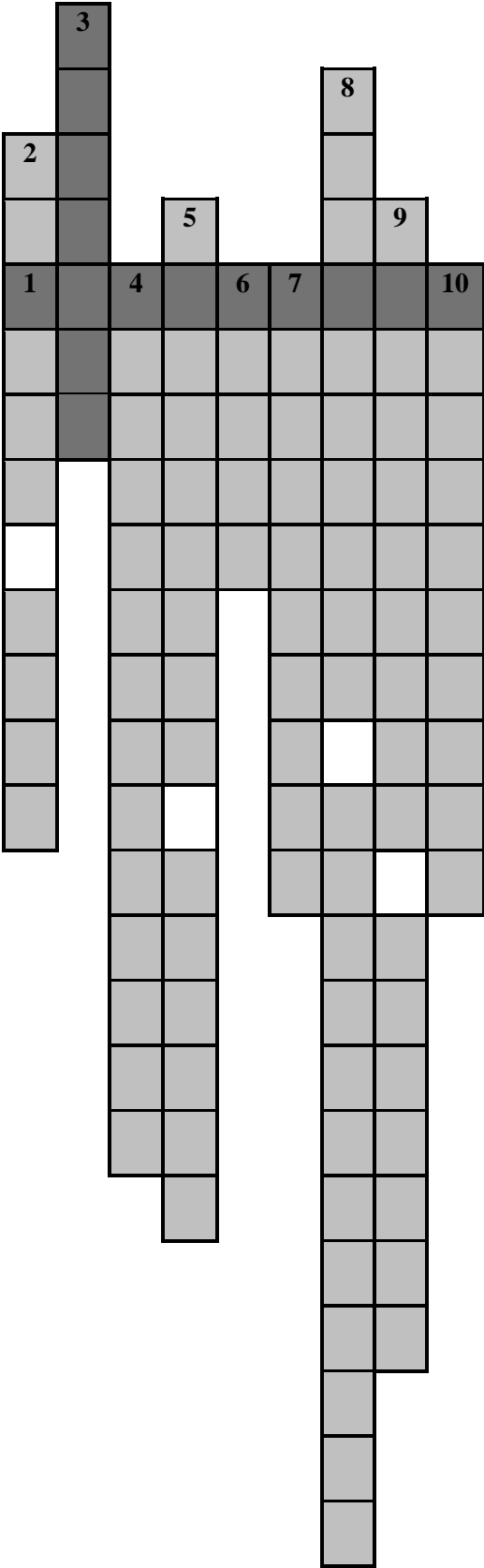
Практическая работа № 24.

20. Try and complete the following crossword.

1.
2. On this component was based the first generation of computers.
3. All the events that happened in the past.
4. A chip, or integrated circuit, that process the instructions provided by the software.
5. A set of programs that controls the way a computer works and runs other programs.
6. This computer became one of the first commercially available computers to take advantage of these advances.
7. A small electronic device used in computers, radios, televisions, etc. for controlling an electric current as it passes along a circuit.
8. An area of study concerned with making computers copy intelligent human behavior.

9. A small microchip that contains a large number of electrical connections and performs the same function as larger circuit made from separate parts.

10. A stage in development of a technical product.



21. Find in the text passages about the first generation computers and translate them into Russian.

22. Choose a passage from those you've translated and read it aloud (the approximate time of reading is 2-3 minutes).

23. Find in the text and put down 10-12 words or word combinations which can be used to speak about the second generation computers.

24. What do you know about the computers of the third generation? Read the statements given below and if you think the statement is true agree to it saying "That's right" If you think it is not true, disagree saying "That's wrong" and make the necessary corrections.

1. The computers of the third generation did not generate a great deal of heat.
2. An engineer Jack Kilby developed the integrated circuit (IC) in 1958.
3. The IC combined three electronic components onto a small silicon disk which was made from silicon.
4. Scientists managed to fit more components on a semiconductor.
5. The ability to translate a foreign language is also moderately possible with third generation computers.
6. Another third-generation development included the use of an operating system.

25. Read the translation of the paragraph given below. Compare it with the original and say if everything is right.

Чип Intel 4004, разработанный в 1981 году, продвинул интегральные схемы на шаг вперед, вместив все компоненты компьютера (CPU, память, устройства ввода и вывода данных) на один небольшой чип. Сейчас любой микропроцессор может быть сконструирован и запрограммирован так, чтобы отвечать любым требованиям. Эти миникомпьютеры были выпущены в комплекте с дружественным пользовательским интерфейсом, особенно популярным текстовым редактором и электронными таблицами. В 1971 году фирма IBM представила свой персональный компьютер для использования дома, в офисе и школах. Компьютеры продолжали свое движение по уменьшению размера, разрабатывая от настольного компьютера к лэптопам, а затем и к палмтопам. В тесной конкуренции с компанией IBM, Макинтош представил свою линию компьютеров в 1984 году.

26. Look through the text again to find two facts which were quite new to you and two facts which were already known to you.

27. Answer the following questions. If necessary, look through the text again.

1. What will be the difference between computers and humans after 2015?
2. What does “positive feedback loop” mean in computer development?
3. Why will knowledge of a major language be the only IT skill needed?

28. Give the main idea of extract “Five Generations of Modern Computers” in 25-30 sentences.

Практическая работа № 25.

Listening Practice

29. Listen to the text “The first computers” and answer if these sentences are true (T) or false (F)?

1. In the 1940s and 1950s, computers were very small.
2. It was not easy for the Sumerians to do calculations.
3. The word “computer” used to mean “a person who does calculations”.
4. In the 1820s, a British mathematician called Charles Babbage invented a machine that did very difficult calculations automatically.
5. Babbage wrote programs for his machines by making holes in old cinema film.
6. In 1979 a modern computer programming language was named ZI.
7. Ada Lovelace was still the first computer programmer in the world.
8. Lord Byron, a famous English writer, was an excellent mathematician and understood Babbage’s ideas.
9. Babbage’s Difference Engine is still in the museum today.
10. Ada Lovelace never finished anything - she always had a better idea and started working on something new.

30. Put the sentences in the right order.

1. who, did, the, the people, the books, calculations, called, and, wrote, were, computers.
2. in the 1820s, called Charles Babbage, a machine, a British mathematician, invented, that, difficult calculations, automatically, did, very.
3. programs, old, for, Zuse, making, machines, wrote, film, his, by, holes, in, cinema.
4. in, built, 1938, he, machine, parents’, his, Berlin, living, first, the ZI, in, in, his, room.
5. not, Babbage, making, did, finish, the, Difference, Engine.
6. work, on, a, started, called, an, Babbage, machine, Analytical, Engine.

31. Think the arguments for and against this statement.

Computers will catch up with the power and speed of the human brain by 2050. Some time after that the computing will start outstripping us and taking over from us.

32. Choose one side only – for or against the statement. Now listen to the recording and note down any points in support of your side.

33. Using your notes and your own ideas, try to persuade the rest of your group to accept your views on the statement in task 30.

Writing Practice

34. Summarise the views of Pearson and of the experts you heard on the Future of Information Technology. Give your own comments on their views. Write about 250 words.

35. Skim the text; write a summary in English about what it is.

Классификация ЭВМ по этапам создания

По этапам создания и используемой элементной базе ЭВМ условно делятся на поколения:

1-е поколение, 50-е гг.: ЭВМ на электронных вакуумных лампах, быстродействие - до нескольких десятков тысяч операций в секунду. Первые запоминающие устройства (перфокарты, перфолента);

2-е поколение, 60-е гг.: ЭВМ на дискретных полупроводниковых приборах (транзисторах); быстродействие - до 1-2 млн. операций в секунду;

3-е поколение, 70-е гг.: ЭВМ на полупроводниковых интегральных схемах с малой и средней степенью интеграции (сотни - тысячи транзисторов в одном корпусе), быстродействие – до 300 млн. операций в секунду, микро-ЭВМ, предназначенные для работы с одним пользователем;

4-е поколение, 80-е гг.: ЭВМ на больших и сверхбольших интегральных схемах-микропроцессорах (десятки тысяч - миллионы транзисторов в одном кристалле), быстродействие - миллиарды операций в секунду. Персональные ЭВМ. Готовые прикладные программы, графический интерфейс, использование технологии мультимедиа. Глобальные компьютерные сети.

5-е поколение, 90-е гг.: ЭВМ со многими десятками параллельно работающих микропроцессоров, позволяющих строить эффективные системы обработки знаний; ЭВМ на сверхсложных микропроцессорах с параллельно-векторной структурой, одновременно выполняющих десятки последовательных команд программы;

6-е и последующие поколения: оптоэлектронные ЭВМ с массовым параллелизмом и нейронной структурой 2-с распределенной сетью большого числа (десятки тысяч) несложных микропроцессоров, моделирующих архитектуру нейронных биологических систем.

Каждое следующее поколение ЭВМ имеет по сравнению с предшествующим существенно лучшие характеристики. Так, производительность ЭВМ и емкость всех запоминающих устройств увеличиваются, как правило, больше чем на порядок.

Практическая работа № 26.

TYPES OF COMPUTER

Unit 4 will give you an overview of the kinds of computers we use today. You will also learn some of the basic issues, definitions, and concepts related to computers and their use. In this chapter, you will learn about the following topics:

- defining the computer;
- how computers are used;
- computer types.

Terms Concepts

There are four main types of computers: **mainframes** (large, expensive computers, often referred to as **host computers**), **supercomputers**, **minicomputers** (smaller and less powerful, but also used as host computers), and **microcomputers** (desktop-sized, personal computers).

Microcomputers are based on a **microprocessor** (a single chip with numerous miniaturized circuits) generally manufactured by a third side (someone other than the maker or the user of the computer).

Language Material

1. Consult a dictionary and practise the pronunciation of the following words:

essential, era, automation, design, to vary, variety, various, entire, research, to attach, to process, to accept, specified, due, manufacturing, generally, often, essentially, fundamental, significantly, agency, board, thought.

2. Learn by heart the following vocabulary:

desktop PC	настольный компьютер	powerful	мощный
handheld	карманный компьютер	regardless	безотносительно
inception	начало	due to	благодаря, из-за

laptop	портативный компьютер	despite	несмотря на
mainframe	универсальная ЭВМ	to attach	прикреплять, присоединять
microcomputer	микрокомпьютер	to allow	позволять
microprocessor	микропроцессор	to communicate	общаться
notebook	компьютер-блокнот	to include	включать
proximity	близость	to input	вводить
workstation	рабочая станция	to output	выводить
host	главный, хост	to process	обрабатывать
portable	переносной, портативный	to referred to as	называться
significant	значительный	to serve	служить

3. Match the English word combinations in the left-hand column with the Russian equivalents in the right-hand column:

- | | |
|---------------------------|--|
| 1. mainframe | a. цепь, схема |
| 2. to execute | b. получать данные на выходе |
| 3. to obtain | c. печатная плата |
| 4. set of instructions | d. служить нуждам |
| 5. a single chip | e. операционная система |
| 6. circuit | f. набор инструкций |
| 7. to input data | g. исполнять (команду) |
| 8. to output data | h. определенная компьютерная задача |
| 9. specific computer task | i. получить, добиться |
| 10. binary system | j. (универсальная) вычислительная машина |
| 11. operating system | k. вводить данные |
| 12. printed board | l. отдельный чип |
| 13. to serve the needs | m. личный цифровой секретарь |
| 14. PDA | n. двоичная система |

4. Translate into Russian words international:

computer, class, microcomputer, supercomputer, notebook, electronic, system, processor, limit, instruction, information, program, disk, era, graphics, design.

5. Match these names to different types of computer.

1. mainframe	5. PDA	8. pen-based computer
2. communicator	6. minicomputer (server)	9 smart phone
3. notebook	7. supercomputer	10. workstation
4. handheld		



a)



b)



c)



d).....



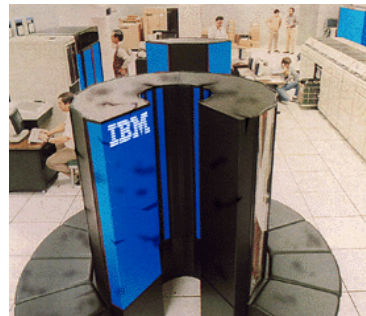
e)



f)



g)



h)



i)



j)

Who uses these types of computer?

- | | | | |
|------------------------|-------------|--------------------------|---------------------------|
| ▪ computer Salesperson | ▪ housewife | ▪ systems Support Person | ▪ system Analyst |
| ▪ hardware Engineer | ▪ schoolboy | ▪ businessman | ▪ technical Sales Manager |
| ▪ software Designer | ▪ student | ▪ operator | ▪ network Support Person |
| ▪ secretary | ▪ plumber | ▪ book-keeper | ▪ scientist |
| ▪ politician | ▪ pilot | ▪ mathematician | ▪ cosmonaut |

Where do they use them? Make a list.

... is/are used in ... || ... is/are used for ... -ing | Using ..., you can ... | You can use ... to ...

6. Find in each line word that is given at the beginning.

to provide	a) исполнять	b) получать	c) вводить	d) обеспечивать
palmtop	a) рабочая станция	b) карманный компьютер	c) компьютер-блокнот	d) универсальная ЭВМ
to obtain	a) обеспечивать	b) получать	c) выполнять	d) использовать
portable	a) переносной	b) мощный	c) значительный	d) главный
to process	a) обрабатывать	b) присоединять	c) позволять	d) получать
inception	a) близость	b) начало	c) множество	d) использование
significant	a) совместимый	b) значительный	c) мощный	d) отдельный

7. Give definitions to the following using the vocabulary.

computer, host computer, microcomputer, minicomputer, mainframe, supercomputer, microprocessor, notebook, desktop PC, workstation, handheld, PDA.

8. Note different meanings for word "to communicate".

to communicate	сообщаться, связываться	One computer system is set up to communicate with another computer system.
	обмениваться, общаться	They communicated in sign language.
	передавать	The disease is communicated through dirty drinking water.
	понимать	The novel is about a family who can't communicate with each other.

9. Consider the grammar:

to base sth. on /upon sth. – основывать, базировать, опираться на ч.-л.

What are you *basin*g this theory *on*?

to concentrate on – сосредоточивать(ся), концентрировать(ся) на ч.-л.

Don't look out of the window. *Concentrate on* your work.

to insist on – настаивать на ч.-л.

I wanted to go alone, but some friends of mine *insisted on* coming with me.

10. Match the synonyms:

capacity – volume, size, expanse, magnitude, content, faculty, ability, skill, genius.

cost – spending, expenditure, expenses, outlay, outgoings.

inception – beginning, start, origin, initiation, opening, onset.

speed – swiftness, quickness, urgency, haste, expedition, dispatch, hurry, rapidity.

type – symbol, emblem, figure, character, letter, sign, sort, kind, form, class, copy, shape.

11. Match the antonyms:

1. cheap	a) input
2. possible	b) seldom
3. high	c) weak
4. different	d) slow
5. main	e) small
6. to attach	f) simple
7. output	g) expensive
8. often	h) low
9. powerful	i) similar
10. fast	j) additional
11. large	k) impracticable
12. complex	l) to unfasten

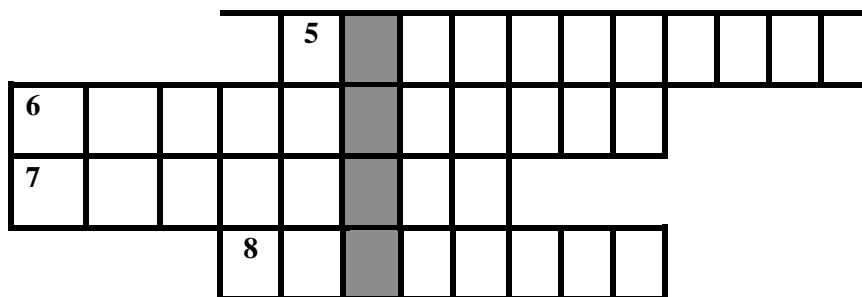
12. Match the English words with them from what they are built.

user, microprocessor, printer, information, computer, electronic, processing, specified, development, communication, mainly, manufacturing, inception, significantly, traditionally, workstation, generally, usually, building, location, basic, institution, calculation, department, specific, basically, managing, instruction, operating.

Практическая работа № 27.

13. Find in each line the word – synonym to the first word.

to obtain	a) to allow	b) to attach	c) to acquire	d) to process
to provide	a) to include	b) to stipulate	c) to contain	d) to serve
host	a) main	b) regard	c) proximity	d) board
powerful	a) portable	b) forceful	c) regardless	d) single
significant	a) due to	b) regardless	c) despite	d) important



17. Word Bingo.

Look at the list of the words given below. Write down any four words. The teacher is going to read the definitions of all the words in random order. If you hear the definition of one of the words you have chosen, cross it out. The first student to cross out all the words he or she has chosen calls out “Bingo” and reads the words to prove his/her claim.

Words: way, laptop, microprocessor, capability, microcomputer, to obtain, circuit, to contain, workstation, mainframe, minicomputer, data.

Word-building

Model 10

Основа прилагательного + **(i)ty** → существительное

regular – регулярный

regularity – регулярность

similar – сходный

similarity – схожесть

popular – популярный

popularity – популярность

stable – стабильный

stability – стабильность

Model 11

Основа существительного + **al** → прилагательное

center – центр

central – центральный

culture – культура

cultural – культурный

form – форма

formal – формальный

intellect – интеллект

intellectual – интеллектуальный

option – выбор, предмет выбора

optional – необязательный, факультативный

18. Make new words using the models 10-11.

accessible	component	acute	cruel	curious	rational
ordinary	patient	globe	industry	probable music	orbit
education	economic	responsible	valid	capable	notion
regular	resistive	region	advisable	stupid	robber material
politic	post	mobile	similar		

Практическая работа № 28.

Reading Practice

19. Read the text. Try to understand it and be ready to answer the questions.

TEXT 4A

COMPUTERS

Computer is an electronic device that can accept data in a certain form, process the data and give the results of the processing in a specified format as information.

The modern world of high technology is possible mainly due to the development of the computer. Computers have opened up a new era in manufacturing by means of automation and they have enhanced modern communication systems.

Essentially all of the computers in use today are based on the same fundamental design. Despite their size, speed, or cost, almost all of the computers we use today are based on a design that includes the following elements:

- Computers process data using some kind of central processing system.
- Computers provide some method of storing data.
- Computer systems include specialized devices that humans can use to communicate with the processing hardware.

Computers have been designed in this way since their inception. But different types of computers can vary significantly in their size and processing capacity, cost, and speed. Computers traditionally have been categorized as being one of four main types – *microcomputers* (*desktop PC, workstation, portable - laptop, notebook, subnotebook, handheld - palmtop, PDA, communicator*), *minicomputers* (*server*), *mainframes* and *supercomputers*.

Supercomputers are the most powerful and expensive computers. They are often grouped together with the mainframes. Although they are similar in basic design to the mainframes, they can process data faster than any other type of computer. Supercomputers generally are used by very large companies and research institutions to process complex mathematical calculations.

The large and powerful computers are known as **mainframes**. They generally cost hundreds of thousands or even millions of dollars and they usually are used as central data processing and storage devices by large businesses or government agencies. An organization's computer users can usually access the mainframe from many different offices that can be in different buildings or even in different

cities. Many people can be in contact with the mainframe at the same time and at any one moment the mainframe can be processing several different programs for several different users. For that reason, mainframes are often referred to as host computers. They are host to many users in many different locations. Many printers and a variety of storage devices may be attached to the mainframe computer.

A *minicomputer* is a computer manufactured on a single printed board which contains one or more chips. At present these computers have become so powerful that they are used as CAD/CAM systems.

Minicomputers are smaller and less expensive than mainframes. Although they may be accessed by a number of different users just as mainframes are, there are usually fewer access sites and the access sites are usually located in closer proximity to the minicomputer. Because they are designed to serve the needs of many different users, they are also referred to as host computers, but, because of their more limited capacity and speed when many users are in communicate with the minicomputer, the computer's response time may be noticeably slower.

Minicomputers are generally thought of as medium sized computers. While the mainframe may do the data processing and data storage for the widespread offices of an entire large company, minicomputers are generally limited to data processing and storage in one location (often for one department or for a smaller company).

Microcomputers come in many different sizes and they offer users a number of different capabilities. Regardless of their size and appearance, all microcomputers are, basically, "personal"; that is, they are designed to be used by one person at a time. Personal computers are also called home computer. The most compact are called *handheld*. They are portable and work on built in batteries. Unlike mainframes and minicomputers, microcomputers generally do not have devices attached that allow them to be "host" to several users at the same time. And microcomputers are not only personal, generally they are local. The computer's input devices, output devices, and storage devices are all designed to be used by one person in the same location as the computer with that one person managing the data input, output, and storage.

Microcomputers are based on a microprocessor. A microprocessor is a single chip that includes a large number of miniaturized circuits that are designed to carry out specific computing tasks. It's the microprocessor that does all of the data processing in a personal computer. Microprocessors can obtain from memory and execute a limited set of instructions in order to perform addition or subtraction on a binary system and to input or output binary data.

Workstations are microcomputers because they are based on a microprocessor. And like other microcomputers, they are designed to be used by one person at a time. However workstations are usually faster than desktop PCs, often have more storage than PCs, and may use more complex and powerful operating systems than PCs. Workstations are often used for scientific tasks or for managing detailed design and graphics tasks. Often they are used as *multiprocessing* machines: that is, because they are fast and use a powerful operating system, they can be used to carry out more than one type of data processing task at the same time.

20. Choose the phrases on the right which complete the sentences on the left.

1. A microcomputer is
 - a) based on a microprocessor and which can perform addition or subtraction on a binary word;
 - b) a computer manufactured on a single printed board which contains one or more chips;
 - c) a very small device that can obtain from memory and execute a limited set of instructions.
2. A microprocessor is
 - a) a device which can perform logical operations;
 - b) a computer manufactured on a single printed board which contains one or more chips;
 - c) a single chip that includes a large number of miniaturized circuits that are designed to carry out specific computing tasks.
3. A minicomputer is
 - a) a computer which does not have devices attached that allow them to be “host” to several users at the same time;
 - b) often used for scientific tasks or for managing detailed design and graphics tasks;
 - c) a computer manufactured on a single printed board which contains one or more chips.
4. A mainframe is
 - a) based on a microprocessor;
 - b) often referred to as host computers and used as central data processing and storage devices by large businesses or government agencies;
 - c) generally limited to data processing and storage in one location (often for one department or for a smaller company).
5. A supercomputer is
 - a) even more powerful and expensive than most mainframes and it can process data faster than any other type of computers;
 - b) basically “personal”; that is, it is designed to be used by one person at a time;
 - c) device which may do the data processing and data storage for the widespread offices of an entire large company.
6. Workstation is
 - a) generally limited to data processing and storage in one location;
 - b) powerful microcomputer that has taken over some of the more complex data management tasks that formerly are reserved for mainframes and minicomputers;
 - c) mostly used on individual desks in homes and in small businesses.
7. A laptop is
 - a) a small computer that can work with a battery and be easily carried;

- b) a large powerful computer, usually the center of network and shared by many users;
- c) a computer that is smaller and slower than mainframe but larger and faster than a microcomputer.
8. A notebook is ...
- a) a very small computer that you can carry with you and use anywhere;
- b) mostly used on individual desks in homes and in small businesses;
- c) small enough to be held in the hand while being used.
9. A handheld is ...
- a) the desk and computer at which a person works; one computer that is part of a computer network;
- b) small enough to be held in the hand while being used;
- c) medium sized computer.
10. A palmtop is ...
- a) a smaller computer that can be held in the palm of one hand;
- b) a very small computer that is used for storing personal information and creating documents and that may include other functions such as telephone, fax, connection to the Internet;
- c) mostly used on individual desks in homes and in small businesses.
11. A PDA is ...
- a) a computer manufactured on a single printed board which contains one or more chips;
- b) the desk and computer at which a person works; one computer that is part of a computer network;
- c) a very small computer that is used for storing personal information and creating documents and that may include other functions such as telephone, fax, connection to the Internet.

21. Find in the text passages about mainframes and translate them into Russian.

22. Choose a passage from those you've translated and read it aloud (The approximate time of reading is 1-2 minutes).

23. What do you know about microcomputers? Read the statements given below and if you think the statement is true agree to it saying "That's right". If you think it is not true, disagree saying "That's wrong" and make the necessary corrections.

Personal computers are designed for use at homes, schools, and offices. At home they can be used for home management (balancing the family finances, for example) and for playing computer

games, watching films or listening to music. Schoolchildren can use computers for doing their homework and many schools now have computers for independent learning and computer-literacy studies. In the office personal computers may be used for word processing, book-keeping, storage and handling of necessary information.

Microprocessors are now used as control devices inside appliances like microwave ovens and stereo systems. They are used to control the complex switching and regulating tasks used in modern appliances. In more complex devices such as automobiles and copy machines, these embedded microprocessors may have a self-diagnostic function that results in the output of information that can be used by humans.

24. Find in the text and put down 10-12 words or word combinations which can be used to speak about minicomputers.

25. General understanding:

1. What are the four main types of computers and how do they differ from each other in terms of size, speed, and processing power?
2. What is the difference between a host computer and a file server?
3. Which type of computer is:
 - the most common?
 - small enough for a pocket?
 - the most common portable?
 - used by many people at the same time?
 - used like mainframes?
 - also called a handheld computer?
 - the most powerful?
 - not suitable for a lot of typing?

26. Reread the text and write a summary in English.

Практическая работа № 29.

TEXT 4B

HOW TO READ A COMPUTER AD.

27. Now study the text below to find this information:

1. What is the memory size of this PC?
2. Which input devices are supplied?
3. What size is the monitor?
4. How fast is the processor?

5. What is the capacity of the hard drive?
6. Which operating system does it use?
7. What multimedia features does the computer have?

1. Intel Pentium IV 5,5 GHz Processor
2. Mini Tower Chassis
3. 2 GB Rambus RDRAM
4. 1 TB Hard Drive
5. Embedded Intel 3D Direct AGP video
6. 64-voice wavetable sound
7. 48 X GD-ROM Drive
8. 19" (17.9" VIS) Colour SVGA monitor
9. Microsoft Windows XP
10. 1.44MB 3.5" Floppy Drive
11. Microsoft Intellimouse
12. 105-key keyboard



TEXT 4C

A DIGITAL PEN

28. Read this text and fill in the blanks with words in the box.

sends	cables	computer	chip	digital	data	Internet
-------	--------	----------	------	---------	------	----------

Anoto is a (1) ... pen that allows you to store and transmit anything you write or draw on paper to any (2)

The components of *Anoto* are: (i) a digital camera, which scans the patterned paper, (ii) an image processor, (iii) a memory (3) ..., which can store several written pages, and (iv) a Bluetooth radio transceiver, which (4) ... the information to your PC, mobile phone or handheld computer. It also contains an ink cartridge so that you can actually see the characters and pictures that you are making.

As you write or draw on the *Anoto* patterned paper, the digital pen converts your notes and diagrams into digital (5) ... which is stored and then transmitted to your computer or, by using a Bluetooth device such as a mobile phone, to another PC, database or the (6) Bluetooth is a wireless technology which doesn't need (7) ... in order to send and receive information.

Oral Practice

29. Questions for group discussion:

1. Almost all of today's computers are based on the same design. Describe the three main elements of that design and list the four main types of computers in use today.

2. Computers based on a microprocessor are known as microcomputers. There are now several different types of microcomputers in use. Describe them.

3. In pairs, decide what sort of computer is best for each of these users.

- John Wilmott is a salesperson and he spends a lot of time visiting customers. He wants a computer to carry with him so he can access data about his customers and record his sales.
- Pat Nye is a personnel officer. She needs a computer to keep staff records and to keep a diary of appointments. She also needs a computer for writing letters.
- The University of the North needs a computer to look after its accounts, its network, the records of all students and staff, and to help with scientific research.
- The James family want a computer for entertainment, writing letters, the Internet, and for calculating tax.

30. Look at these sentences and match them with the language functions a-g.

- | | |
|---|--|
| 1. Good morning. Can I help you? | a. asking the price |
| 2. Can I have a look at those pocket PCs? | b. describing a computer |
| 3. It has a processor running at 3 GHz. | c. asking to see some computers |
| 4. What about RAM? | d. greeting customers and offering help |
| 5. Does it have a DVD? | e. asking about technical specifications |
| 6. Which one would you recommend? | f. explaining different ways of paying |
| 7. How much does it cost? | g. asking for advice |
| 8. Well, you can pay by cheque, credit card or in cash. | |

31. Role play. Work with a partner. One of you wants to buy a computer; the other is the sales assistant. Put and answer questions, using the information and instructions below to help you.

<i>Products available</i>	<i>Processor Speed</i>	<i>Minimum/Maximum RAM</i>	<i>Hard disk</i>	<i>Disk drives</i>	<i>Monitor</i>	<i>Price</i>
---------------------------	------------------------	----------------------------	------------------	--------------------	----------------	--------------

Explora 700 Net PC	Mips R4700 900 MHz	128 MB expandable to 512	20 GB	Optional 3.5" drive	Super VGA compatible	£ 499
Toshiba portable	Pentium 4 1.5 GHz	256 MB expandable to 512	40 GB	3.5" drive DVD/ CD- RW	colour LCD	£ 609
IBM	Pentium 4 1. 8 GHz	256 MB expandable to 512	70 GB	DVD/ CD- RW	XGA	£ 749
Polywell	AMD Athlon 1.6 GHz	512 Mb expandable to 2 GB	80 GB	3.5" drive DVD/ CD- RW	SuperVGA	£ 900
Dell	Pentium 4 2 GHz	256 MB expandable to 1GB	60 GB	DVD/ CD- RW	XGA	£ 1,010
DEPO Race 625	Pentium 4 3 GHz	1 Gb up to 4 GB	160 GB	DVD/ CD- RW	XGA	£ 1,250

Shop assistant

Customer

Greet the customer and offer help.

Ask to see some computers.

Show the customer some models.

Ask for details: processor, RAM, etc.

Describe the speed in megahertz and the main memory.

Ask about the hard disk.

Give explanations (GB storage capacity, etc.).

Ask about the monitor and other features.

Give the required information.

Ask the price.

Give the price and explain different ways of paying.

Decide to buy one/to think about it.

Thank the shop assistant and leave the shop.

Практическая работа № 30.

Listening Practice

32. Before listening, answer these questions.

1. Have you got a computer at home, school or work? What kind is it?
2. How often do you use it? What do you use it for?
3. What are the main components and features (the configuration) of your computer system?

33. Listen to Part 1 of this conversation between a shop assistant and customer. Tick (✓) the correct answers to these questions.

1. The customer wants a computer for:		2. A multimedia computer provides:	
<input type="checkbox"/>	writing	<input type="checkbox"/>	Internet
<input type="checkbox"/>	graphics	<input type="checkbox"/>	video
<input type="checkbox"/>	games	<input type="checkbox"/>	sound
		<input type="checkbox"/>	graphics
		<input type="checkbox"/>	animation
		<input type="checkbox"/>	telephone
		<input type="checkbox"/>	video

34. Listen to Part 2 of the conversation. In column A, tick the hardware items named. In column B, tick the items the assistant recommends.

A	B	Device	A	B	Device
<input type="checkbox"/>	<input type="checkbox"/>	multimedia computer	<input type="checkbox"/>	<input type="checkbox"/>	handheld
<input type="checkbox"/>	<input type="checkbox"/>	multimedia notebook	<input type="checkbox"/>	<input type="checkbox"/>	printer
<input type="checkbox"/>	<input type="checkbox"/>	subnotebook	<input type="checkbox"/>	<input type="checkbox"/>	monitor
<input type="checkbox"/>	<input type="checkbox"/>	laptop	<input type="checkbox"/>	<input type="checkbox"/>	modem

Writing Practice

35. Complete the text below with the words in the box.

Minis and micros

systems	memory	task	terminals	desktop	CAD	applications
---------	--------	------	-----------	---------	-----	--------------

The first microcomputers, also known as (1) “...” PCs were for single users only, and this clearly distinguished them from minicomputers. Another important difference was that “minis” were much more powerful than “micros”: they hold execute more than one (2) ... simultaneously and were used as file servers for (3) ... and workstations. However, modern microcomputers have operating (4) ... and network facilities that can support many simultaneous users. Today, most personal computers have

enough (5) ... to be used for word processing and business (6) Some PCs can even handle multitasking and (7) ... applications. As a result, the division between “minis” and “micros” is now disappearing.

36. Put the words in brackets into the correct form to make an accurate description of sizes of computers.

There are different types of computer. The (*large*) ... and (*powerful*) ... are mainframe computers. Minicomputers are (*small*) ... than mainframes but are still very powerful. Microcomputers are small enough to sit on a desk. They are the (*common*) ... type of computer. They are usually (*powerful*) ... than minicomputers.

Portable computers are (*small*) ... than desktops. The (*large*) ... portable is a laptop. (*Small*) ... portables, about the size of a piece of writing paper, are called notebook computers. Subnotebooks are (*small*) ... than notebooks. You can hold the (*small*) ... computers in one hand. They are called handheld computers or palmtop computers.

Практическая работа № 31.

COMPUTER ESSENTIALS

This chapter introduces the various types of hardware and software that comprise today's computer systems. In this chapter you will learn about computer hardware components, and understand the basic structure of a computer in use. By the end of this unit, you should be better at: matching pictures of components to their English names and functions listening for specific detail. You should know and be able to use these words and abbreviations: *byte, kilobyte, megabyte, gigabyte, megahertz, motherboard, port, RAM, ROM, cache memory, expansion card.*

Terms Concepts

A computer system is composed of a set of interrelated devices with interrelated functions, including **the central processing unit** or **CPU** (the computer's main processing device), **main memory**, **input devices** (used to get information into the computer), **output devices** (used to get information out of the computer in a form usable by humans), and **secondary storage system** (used for long-term data storage).

Language Material

1. Consult a dictionary and practise the pronunciation of the following words:

procedure, to process, processing, variety, circuit, microscopic, keyboard, to direct, capability, capacity, durable, result, specified, screen, to accept, character, raw, to convert, board, facility, expansion, supply, removable, design.

2. Learn by heart the following vocabulary:

character	символ	procedure	процедура, операция
connector	соединитель, разъем	pointer	указатель, курсор
contents	содержание	compatible	совместимый
CPU	микроспроцессор	durable	длительный, прочный
to incorporate	объединять, включать, присоединять	flexible	гибкий
software	программное обеспечение	raw	необработанный, сырой
hardware	оборудование	to accept	принимать, допускать
instruction	команда	to connect	соединять

driver	программа управления устройствами	to convert	преобразовывать
drive	дисковод	to create	создавать
display	экран; выставлять, показывать	to evolve	развивать(ся)
keyboard	клавиатура	to house	размещать
main memory	оперативная (основная) память	to perform	выполнять
memory board	плата памяти	to plug	подключать, вставлять
RAM	оперативная память (ОЗУ)	to refine	очищать
ROM	постоянная память (ПЗУ)	to respond	отвечать
peripherals	периферия	to retrieve to set up	извлекать устанавливать
power supply	источник питания		

3. Match the English word combinations in the left-hand column with the Russian equivalents in the right-hand column:

1. term	a. деятельность
2. useful	b. вставлять
3. combination	c. указатель
4. despite	d. полезный
5. activity	e. термин
6. capability	f. кремний
7. to retrieve	g. чип
8. silicon	h. печатать
9. to rotate	i. экран
10. to insert	j. извлекать
11. pointer	k. несмотря на
12. button	l. комбинация, сочетание
13. to type	m. вращать(ся)
14. screen	n. способность, мощность
15. system board	o. кнопка

16. chip

17. capacity

18. to make decision

q. способность

г. системная плата

с. принимать решение

4. Which of the listed below terms have Russian equivalents?

computer, circuit, diskette, metal, activity, processor, display, scanner, information, data, microphones, contents, printer, modem, screen, Internet, monitor, motherboard, video, icon, component, graphics, electronics, adapter, stereo, contract, letter, instruction, disk, command, application, format, megabyte, specialize, photo, combination.

5. Find 12 words about a computer system and its parts. They go down and across.

D	R	I	V	E	B	R	A	M	F	H	P
L	S	O	I	R	A	H	M	E	I	A	L
O	R	S	C	A	N	N	E	R	D	R	M
W	L	P	X	Y	I	O	M	O	C	D	O
E	O	M	M	F	A	E	B	L	A	W	D
P	R	O	C	E	S	S	O	R	L	A	E
R	C	U	G	P	A	M	B	L	Z	R	M
I	D	S	D	R	R	O	M	I	R	E	Y
N	C	E	I	E	B	I	G	U	E	V	Z
T	R	I	S	E	M	O	N	I	T	O	R
E	R	S	K	X	Q	O	Z	X	Y	A	Z
R	R	E	T	S	O	F	T	W	A	R	E

6. Find in each line word that is given at the beginning.

1. программное обеспечение a) hardware b) command c) instruction d) software

2. обрабатывать a) to access b) to process c) to reduce d) to adjust

3. символ a) letter b) figure c) character d) key

- | | | | | |
|-------------------------|---------------|---------------|-----------------|--------------|
| 4. применение | a) software | b) resolution | c) application | d) sharpness |
| 5. устанавливать | a) to install | b) to type | c) to access | d) to plug |
| 6. совместимый | a) compatible | b) convenient | c) suitable | d) floppy |
| 7. ссылаться | a) to display | b) to process | c) to refer | d) to point |
| 8. дисковод | a) driver | b) arrow | c) screen saver | d) drive |

7. Find in each line word that is given at the beginning.

- | | | | | |
|-----------------------|--------------------|----------------|--------------|---------------|
| 1. term | a) диск | b) термин | c) операция | d) устройство |
| 2. instruction | a) команда | b) конструкция | c) дисковод | d) курсор |
| 3. slot | a) дисковод | b) символ | c) разъем | d) периферия |
| 4. to describe | a) обрабатывать | b) принимать | c) описывать | d) дискета |
| 5. to set up | a) устанавливать | b) падать | c) садить | d) размещать |
| 6. to upgrade | a) модернизировать | b) размещать | c) выполнять | d) извлекать |
| 7. digital | a) необработанный | b) подвижный | c) значимый | d) цифровой |
| 8. useful | a) бесполезный | b) полезный | c) полный | d) сырой |

8. Work in pairs. Study these pictures of inside of a computer. Can you label these components? Compare your answers with other students in your group.



a)



b)



c).....



d)



e)



f)



g)



h)

1. hard disk drive	3. memory chips	5. processor	7. video card
2. mother board	4. power supply	6. sound card	8. chain

9. Read the following sentences; find out parts of the speech of the words in bold,; translate them.

- a) There were a lot of **files** on the desk.

b) It took operator some time to find the necessary **file**.
- a) You can use only **floppy** disks with this computer.

b) This hard disk holds more information than 100 **floppies**.

- c) This **floppy** drive is usually referred to as drive A.
3. a) **Drivers** are one of the components of a computer.
- b) **Drivers** do their best to reduce the car body wear.
- c) The **drives** can read and write on diskettes.
4. a) According to the readings of the instrument a considerable **amount** of fuel was stored in the tank.
- b) A computer is a device used to manage the great **amount** of world's information.
5. a) Computers can be used **to access** the Internet, teach courses such as computer-aided design, language learning, programming, mathematics.
- b) You can get **access** to a great amount of information with the help of CD-ROM.
- c) The **access** to the mountain village was extremely difficult because of many rapid rivers.
6. a) This **computer** is not IBM-compatible.
- b) The account section has been completely **computerized**.
- c) My friend is a specialist in **computer** hardware.
- d) You can buy a **computer** and the necessary software as well.
7. a) Women were afraid that there might be **mice** in the house.
- b) Usually it takes some time to learn to use a **mouse**.
8. a) Press the button to switch on the **device**.
- b) Nobody expected that the application of this **device** is so wide.
9. a) How many **letter** keys are there on the computer keyboard?
- b) I've written a **letter** to my grandmother.

10. Note additional meanings for word "to make up".

to make up	пополнять, возмещать	Can I leave this afternoon and make up the time tomorrow?
	компенсировать	Nothing can make up for the loss of a child.
	составлять, комплектовать, собирать	The term computer is used to describe a device made up of a combination of electronic and electromechanical components.
	гримировать, подкрасить	She made up herself to prepare for an appearance in the theatre.

выдумывать	I told the kids a story, making it up as I went along.
мириться	Has he made it up with her yet?
подходить, приближаться	We just managed to make up the deadline.

Практическая работа № 32.

11. Consider the grammar:

to break into - взламывать(ся), разрываться смехом, прервать

Our system was *broken into*, but nothing was stolen.

to convert into – превращать, переделывать в

Computer is used to *convert* data *into* information.

to divide into – делить, подразделяться на

The book is *divided into* three parts.

to translate into – переводить на

All computer languages must be *translated into* binary commands.

12. Match the synonyms.

combination – union, association, alliance, league, confederacy, cabal, conspiracy, plot, faction.

manner – habit, custom, behavior, appearance, aspect, look, way, style, mood, expression, description, character, stamp, means, method, fashion, approach.

to connect - to join, to link, to unite, to put through, to combine.

to accept – to receive, to take, to acquire, to admit, to get, to gain, to assent, to concur.

to perform – to do, to act, to play, to achieve, to execute, to accomplish, to fulfill, to complete.

to respond - to reply, to react.

13. Match the antonyms.

basic – additional, supplementary, extra, subsidiary, complementary.

part – whole, all, total, aggregate, sum, entirety, entireness, completeness, bulk, mass, totality, amount, gross, combination, unity, integration, stock.

raw – mature, ripe, adult, seasoned.

useful – useless, worthless, unserviceable, valueless, unproductive, ineffectual, idle, fruitless.

14. Name all possible word expressions with following verbs and nouns:

to process	characters	to display	to set up
to install	a computer	a keyboard	data
information	to type	a floppy disk	to house
a mouse	instruction	input	procedure
to perform	device	to store	output

15. Complete the sentences with suitable compounds from this list.

expansion slots	database	websites
magnification software	voice recognition	word processor
	screen reader	

1. can enlarge text appearing on the screen by up to 16 times.
2. Blind users can't use a typical ... to write letters or faxes. They need Braille and a speech-synthesis system.
3. A ... allows blind users to hear the text from the screen.
4. ... interprets human speech, transforming the words into digitized text.
5. ... let users install expansion boards (modems, graphics boards, etc.) to improve the computer system.
6. A ... contains a set of structured data.
7. There are ... which give information about assistive technologies for the disabled.

16. Read and translate the following expressions.

hardware pieces	to communicate with a computer
to produce hardware	to display a character
to process information	to put all the files on the table
word processor	a floppy disk
a disk drive	to refer to the experimental data
to type a letter	a great amount of information (data)

to press any key	the access to this important information
to read a manual carefully	to access the main highway
to produce the software	to be compatible with most computers
a screen of the display	the compatibility of computers
a long pointer	nonmagnetic technology
3½-inch diskette	a pointing device
temporary storage system	display monitor (screen)
spinning platters	two inches square
hard disk	diskette drive

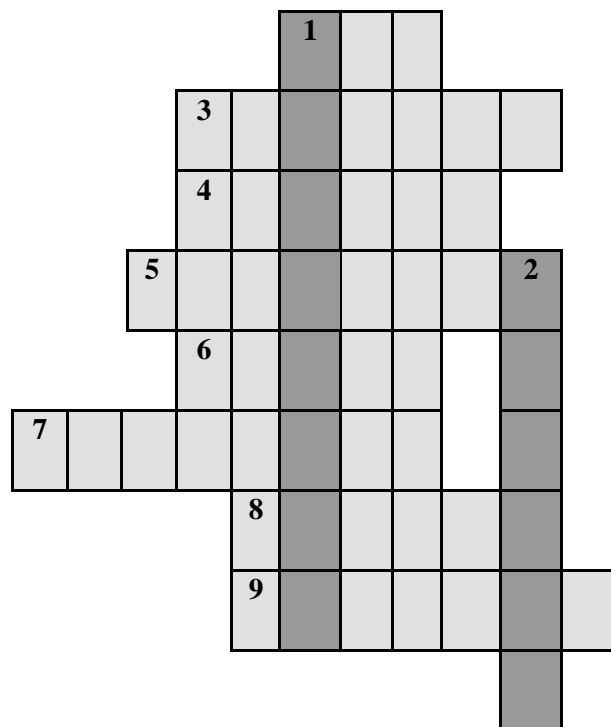
17. Match the following:

1. процессор	3. клавиатура	5. мышь	7. дискета	9. ОЗУ
2. модем	4. «винчестер»	6. экран	8. ПЗУ	10. память

- a) nonvolatile, nonmodifiable computer memory, used to hold programmed instructions to the system.
- b) the part of a television or computer on which a picture is formed or information is displayed.
- c) rigid disk coated with magnetic material, for storing computer programs and relatively large amounts of data.
- d) an electronic device that makes possible the transmission of data to or from computer via telephone or other communication lines.
- e) a set of keys, usually arranged in tiers for operating a typewriter, typesetting machine, computer terminal, or the like.
- f) volatile computer memory, used for creating, loading, and running programs and for manipulating and temporarily storing data; main memory.
- g) central processing unit: the key component of a computer system, containing the circuitry necessary to interpret and execute program instructions.
- h) a palm-sized device equipped with one or more buttons, used to point at and select items on a computer display screen and for controlling the cursor by means of analogous movement on a nearby surface.
- i) a thin, usually flexible plastic disk coated with magnetic material, for storing computer data and programs.
- g) the system of the computer component in which information is stored.

18. Try to complete the following crossword.

1. The device, which function is to execute program instruction and coordinate the activities of all other units.
2. A CRT device which displays the computer output.
3. The process of keeping information on a computer.
4. The section which holds the instructions and data currently being processed.
5. Disks made of a flexible plastic material upon which data is stored on magnetic tracks.
6. A small input device with a ball underneath that is rolled by the user to specify the position of the cursor or to make choices from the menu.
7. The component in the processor or other chip which holds the instruction from the memory while it is being executed.
8. An object or a piece of equipment that has been designed to do a particular job.
9. An output device which converts data into printed form.



Word-building

Model 12

Prefix	Meaning	Examples
deci- ten		decimal, decimalize, decibel

hexadeci-	sixteen	hexadecimal
kilo-	one thousand (1,000) (1,024 in binary: 2 ¹⁰)	kilocycle, kilogram(me), kilowatt
mega-	large; one million	megahertz, megalith, megaton
giga-	very large; one thousand million	gigantic, gigabyte, gigahertz
mini-	small	minibus, minimum, minimize
micro-	very small	microfilm, microphone, microwave
bi-	two	bidirectional, bidimensional, binary
tri-	three	tripartite, tricycle, trilingual
multi-	many	multi-racial, multi-user, multitasking
mono-	one	monologue, monosyllable, monolingual

Model 13

Compound adjectives

battery-powered systems	hands-free operations	waist-mounted computer	head-mounted display	voice-activated device
-------------------------	-----------------------	------------------------	----------------------	------------------------

12. **19. Explain these expressions, taking into account the prefixes and root word, using the model**

Example: the binary system - *the binary system is a notation which uses two digits, 0 and 1.*

1. a minicomputer	6. a bidimensional chessboard
2. a microcomputer	7. a tricycle
3. the decimal system	8. a monochrome computer
4. the hexadecimal system	9. a CPU with 256 MB of RAM
5. a multi-user configuration	10. a document of 3 kilobytes

20. Prefixes are commonly used in computer science. With the help of a dictionary, find two additional examples for each prefix.

super-	more than.....	super-computer
hyper-	extremely	hyper-media
mini-	small	mini-computer

micro-	very small	micro-computer
semi-	partly, half.....	semi-conductor
ultra-	beyond	ultra-modern
uni-	one.....	unilateral
mono-	one.....	monochromatic
kilo-	thousand.....	kilobit

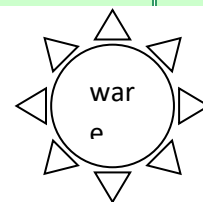
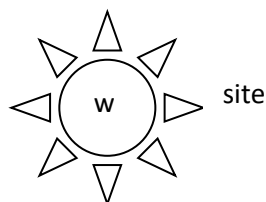
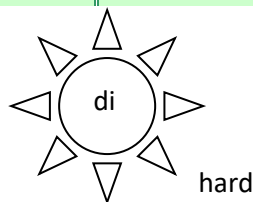
21. Think of suitable compound nouns for these definitions.

EXAMPLE: A device which displays or prints the output - An output device.

1. A secret word used to receive e-mail -
2. A pool that we swim in -
3. A book which has cheques -
4. A room where you eat meals -
5. Lights used to control the traffic -
6. A card used instead of coins to make phone calls -

22. Making wordwebs will help you to organize and remember vocabulary. Use the words in the box to make three different wordwebs with compounds.

floppy	error	mail	share	word	page
optical	free	firm	pal	site	compact
soft	designer	hard	directory	drive	server



23. Find the expression from the model 13 in the text and explain their meaning.

Wearable computers, aren't they chic?

Can you imagine wearing a PC on your belt and getting e-mail on your eyeglasses? Wearable computers are battery-powered systems worn on the user's body on a belt, backpack or vest and are designed for mobile or hands-free operations, often incorporating a microphone and a head-mounted display.

Some devices are waist-mounted, equipped with a wireless modem, a keypad and small screen. Others are voice-activated, worn like a scarf and access e-mail or voice mail.

Users of wearable technology consider themselves “cyborgs”. This term comes from “cybernetic organism”, referring to a being that is part robot, part human.

Практическая работа № 33.

Reading Practice

24. Read the text. Try to understand it and be ready to answer the questions.

TEXT 5A

COMPUTER ARCHITECTURE

The term “computer” is used to describe a device which can accept the data in a certain form, process it and give the results of the processing in a specified format as information. Computer doesn't have intelligence by itself and is referred to as hardware. A computer system is a combination of five elements:

- hardware;
- software;
- people;
- procedures;
- data/information.

The electronic, magnetic, electrical and mechanical parts that make up a computer system are called hardware. Computer hardware refers to the computer's machinery, its electronic devices and its circuits. A computer is actually a system, a combination of parts that work together. Computer hardware can be divided into four categories:

- 1) input hardware (keyboard, mouse, etc.);
- 2) processing hardware (CPU, main memory);
- 3) storage hardware (fixed-disk drive, diskette drive, magnetic tape drive, etc.);
- 4) output hardware (display monitor, printer, etc.).

The hardware is designed to work hand-in-hand with computer programs that are often designed specifically for use with one type of hardware. Software is the term used to describe the instructions that tell the hardware how to perform a task. People however are the most important component of the computer system: they create the computer software instructions and respond to the procedures that those instructions present.

The basic job of the computer is the processing of information. Three basic steps are involved in the process. First, data is fed into the computer's memory. Then, when the program is run, the computer performs a set of instructions and processes the data. Finally, we can see the results (the output) on the screen or in printed form. Computers accept information in the form of instruction called a program and characters called data to perform mathematical and logical operations and then give the results. The data is raw material while information is organized, processed, refined and useful for decision making. Computer is used to convert data into information. Computer is also used to store information in the digital form.

PROCESSING HARDWARE

The Central Processing Unit

Today's computers are designed around a single large-scale processing chip known as the central processing unit (CPU). At the microscopic level, many circuits and processing capabilities are incorporated into one chip that may only be one or two inches square. The CPU can be thought of as the "brains" of the computer. Its function is to execute program instructions and coordinate the activities of all the other units. The Control Unit, the ALU and the registers make up the CPU of a computer. Each new generation of CPUs has added new processing capabilities and yet, despite this increased capability, each new generation processes information faster. Today's CPUs are complex devices composed of many different components and circuits that carry out a great variety of functions.

Main Memory

The main memory holds the instructions and data which are currently being processed by the CPU. In today's computers, the CPU acts on instructions that are retrieved from a storage system known as main memory. The CPU also uses this main memory to store data temporarily as it carries out processing tasks. This temporary storage system is based on sets of silicon chips. Each chip is actually made up of millions of circuits that store data in a coded format. **RAM** is the volatile computer memory, used for creating loading and running programs and for manipulating and temporarily storing data. This information is lost when the computer is turned off. **ROM** is nonvolatile nonmodifiable computer memory used to hold programmed instructions to the system. ROM contains permanently stored information such as the instructions that are needed for the computer's operation.

Power is a function of both speed and capacity. The power of a computer depends on the combination of all the components. When buying a computer, often can be chosen between different components, in particular between different processor speeds, amounts of memory and hard disk sizes. Units of measurement commonly used in computing are shown below.

<i>Unit</i>	<i>Symbol</i>	<i>Meaning</i>	<i>Measurement</i>
hertz	Hz	cycles per second	frequency
byte	B	space for one character, i.e. one letter, number, punctuation mark, symbol or even a space	capacity

Hertz are measured using the decimal system but *bytes* are measured using the binary system. The values of the unit prefixes vary in these two systems as shown in the table below.

<i>Unit</i>	<i>Symbol</i>	<i>Decimal System</i>	<i>Binary System</i>
kilo	K	$10^3 = 1000$	$2^{10} = 1024$
mega	M	$10^6 = 1000000$	$2^{20} = 1048576$
giga	G	$10^9 = 1000000000$	$2^{30} = 1073741824$

SECONDARY STORAGE SYSTEMS

Hard Disk Drive

Hard disks (also known as fixed disks) are very similar to diskettes but they are fixed permanently inside the computer. Hard disks use one or more spinning platters that are very much like diskettes, but they can hold far greater amounts of data.

Floppy

Diskettes (also known as floppy disks) are a form of storage that can be inserted into a computer that has a compatible disk drive. Earlier personal computers used a 5 1/4-inch diskette housed inside a flexible plastic jacket; however, now it is used smaller 3 1/2-inch diskettes enclosed in a hard plastic case. Both types of diskettes use the same thin, flexible disk inside, but their capacities can vary from 360,000 bytes to more than 2 million bytes.

Flash

It is 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 to back up entire PC on one disk.

Optical Disk Drive

Optical disks can store information at much higher densities than magnetic disks. Some storage devices use a nonmagnetic technology that is based on optical disks. Optical disks are far more durable and they can be used to store significantly more information. There are various types of optical drives: **CD-ROM**; CD-Recorders in two different forms: **CD-R** and **CD-RW**; **DVD** (digital versatile disk); **magneto-optical (MO) drives**.

THE PERIPHERALS

The peripherals are the physical units attached to the computer. They include storage devices and input/output devices.

Input Devices

Devices that are used to get information into the computer are known as input devices. Input devices are used to convert information from a form used by humans into a form that is useable by computers. Today, there are many different ways to get information into the computer, but the keyboard is still one of the most common input devices.

The computer mouse is another input device. It is referred to as a pointing device. A pointing device is used to move a pointer around on the display screen. Another input devices are trackerball, joystick, touchscreen, microphone, barcode reader, scanner, camera, modem, etc.

Output Devices

Output devices are used to get information out of the computer in a form useable by humans. The display monitor and the printer have long been the computer's primary output devices. But the type and variety of both monitors and printers are in constant change.

25. General understanding:

- 1) What does the term «computer» describe?
- 2) Is computer intelligent?
- 3) What are five components of computer system?
- 5) What is software? What's the difference between hardware and software?
- 6) Why people are the most important component of a computer system?
- 7) In what way do terms “data” and “information” differ?
- 8) How does computer convert data into information?
- 9) Why can the central processing unit be thought as the “brains” of computer? Name the CPU's three different components and describe what they do.
- 10) What is the main memory? How does it work?
- 11) Without what parts computer is unable to work?
- 12) What is the most expensive part of the hardware?
- 13) Describe the role of input devices and describe how they are changing because of new methods now being used to interact with computers.
- 14) Today's computers use secondary storage systems to store data that is not currently being processed. Name and describe three different types of storage systems that use disks.

26. Find in the text passages about the central processing unit and translate them into Russian.

27. Choose a passage from those you've translated and read it aloud (The approximate time of reading is 1-2 minutes).

28. Find in the text and put down 10-12 words or word combinations which can be used to speak about secondary storage system.

29. Use the information in the text to help you match the terms in the box with appropriate explanation or definition below.

a. software	b. peripheral devices	c. monitor	d. floppy disk	e. hardware
f. input	g. central processing unit	h. output	i. port	j. mouse

1. The brain of the computer
2. Physical parts that make up a computer system
3. Programs which can be used on a particular computer system
4. The information which is presented to the computer
5. Results produced by a computer
6. Hardware equipment attached to the computer
7. Visual display unit
8. Small device used to store information. Same as "diskette"
9. Any socket or channel in a computer system into which an input/output device may be connected
10. A handheld device connected (or not) to the computer by small cable

30. Give definitions to the following words and expressions using the vocabulary:

computer	hardware	software	procedure	data	information
CPU	main memory	floppy disk	hard disk drive	scanner	CD-ROM
ROM	printer	modem	motherboard	keyboard	sound-card

31. Match the following:

a) program	c) processing of information	f) computer
b) information	d) software	g) people

1) ... doesn't come to life until it is connected to other parts of a system.

- 2) ... is the term used to describe the instructions that tell the hardware how to perform a task.
- 3) ... create the computer software instructions and respond to the procedures that those instructions present.
- 4) Information in the form of instruction is called a
- 5) ... is organized, processed and useful for decision making.
- 6) The basic job of the computer is the

Практическая работа № 34.

32. Read these slogans or quotations, and say what computer elements they refer to.

- | | |
|--|--------------|
| <ol style="list-style-type: none"> 1. a "Point and click here for power." <li style="padding-left: 20px;">b "Obeys every impulse as if it were an extension of your hand." | <p>.....</p> |
| <ol style="list-style-type: none"> 2. a "Displays your ideas with the perfect brilliance." <li style="padding-left: 20px;">b "See the difference – sharp images and a fantastic range of colours." | <p>.....</p> |
| <ol style="list-style-type: none"> 3. a "I love his drive. It's quiet and fast." <li style="padding-left: 20px;">b "With this it's easy to back up your data before it's too late." | <p>.....</p> |
| <ol style="list-style-type: none"> 4. a "Power and speed on the inside." <li style="padding-left: 20px;">b "Let your computer's brain do the work." | <p>.....</p> |
| <ol style="list-style-type: none"> 5. a "... a big impact on the production of the text and graphics." <li style="padding-left: 20px;">b "Your choice: a laser powerhouse." | <p>.....</p> |

33. Match each item in column A with its function in column B. Then describe its function in two ways: using the Present Simple, or constructions used to - Infinite, used for + ing form.

A	Item	B	Function
RAM		controls the cursor	
processor		inputs data through keys like a typewriter	
mouse		displays the output from a computer on a screen	
clock		reads DVD-ROMs	
3,5" floppy drive		reads and writes to removable magnetic disks	

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

34. Describe the functions of these items:

1. scanner	3. ATM	5. hard disk drive	7. mainframe computer	9. swipe card
2. printer	4. PDA	6. supercomputer	8. barcode	10. memory

35. Name the main parts of the computer and fill in the chart.

<i>The part</i>	<i>Its function</i>
mouse	

36. Read these sentences and identify all classifying patterns. Then put them into the correct column.

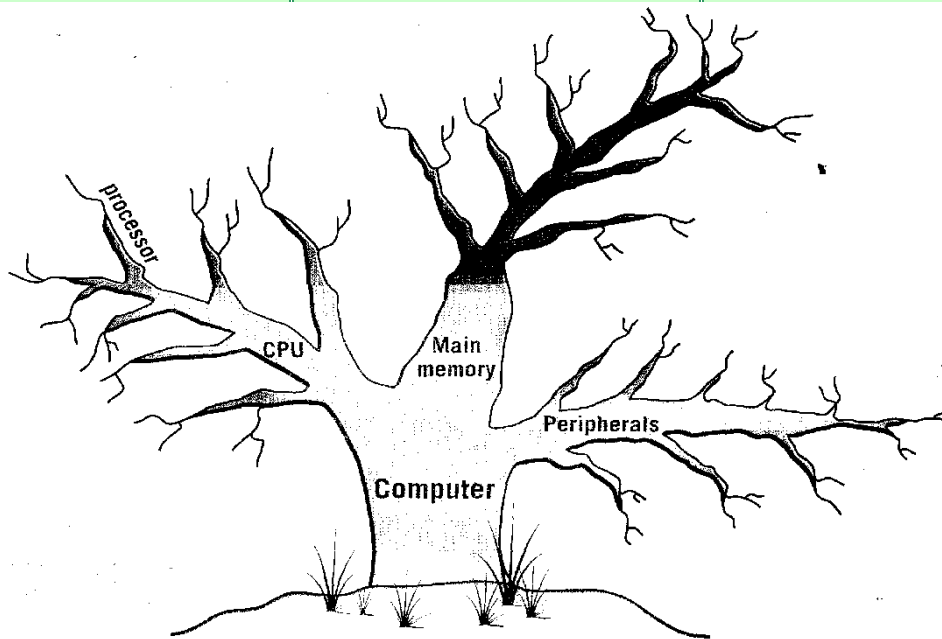
- There are two classes of personal computers: (a) desktop PCs and (b) portable PCs.
- A computer system consists of two parts: hardware and software.
- The basic structure of a PC is made up of three hardware sections: the CPU, the main memory and the peripherals.
- The Control Unit, the ALU and the registers make up the CPU of a computer.
- The RAM and ROM constitute the main memory.
- A DVD is a type of disk.
- A hub is a component of a computer network.

<i>From general to specific</i>	<i>From specific to general</i>
.....

.....
.....
.....

37. Designing vocabulary trees or networks can help you build up your own mental «maps» of vocabulary areas. Look at the list of terms in the box and put each one in an appropriate place on the vocabulary tree below. The first one has been done for you.

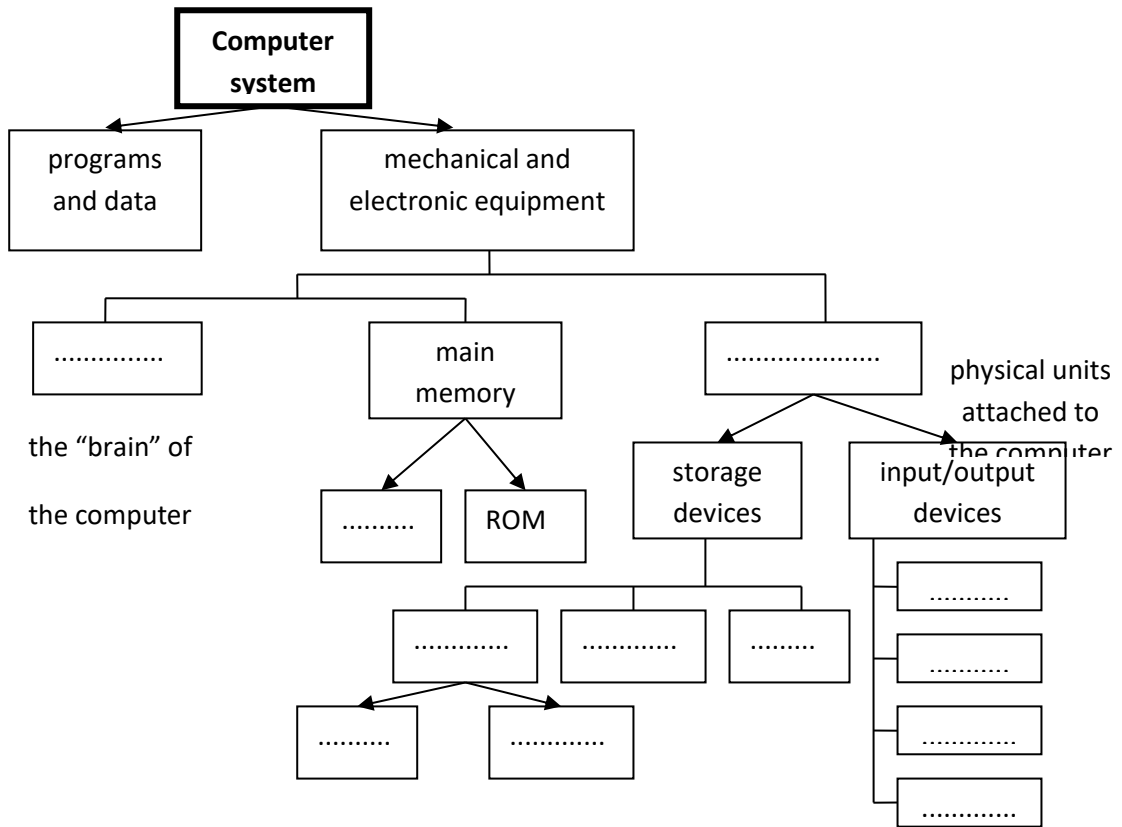
processor	kilobyte	expandable memory
megahertz	SIMMs	hard disk
RAM	computer brain	byte
DVD	clock speed	keyboard
mouse	gigahertz	CD-ROM
megabyte	floppy disk	registers



38. Give the main idea of extract “COMPUTER ARCHITECTURE” in 25-30 sentences.

Listening practice

39. Label this diagram with the correct terms.



40. Compare your answers with the partner.

41. Listen and check your answers.

Buying a computer

42. You are going to hear two people making enquiries in a Macintosh computer shop. The shop assistant is telling them about the two models below. Listen and fill in the missing information.

iBook

Processor speed

RAM standard

Hard disk capacity.....

Price£1,207

DVD and Mac OS included?

iMac

Processor speed1 GHz

RAM standard

Hard disk capacity

Price

DVD and Mac OS included?

43. Now listen again and fill in the gaps below.

Assistant: Do you need any help?

Paul: Um yes, we're looking for a personal computer. Have you got any fairly basic ones?

Assistant: Yes, sure. If you'd like to come over here

Paul: What different (1) ... are there?

Assistant: At the moment we've got these two models: The iMac, which is a desktop computer with a (2) ... operating at 1 gigahertz, and the portable iBook, which has a processor (3) ... at 700 megahertz.

Sue: So the iMac is the (4) ... one. And which one has the most memory? I mean - which has the most RAM?

Assistant: Well, the iMac has 256 megabytes of (5) ..., which can be (6) ... up to 1 gigabyte, and the iBook has 128 megabytes which can be expanded up to (7) It all depends on your needs. The iMac is suitable for home users and small offices. The iBook is ideal for students and for people who travel.

Практическая работа № 35.

Reading Practice

TEXT 5B

THE MOTHERBOARD

The main parts of a desktop computer are enclosed in a box known as the *system unit*. This contains an electronic board called the *motherboard* that holds and connects together the main electronic components. These are shown in the table below.

Processor	controls the system (microprocessor) and processes the data
ROM (Read Only Memory)	stores the program instructions the computer needs to start up
RAM (Random Access Memory)	stores the data being processed
Cache memory	speeds up the processing

The motherboard usually has empty electronic connectors, called *expansion slots*, into which additional electronic boards (sometimes called *expansion cards*) can be plugged. This allows extra electronic components to be added. For example, more memory can be added by plugging *memory boards* (e.g. *SIMMS*) into the memory slots. Sound facilities can be added by plugging a sound card into an expansion slot. This is one way of upgrading a computer. Another way is to replace the motherboard with a newer and better one. The system unit usually also contains a small speaker (or loudspeaker), the power supply, and some storage devices. These often include: a hard disk drive with a fixed disk that can store a very large amount of data; a floppy disk drive that uses removable floppy disks (diskettes);

a CD-ROM or DVD drive that is used for reading CD-ROM or DVD drive disks (particularly in multimedia computers). Some other devices may be included in the system unit but most input and output devices are plugged into the back of the system unit using connectors known as ports.

44. Study this photo of a PC motherboard. Match the components to their descriptions. If you need help, use the Glossary.

1. These are memory chips. The more you have the more work you can do at a time. Empty memory slots mean you can add more memory.
2. This is the «brain» of the computer.
3. It is part of the memory store. It has extremely fast access. It's faster than normal RAM. It can speed up the computer.
4. These let you add features such as sound or a modem to your computer.
5. This kind of memory contains all the instructions your computer needs to activate itself when you switch on. Unlike RAM its contents are retained when you switch off.



45. Study these instructions for formatting a disk in Microsoft Windows. Write the instructions in the correct order (1-6), using sequence words. You will have to use one of the words more than once.

- a) Select “OK” to start formatting the disk.
- b) Choose “Format” from the drop-down menu.
- c) Click the “Start” button.
- d) Put the disk into the drive.
- e) Choose the formatting options you require.
- f) Click the “OK” button when formatting is complete.

TEXT 5C

A PORTABLE COMPUTER

46. Complete the text about a portable computer with the words in the box.

notebook	microphone	drive	display
----------	------------	-------	---------

CD	peripherals	anti-virus	performance
keyboard			

The Toshiba Satellite only weighs eight pounds but it provides the power, (1) ... and multimedia functions of a desktop PC in a new mobile design. Packed with 3 GHz and 512 MB of RAM, the Satellite (2) ... is the perfect solution for those customers that want a multimedia portable computer at an affordable price.

Its 60 GB hard disk (3) ... is large enough to hold all the applications that you're likely to need. You also get a 3.5" internal floppy disk drive and a DVD/CD-RW unit compatible with most DVD and (4) ... formats.

It features a large 14.1" TFT active matrix (5) ... supporting up to 16 million colours at 1024 x 768 pixel resolution.

The Satellite comes with Windows XP pre-installed and additional software including Lotus SmartSuite, Adobe Acrobat Reader, Internet Explorer and an (6) ... program.

Its (7) ... has 85 full-sized keys with 12 function keys, and a touch pad pointing device acts as a mouse. The sound capabilities comprise a SoundBlaster card, built-in stereo speakers, and an external (8) ... port, so you can digitally record, edit and play back speech.

To get online, the Satellite has a 56k modem and an Ethernet connector. It can be connected to a wide range of (9) ... and network devices.

It runs on rechargeable Lithium batteries.

47. Read the text again and complete these notes with the most relevant information.

Microprocessor: Other software:
RAM: Other peripherals:
Hard disk: Power supply:
Screen:
Operating system:

Oral Practice

48. Work in pairs. Study this diagram. It shows the ports at the back of a desktop PC. With the help of the text below, match these labels to the correct ports.

keyboard	parallel port	serial ports	USB port	COM 1	video port
----------	---------------	--------------	----------	-------	------------



Desktop PC ports and connectors

External devices connect to ports at the back of the computer. Different types of port are used for each device. Most computers have: 1 keyboard port, 1 video port, 2 serial ports, 1 parallel port. Some also have a mouse port and one or more USB ports.

The mouse port and the keyboard port look exactly the same but they have labels to avoid confusion. If there is no mouse port, a serial mouse can be used. This connects with one of the serial ports. You can use the other one for a modem. The serial ports often have the labels COM1 and COM2.

The monitor connects to the video (VGA) port. The printer uses the larger parallel port. A variety of peripherals can be connected through the USB ports.

49. Work in pairs, A and B. Find out as much as you can about your partner's computer and complete this table.

Feature	A	B
processor type		
processor speed		
bus speed		
memory (RAM)		
memory type		
hard disk capacity		
hard disk type		
monitor size		
monitor resolution		
CD-ROM drive speed		

Student A - Your conversion is on page 139.

Student B - Your conversion is on page 140.

Практическая работа № 36.

Writing Practice

50. A friend has written to you asking you to recommend a computer that suits their needs. Write a letter in reply, describing its technical features and saying why you recommend it.

51. Complete this description of the motherboard shown on page 65 by adding the definitions from the reading text 5 B in the correct places.

The most important electronic part of a computer is the motherboard. The largest chip is the processor. The board also contains plug-in chips. One type contains ROM. A number of chips are mounted on memory boards. A third type of memory is cache memory. The board also has expansion slots.

Практическая работа № 37.

PROCESSING HARDWARE

This unit introduces the various hardware components that make up a computer system. By the end of this unit you should be better at reading for specific information, understanding computer advertisements. In this unit you will learn about the following topics:

- processing hardware;
- main memory.

Terms Concepts

Hardware comes in many configurations, depending on what the computer system is designed to do. Processing is controlled by the **central processing unit** which consists of a control unit that directs the transfer of data and arithmetic/logic unit that performs mathematical and logical calculations. The smallest unit of data that a computer can deal with is a single binary unit called a bit. Generally, computers deal with bits in groups of eight (called bytes) and computer storage capabilities are measured in bytes or kilobytes (K-bytes). Other common symbols are M (megabytes or millions of bytes), and G (gigabytes or billions of bytes).

Language material

1. Consult a dictionary and practise the pronunciation of the following words:

design, area, processing, temporarily, to direct, instruction, execution, internal, architecture, to couple, to interpret, tiny, circuit, to coordinate, register, although, extremely, counter, which, to synchronize, high-resolution, currently, to determine.

2. Learn by heart the following vocabulary:

adapter	адаптер	sophisticated	сложный
CPU	центральный процессор, ЦП	tiny	крошечный
CD-ROM	накопитель на компакт-дисках	to couple	соединять
RAM	ОЗУ	to deliver	снабжать, поставлять
ROM	ПЗУ	to determine	определять
expansion slot	гнездо платы расширения	to evolve	развивать(ся)

microprocessor	микропроцессор	to execute	выполнять
performance	быстродействие, эффективность	to handle	управлять
processing hardware	устройство обработки данных	to interpret	переводить
unit	блок, устройство	to refer	относиться, ссылаться
to relate	устанавливать связь, относиться	to retrieve	извлекать

3. Match the English word combinations in the left-hand column with the Russian equivalents in the right-hand column:

- | | |
|----------------------------|-------------------------------------|
| 1. computer's machinery | a) регистр команд |
| 2. hand-in-hand | b) два положения двоичной системы |
| 3. key component | c) система кодирования данных |
| 4. memory register | d) арифметическое вычисление |
| 5. two-state binary system | e) внутренний таймер |
| 6. data encoding system | f) программный счетчик |
| 7. hard disk | g) тактовая частота |
| 8. internal clock | h) компьютерное оборудование |
| 9. clock speed | i) рука об руку, совместно |
| 10. arithmetic/logic unit | j) ключевой компонент |
| 11. instruction register | k) жесткий диск, "винчестер" |
| 12. program counter | l) арифметико-логическое устройство |
| 13. arithmetic computation | m) устройство управления |
| 14. control unit | n) регистр памяти |

4. What's the meaning of these abbreviations?

CPU	RAM.....	PC
ALU.....	ROM	CU
GHz	DIMM	IR
ASCII	EBCDIC	MR

5. Find in each line word that is given at the beginning.

activity	a) устройство	b) блок	c) адаптер	d) деятельность
circuit	a) блок	b) плата	c) схема	d) устройство
to determine	a) определять	b) извлекать	c) ссылаться	d) выполнять
to cause	a) управлять	b) причинять	c) переводить	d) поставлять
to emit	a) испускать	b) соединять	c) развивать	d) управлять
frequency	a) извлекать	b) ссылаться	c) излучать	d) частота

6. Note different meanings for words "to manage", "to hold".

to manage	руководить, управлять	The pension funds are managed by commercial banks.
	уметь обращаться	The questionnaire was managed by trained interviewers.
	применять, накладывать	The teacher has the authority to manage punishment.
	справляться, ухитриться	She managed to persuade the child to give an injection.
	принимать	Police believe his wife could not have managed the poison.
to hold	держат	He was holding the baby in his arms.
	владеть	Employees hold 30% of the shares.
	удерживать (позицию)	Hold this position for a count of 10.
	вмещать, содержать в себе	The plane holds about 300 passengers.
	держат (в тюрьме)	Police are holding two men in connection with last Thursday's bank raid.
	держаться	How long will the fine weather hold ? If their luck holds , they could still win the championship.
	удерживать	Who holds the world record for the long jump? She held the title of world champion for three years.
	полагать, считать	He holds strange views on education. She is held in high regard by her students.
	проводить (собрание, разговор)	The meeting will be held in the community centre. It's impossible to hold a conversation with all this noise.
	подождать (телефон)	That extension is busy right now. Can you hold ? She asked me to hold the line.
	останавливать, сдерживать	Hold your fire! Hold the front page! Give me a hot dog, but hold the mustard.

7. Match the synonyms.

instruction – direction, order, control, command, management.

to manage – to regulate, to govern, to direct, to control, to administer, to dominate, to rule.

to provide – to ensure, to secure, to assure, to meet the requirements.

to hold – to have, to hold on, to retain, to keep, to own, to occupy, to contain, to maintain.

to measure – to plumb, to evaluate, to estimate.

8. Match the antonyms.

- | | |
|---------------|----------------|
| 1. temporally | a) more |
| 2. software | b) previous |
| 3. less | c) complex |
| 4. simple | d) flexible |
| 5. next | e) constantly |
| 6. fixed | f) unable |
| 7. to differ | g) to resemble |
| 8. able | h) hardware |

9. Find in each line the word – synonym to the first word:

- | | | | | |
|--------------------|----------------|-------------------|-----------------|---------------|
| performance | a) component | b) computation | c) productivity | d) unit |
| unit | a) device | b) design | c) instruction | d) speed |
| to execute | a) to increase | b) to perform | c) to resume | d) to include |
| to relate | a) to expand | b) to succeed | c) to bear | d) to squeeze |
| to handle | a) to allow | b) to communicate | c) to contain | d) to use |

10. Find in each line the word – antonym to the first word:

- | | | | | |
|------------------|-----------------|----------------|---------------|---------------|
| to evolve | a) to determine | b) to couple | c) to lessen | d) to deliver |
| to couple | a) to unfasten | b) to relate | c) to execute | d) to handle |
| hardware | a) clock speed | b) performance | c) execution | d) software |
| complex | a) tiny | b) simple | c) basic | d) small |

subtraction a) division b) multiplication c) addition d) comparison

11. Find in each line noun:

1. a) sophisticated b) direct c) design d) retrieve e) central
2. a) during b) perform c) sort d) examine e) through
3. a) temporally b) instruction c) logical d) main e) involve
4. a) combine b) contain c) temporary d) comparison e) internal
5. a) provide b) refer c) enable d) partly e) example

12. Give definitions to the following using the vocabulary:

CPU, hardware, microprocessor, software, memory, instruction, data, chip, control unit, speed, information, internal clock.

13. Try and complete the following crossword:

CLUES ACROSS

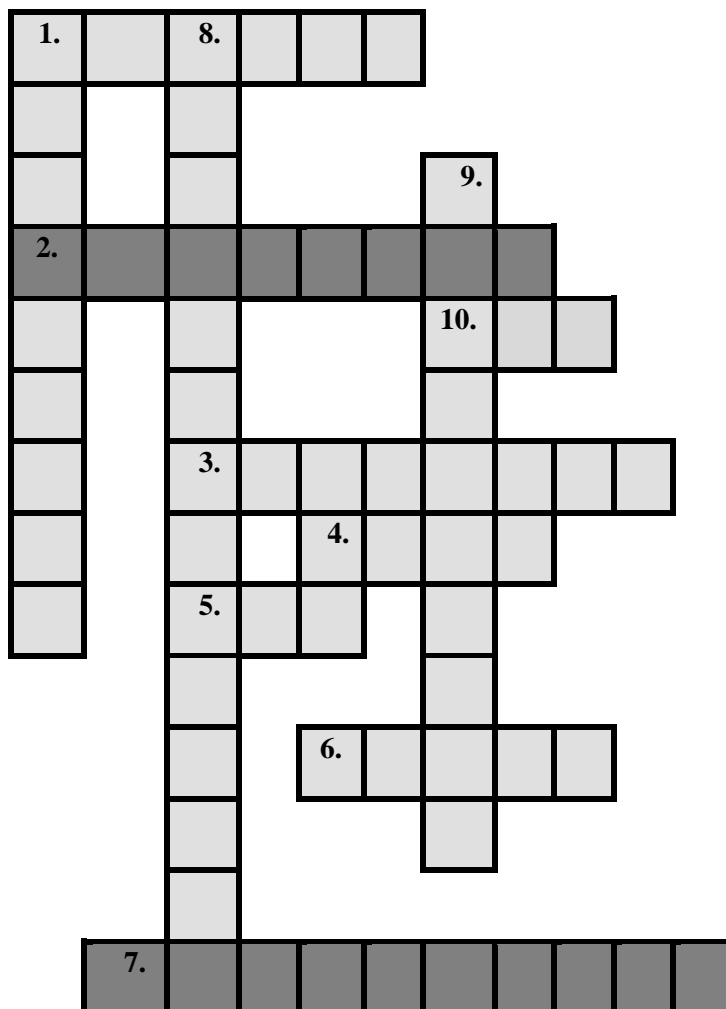
1. The part of a computer where information is stored; the amount of space in a computer for storing information.
2. The physical units which make up a computer system.
3. The component in the processor or other chip which holds the instructions of the screen.
4. A tiny piece of silicon containing complex electronic circuits; is used to make the hardware components of a computer.
5. The “brain of the computer”. Its function is to execute programs stored in the main memory by fetching their instructions, examining them and then executing them one after another.
6. The set of electronic circuits used to control the timing of signals and synchronise different parts of a computer system.
7. A series of actions that a computer performs on data to produce an output.
10. Abbreviation for a component of the CPU which performs the actual arithmetic and logical operations asked for by a program.

CLUES DOWN

1. Equipment with moving parts that is designed to do a particular job.

8. A chip, or integrated circuit, that processes the instructions provided by the software.

9. A small electronic device used in computers, radios, televisions, etc. for controlling an electric current as it passes along a circuit.



Word-building

Model 14

Основа глагола + **-ance/-ence** → существительное

-ant/ - ent → прилагательное

to differ – различаться

difference – различие

different – различный

to insist – настаивать

insistence – настойчивость

insistent – настойчивый

to resist – сопротивляться

resistance – сопротивление

resistant – сопротивляющийся, стойкий

to depend – зависеть

dependence – зависимость

dependent – зависимый

Model 15

Основа глагола + **ive** → прилагательное

to communicate – общаться	communicative – общительный
to regulate – регулировать	regulative – регулярный
to illustrate – иллюстрировать	illustrative – иллюстративный
to demonstrate – демонстрировать	demonstrative – демонстративный

14. Make new words using the models 14-15.

to correspond	to assist	to signify	to coexist	to ignore
to attract	to create	to imitate	to progress	to imagine
to neglect	to observe	to perform	to acquaint	to compete
to impress	to incise	to legislate	to select	to offend
to confine	to obsolesce	to consent	to excel	to import
to negate	to nominate	to restrict	to operate	to connect

Практическая работа № 38.

Reading Practice

15. Read the advertisement and translate the technical specifications into Russian.

Ulysses XT	<ul style="list-style-type: none">• Pentium 4 microprocessor at 5,5 GHz (5,500 MHz)• 2 gigabytes of RAM, upgradable to 4 GB• 1 TB hard disk• comes with Microsoft Windows
------------	--

16. Try to answer these questions.

1. Without what parts is computer unable to work?
2. What is the main function of a microprocessor?
3. What unit of frequency is used to measure processor speed?
4. What is the most expensive part of the hardware?
5. What other hardware devices do you know? What are they for? Do you know how to use them?

17. Read the text below and then sentences 1 to 8 on page 73. Decide if the sentences are true (T) or false (F), and rewrite the false ones to make them true.

PROCESSING HARDWARE

Almost all of today's computers, large and small, are based on a design that couples some sort of central processing device with a memory area that is used to temporarily hold instructions and data that can be used during processing. The purpose of processing hardware is retrieve, interpret and direct the execution of software instructions provided to the computer.

The Central Processing Unit (CPU)

The central processing unit is the most complex of the computer's hardware components. The CPU is just a tiny microprocessor chip but it holds more than forty million transistors and functions as the nerve centre of the entire computer. The CPU can be thought of as the "brains" of the computer.

The power and performance of a computer is partly determined by the speed of its microprocessor. A clock provides pulses at fixed intervals to measure and synchronize circuits and units. The clock speed is measured in MHz (megahertz) or GHz (gigahertz) and refers to the frequency at which pulses are emitted. For example, a CPU running at 1.6 GHz (1,600 million cycles per second) will enable the computer to handle the most demanding applications.

One area where microprocessors differ is in the amount of data – the number of bits – they can work with at a time. There are 16, 32 and 64-bit processors. The computer's internal architecture is evolving so quickly that the new 64-bit processors are able to address 4 billion times more information than a 32-bit system.

The two main manufacturers of microprocessor chips are Intel and Motorola.

1. The Intel 80x86 chips were used in the first IBM PCs and compatibles. In 1993 Intel Corporation introduced the Pentium processor which was 150 times faster than the speediest 80 x 86. Now most PCs have Intel Pentium 4 or AMD chips, delivering high performance for multimedia, Internet communications and 3-D applications.

2. The Motorola 680x0 chips were used in the first Macintosh, Atari ST and Amiga computers. In 1993 the alliance of IBM, Apple and Motorola created the PowerPC, a new 64-bit processor that could handle more information than 32-bit processors. Today, Macs have a PowerPC G3 or G4 processor, with high-performance multimedia extensions and faster clock speeds.

Its functions are following: (1) interpretation of instructions and direction the processing, (2) performance arithmetic operations and making comparisons, and (3) temporarily storage data during processing (main memory).

The CPU is composed of following key components: *a control unit, arithmetic/logic unit, a clock and some memory registers.*

The Control Unit examines the instructions and causes the circuits and the rest of the components, e.g. controls and coordinates all of the CPUs activities. Acting on instructions that it retrieves one by one from main memory, the control unit interprets each instruction and carries it out. In addition, it controls input and output devices and transfers data between the arithmetic/logic unit and main memory.

The Arithmetic/Logic Unit (ALU) performs arithmetic computations and logical operations. The arithmetic operations include addition, subtraction, multiplication, and division. The logical operations involve comparisons such as less than, greater than, or equal to. Although these may seem like simple operations, the ALU can carry out extremely complex tasks by combining these functions. The speed of the ALU determines the speed of the computer.

Both the control unit and the ALU contain **Registers**, which are high-speed units of memory used to control information. They are temporary storage locations for managing instructions and data as they are being processed. One of these registers is the program counter (PC) which keeps track of the next instruction to be performed in the main memory. Another is the instruction register (IR) which holds the instruction that is currently being executed.

The CPU has an **Internal Clock** that synchronizes all of the operations in the cycle and the clock speed helps to determine the speed at which operations are carried out.

The Central Processing Unit performs the following four steps for each instruction:

1. The control unit fetches (gets) the instruction from memory.
 2. The control unit decodes the instruction and directs that the necessary data be moved from memory to arithmetic/logic unit. These first two steps together are called *instruction time*, or I-time.
 3. The arithmetic/logic unit *executes* the arithmetic or logical instruction. That is the ALU is given control and performs the actual operation on data.
 4. The arithmetic/logic unit stores the results of this operation in memory or in a register.
- Steps 3 and 4 together are called *execution time*, or E-time. The control unit eventually directs memory to realise the result to an output device or a secondary storage device. The combination of I-time and E-time is called the *machine cycle*.

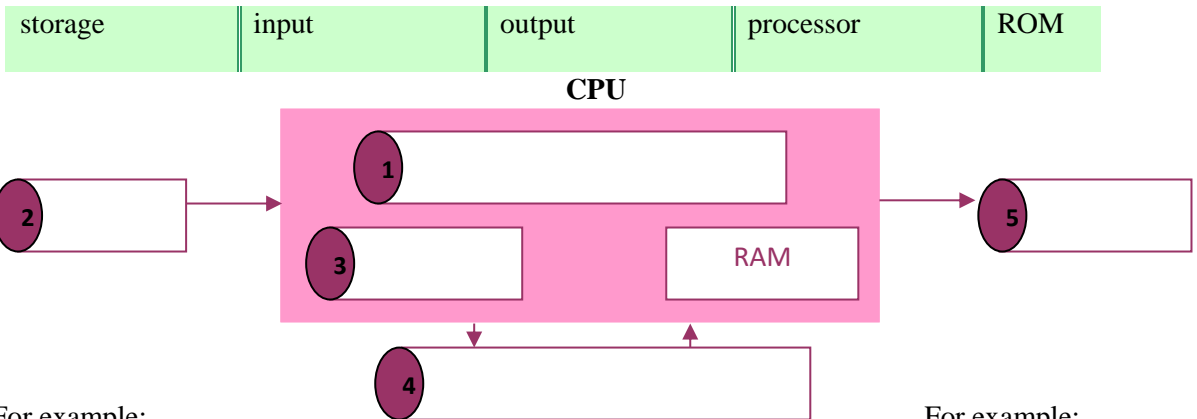
Computers use a data encoding system that is based on a two-state binary system. Information in this system is represented through the use of ones and zeros. The digit 1 stands for *on* (the presence of an electronic signal), and the digit 0 stands for *off* (the absence of an electronic signal). When using magnetic media such as disks and tapes, these two states are indicated through the use of one or two magnetic polarities. When computers store data in a binary representation, each letter, number, and special character is stored based on a coding system. The two most commonly used coding systems are American Standard Code for Information Interchange (ASCII), and the Extended Binary Coded Decimal Interchange Code (EBCDIC) which is usually used only on large mainframe computers. The smallest unit of data that a computer can deal with is known as a bit, but generally computers deal with bits in groups of eight, referred to as a byte. As a result data management and storage capacities are usually measured in bytes.

- The CPU directs and coordinates the activities taking place within the computer system.
- The arithmetic logic unit performs calculations on the data.
- 32-bit processors can handle more information than 64-bit processors.
- A chip is an electronic device composed of silicon elements containing a set of integrated circuits.
- Information cannot be processed by the microprocessor if it is not loaded into the main memory.
- The speed of the microprocessor is measured in gigahertz or megahertz. One GHz is equivalent to one thousand MHz. One MHz is equivalent to one million cycles per second.
- Computer is an electronic device therefore hardware is a system of electronic devices.
- The purpose of processing hardware is to retrieve, interpret and direct the execution of software instructions provided to the computer.
- CPU reads and interprets software and prints the results on paper.
- User is unable to change the contents of ROM.

18. Which of the following is Processing Hardware:

program	mouse	CPU	printer
modem	command	port	cursor or the pointer
keyboard	character	RAM	ROM

19. Label this diagram of a computer system with these terms.



For example:

keyboard, mouse,
lightpen, scanner

For example:

monitor, printer,
plotter, speaker, motor

For example: hard disk, floppy disk, CD-ROM

20. Work in pairs. What other examples of output devices, input devices, and storage devices can you add to the diagram?

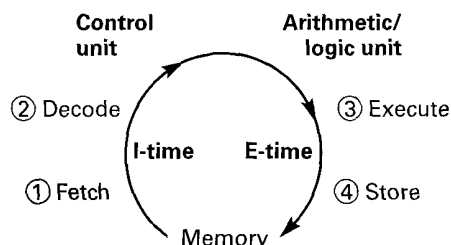
21. General understanding:

- What is the definition of the hardware?
- What are the main parts of the CPU?
- What is processing hardware?
- What is the typical unit used to measure RAM memory and storage memory?
- What is a megahertz?
- What is the ALU? What does it do? Where does the ALU store the results of its operations?
- What is the abbreviation for “binary digit”?
- What must be put into memory before an instruction can be executed?
- Where will the data be stored temporarily?

- What operation does the control unit perform on the data?
- What happens to the results eventually?
- What is the machine cycle?

22. Study this diagram of a machine cycle. Answer these questions.

1. How many steps are there in the machine cycle?
2. What are the *Fetch* and *Decode* steps together called?
3. Which steps together are called *E-time*?
4. Where does the *Decode* step happen?



Практическая работа № 39.

Text 6B

MAIN MEMORY

23. Read the text below and then sentences, decide if the sentences are true (T) or false (F).

temporary – временный, рабочий

to modify - модифицировать

solid-state – твердотельный

volatile memory – энергозависимая память

Memory is the system of components of the computer in which information is stored. Computers act on instructions provided by computer programs. These instructions are temporarily stored in a special data storage area referred to as main memory which is based on sets of silicon chips. Before the CPU can act, it must retrieve instructions from main memory (also known as temporary or internal storage). The CPU may also store data in main memory temporarily as it carries out processing tasks. Each chip contains millions of miniature circuits and each of those circuits can be in one of two states. This system is known as a binary system. The word “binary” refers to two distinct states, *on* or *off*, *present* or *absent*. Data is stored in these chips in grouped, coded patterns using this binary method. By setting some circuits to *on* and others to *off*, the computer can store many different kinds of data. In fact, all the different types of data that can be used on computers can be stored using complex combinations of this simple on/off binary coding system.

There are two types of solid-state, chip-based memory: *RAM* (*random-access memory*) and *ROM* (*read-only memory*). The computer uses **random-access memory (RAM)** to temporarily store program and processing information. This information is lost when the computer is turned off. Without power the circuits in the chips change back to their normal off-state and all the data is lost. For that reason this type of memory is known as volatile. It is contrasted to more permanent types of storage systems that are known as non-volatile. However, the term “random” may not be the best way to refer to this type of memory. While almost all of today’s computers use some random-access method of storing data (that is, the computer can retrieve data from wherever it is stored, randomly), the term “RAM” is reserved for the computer’s primary, chip-based memory system.

Read-only Memory (ROM) is another storage system that also uses silicon chips, but with this type of storage the data is not lost when the computer's power is turned off. ROM is nonvolatile, nonmodifiable computer memory, used to hold programmed instructions to the system. ROM contains permanently stored information such as the instructions that are needed for the computer's operation. This type of memory is known as "read-only memory" because the computer cannot store data to ROM but data can be read from ROM as often as needed. Computer makers use this type of chip-based storage system to permanently store data that is needed for the computer's operation.

- "Permanent" storage of information is provided by RAM.
- ROM is nonvolatile, nonmodifiable computer memory.
- RAM, ROM and secondary storage are the components of the main memory.
- Main memory provides a way to pass files to and from the hard drive or to and from another computer.
- A chip is an electronic integrated circuit in a small package.
- RAM is volatile computer memory, used for creating, loading, and running programs and for manipulating and temporarily storing data.
- ROM is used to hold programmed instructions to the system.
- A binary system is a notation system in which the base for each digital position is 2.

24. As we have seen, there are three types of the memory used by computers: RAM, ROM and secondary storage. Look through this list of features and decide which type of memory they refer to.

1. Any section of the main memory can be read with equal speed and ease.
2. It is available in magnetic, optical and video disks.
3. A certain amount of this memory can be designated as "cache" memory to store information in applications that are used very frequently.
4. It stores basic operating instructions, needed by the CPU to function correctly.
5. Memory which can be expanded by adding SIMMs of 8 MB, 16 MB, 32 MB or other major increments.
6. Information is permanent and cannot be deleted.
7. You can save and store your documents and applications.

25. With a partner try to answer these questions.

1. Can a PC-user change the ROM? Who records the information in ROM?
2. What is storage hardware? What is CD-ROM used for? Can a user record his or her data on a CD? What kind of storage hardware can contain more information: CD-ROM, RAM or ROM?
3. What are the basic types of memory used in a PC?
4. What memory section is permanent and consists instructions needed by the CPU?
5. What is the meaning of the acronym SIMM?
6. How can we store data and programs permanently?
7. How many digits does a binary system use? What is a "bit"?
8. What is the difference between binary notation and the decimal system? Give some examples.
9. What is a collection of eight bits called?
10. One kilobyte (1 Kb) equals 1,024 bytes. Can you work out the value of these units?
1 megabyte =bytes/1,024 kilobytes

1 gigabyte =bytes/1,024 megabytes
11. What does the acronym ASCII stand for? What is the purpose of this code?

UNITS OF MEMORY

26. Now read the text to check your answers or to find the correct answer.

Bits - basic units of memory

Information is processed and stored in computers as electrical signals. A computer contains thousands of electronic circuits connected by switches that can only be in one of two possible states: ON (the current is flowing through the wire) or OFF (the current is not flowing through the wire). To represent these two conditions we use **binary notation** in which 1 means ON and 0 means OFF. This is the only way a computer can “understand” anything. Everything about computers is based upon this binary process. Each 1 or 0 is called a **binary digit** or **bit**.

Bytes and characters

1s and 0s are grouped into eight-digit codes that typically represent characters (letters, numbers and symbols). Eight bits together are called a **byte**. Thus, each character in a keyboard has its own arrangement of eight bits. For example, 01000001 for the letter A, 01000010 for B and 01000011 for C.

The ASCII code

The majority of computers use a standard system for the binary representation of characters. This is the American Standard Code for Information Interchange, known popularly as “ASCII” (pronounced “ask-key”). There are 256 different ways of combining 0 and 1 bits in a byte. So they can give us 256 different signals. However, the ASCII code only uses 128 bytes to represent characters. The rest of the bytes are used for other purposes.

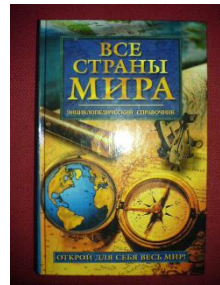
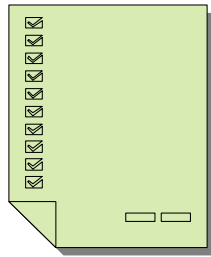
The first 32 codes are reserved for characters such as the Return key Tab, Escape, etc. Each letter of the alphabet, and many symbols (such as punctuation marks), as well as the ten numbers, have ASCII representations. What makes this system powerful is that these codes are standard.

Kilobytes, megabytes and gigabytes

In order to avoid astronomical figures and sums in the calculation of bytes, we use units such as kilobytes, megabytes and gigabytes. One kilobyte is 1,024 bytes (2^{10}) and it is represented as KB, or more informally as K. One megabyte is equivalent to 1,024 KB, and one gigabyte is 1,024 MB.

We use these units (KB, MB, GB, and TB) to describe the RAM memory, the storage capacity of disks and the size of any application or document.

27. Look at the illustrations and the captions below. Then fill in the blanks with the correct unit of memory.



1. One ... represents one character.
 2. One ... represents 1,024 characters (about a small page of text).
 3. One ... represents 1,000,000 characters (about the text of this book).
 4. One ... represents 1,000,000,000 characters (about 1,000 books in a library).

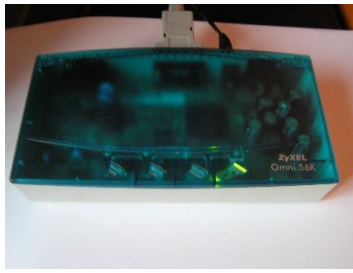
28. Put these units of measurement in the correct place.

terabyte	megabyte	gigabyte	bit	byte	kilobyte
----------	----------	----------	-----	------	----------

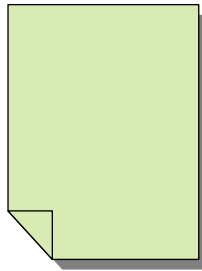
<i>Units of memory</i>	<i>Equivalence</i>
1.	binary digit (0 or 1)
2.	8 bits
3.	1,024 bytes
4.	1,024 kilobytes
5.	1,024 megabytes
6.	1,024 gigabytes

29. The quotations 1-7 below are typical in computing. Read them and find:

- the unit of measurement that represents ASCII characters;
- the abbreviation for “megabyte”;
- the size of the text file;
- the acronym for “random access memory”;
- the speed of a conventional modem;
- the maximum storage capacity of a DVD;
- the reason why you can't download an audio file.



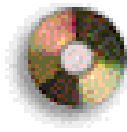
A conventional modem transmits data at 56 kilobits per second.



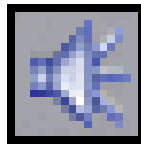
This text file occupies 3 kilobytes.



I've got a Pentium computer with 5,5 GHz (5,500 MHz) and 2 gigabytes of RAM and 1 TB of hard disk space Windows.



A CD can hold 650 megabytes of data. However, a DVD can store up to 17 gigabytes.



You can't download this audio file. You need 3 MB of additional space on your disk.



This Windows program runs best with 256 MB or more of memory.

A, z, 7

Bytes are used to represent individual characters – a letter, a number, or even a space.

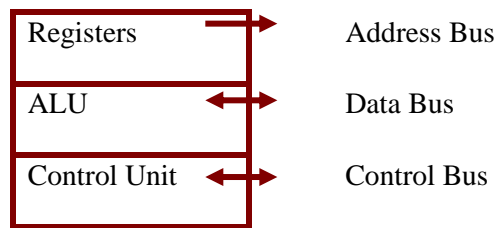
Listening Practice

30. Study this diagram of the Central Processing Unit. Answer the questions:

1. What does ALU mean?

2. What is a register?

3. What does the control unit do?



Listen to the recording. Check your answer to exercise.

31. Listen again to find the answers to these questions.

1. What sort of functions does the ALU perform?
2. Name a logic operation performed by the ALU.
3. Which part of the CPU controls printers?
4. What is the difference between registers and main memory?

Практическая работа № 40.

Oral Practice

32. Make notes about the features of the computer that you would like to have.

CPU	Speed	Optical disk drives
Minimum/maximum RAM		Monitor ...
Hard disk:		Software

33. Now describe it to your partner.

Useful expressions

- It has got ...
- It's very fast. It runs at ...
- The standard RAM memory and it is expandable ...
- The hard disk can hold
- I need SuperVGA monitor because
- As for the Internet

34. Work in pairs, A and B. Explain to your partner how to convert a number from one system to another. You can write down the steps and show them to your partner, but you must explain each step in English.

Student A - Your conversion is on page 139.

Student B - Your conversion is on page 140.

Writing Practice

35. Read the text and complete it with the phrases in the box.

All the information stored in the RAM is temporary
Microcomputers make use of two types of main memory
ROM chips have “constant” information
the size of RAM is very important

Main memory: RAM and ROM

The main memory of a computer is also called the “immediate” access store, as distinct from any storage memory available on the disks. (1) ...: RAM and ROM, both contained in electronic chips connected to the main board of the computer.

RAM stands for “random access memory” and is the working area of the computer, that is, the basic location where the microprocessor stores the required information. It is called “random access” because the processor can find information in any cell or memory address with equal speed, instead of looking for data in sequential order.

(2) ..., so it is lost when the machine is turned off. Therefore, if we want to use this information later on, we have to save it and store it on a disk. When running an application, the microprocessor finds its location in the storage device (the floppy or hard disk) and transfers a temporary copy of an application to the RAM area. Consequently, (3) ... if we want to increase the performance of a computer when several applications are open at the same time or when a document is very complex.

The RAM capacity can sometimes be expanded by adding extra chips. There are usually contained in single in-line memory modules or SIMMs which are installed in the motherboard of the computer.

We can designate a certain amount of a RAM space as a **cache** in order to store information that an application uses repeatedly. A RAM cache may speed up our work, but it means that we need enough internal memory or a special cache card.

ROM is an acronym for “read only memory” which implies that the processor can read and use the information stored in the ROM chip, but cannot put information into it. (4) ..., including instructions and routines for the basic operations of the CPU. These instructions are used to start up the computer, to read the information from the keyboard, to send characters to the screen, etc. They cannot be changed and are not erased when the power is turned off. For this reason, the ROM section is also referred to as **firmware**.

Практическая работа № 41.

SECONDARY STORAGE SYSTEM

The term secondary storage refers to devices that are used to store data and program files for long periods of time. There are many different types of secondary storage devices including diskette drives, fixed disk drives, and magnetic tape drives.

Terms Concepts

Today's storage systems generally are based on magnetic disks or magnetic tape. One such storage system uses a diskette (also known as a floppy disk) which is available in a 3.5 inch size. **Fixed disks**, also known as **hard disks**, use the same magnetic media, but they can store a great deal more data and they are permanently sealed in a case. **Magnetic tape** is often used to store backup copies of programs and data. **Optical disks** are high-capacity, nonmagnetic storage devices that are based on laser technology.

Language material

1. Consult a dictionary and practise the pronunciation of the following words:

purpose, relatively, permanent, basic, function, except, capacity, surface, circle, catalogue, head, toward, measure, millisecond, mechanism, microdrive, multimedia, through, various, digitized, archive, version, rewritable, language, limitation, suitable.

2. Learn by heart the following vocabulary:

average	среднее число, средний	as soon as	как только, не позже
cartridge	патрон, картридж	therefore	следовательно
density	плотность, компактность	while	в то время как, пока
entry	вход, проход	to back up	поддерживать
off-line	автономный режим	to clamp	фиксировать, захватывать
purpose	намерение, цель, назначение	to coat	покрывать, облицовывать
shareware	условно-бесплатное ПО	to discover	обнаруживать, открывать
surface	поверхность	to distinguish	различать, отличать
track	дорожка, след, курс	to distribute	распределять

corporate	корпоративный, общий	to duplicate	дублировать, делать копию
empty	пустой	to erase	стирать, вычеркивать
flexible	гибкий	to format	размечать, форматировать
permanent	постоянный, долговременный	to initialize	инициализировать
random	случайный, наугад	to occupy	занимать
rigid	жесткий, твердый, негибкий	to record	записывать данные на носитель
secure	безопасный, надежный	to share	делиться, участвовать
relatively	относительно, сравнительно	to spin	вращаться
tightly	тесно, туго, плотно, крепко	to stack	записывать в стек

3. Match the English word combinations in the left-hand column with the Russian equivalents in the right-hand column:

1. office filing system	a. полным ходом
2. electromagnetic signal	b. магнитооптический диск, магнитооптика
3. floppy disk	c. магнитная лента
4. concentric circle	d. головка чтения/записи
5. a blank disk	e. время поиска, позиционирования
6. read/write head	f. скорость передачи данных
7. access time	g. дискета, гибкий (магнитный) диск
8. at full speed	h. офисная файловая система
9. seek time	i. пустой диск
10. data transfer rate	j. электромагнитный сигнал
11. sealed case	k. концентрический круг
12. at the same rate	l. с такой же скоростью
13. animation program	m. анимационная программа
14. optical disk	n. съемный диск
15. digital versatile disk	o. поперечная плотность записи
16. magneto-optical disk	p. время доступа

- 17. magnetic tape
- 18. removable disk
- 19. track density

- q. закрытый корпус
- г. оптический диск
- с. цифровой многофункциональный диск

4. Look at the illustrations and find out:

- 1. the size (dimensions) of a floppy disks;
- 2. the name of a hard drive on a PC platform;
- 3. the storage capacity of external DVD ;
- 4. the system that can hold 10 GB tapes;
- 5. the meaning of the abbreviations “DS”, “DD”, “HD”;
- 6. the external features of double density and high density disks.



3.5-inch 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

Hard drive, which can be taken off from the computer and easily carried.



External DVD

External DVD is used for reading and recording data on



Pocket-sized drive

Ultra portable drives are used with mobile computers. They hold 40



Microdrive

A Microdrive is the smallest external hard drive for PC. It

removable DV disks. It comes up to 8 GB. MB disks. The Peerless system can hold 20 GB disks. comes in 10 GB and 30 GB capacities

5. Find in each line word that is given at the beginning.

application	a) приложение	b) плотность	c) корпус	d) намерение
platter	a) цель	b) лента	c) проход	d) тарелка диска
to allow	a) расширять	b) позволять	c) отличать	d) вычеркивать
to replace	a) замещать	b) делиться	c) занимать	d) поддерживать
to retrieve	a) форматировать	b) вращаться	c) извлекать	d) размечать
to seal	a) инициализировать	b) запаивать	c) покрывать	d) открывать
common	a) общий	b) гибкий	c) пустой	d) надежный
thus	a) относительно	b) сравнительно	c) тесно	d) таким образом

6. Note additional meanings for words “to pass”, “to mean”.

to pass	проходить мимо	Several people were passing but nobody offered to help. There was a truck behind that was trying to pass me.
	передавать, давать	Pass the salt, please. Pass that book over. Pass me over that book.
	переходить (после смерти)	On his death, the title passed to his eldest son.
	превышать	Unemployment has now passed the three million mark.
	проходить, проводить (о времени)	Six months passed and we still had no news of them. We sang songs to pass the time. How did you pass the evening?
	заканчиваться	They waited for the storm to pass .
	сдавать (экзамены)	She hasn't passed her driving test yet. The examiners passed all the candidates.
to mean	значить, означать, иметь значение	What is meant by “batch processing”? The flashing light means you must stop.

иметь в виду	What do you mean , you thought I wouldn't mind? Did he mean he was dissatisfied with our service?
подразумевать	What did she mean by leaving so early? Don't be upset - I'm sure she meant it as a compliment.
собираться, намереваться	His father meant him to be a systems support person.
означать	Spending too much now will mean a shortage of cash next year. This new order will mean working overtime.
значить, быть важным	\$20 means a lot when you live on \$100 a week. Her children mean the world to her.

7. Consider the grammar:

to insert into – вставлять в

When you *insert* a blank disk *into* a disk drive, it must be “initialized”, or formatted, before information can be recorded onto it.

to pass into sth – превращаться в, переходить в, делаться

Many foreign words have *passed into* the English language.

to read into – вчитываться в

The operating system looks for its entry in the directory, moves the read/write heads to the correct sectors, and *reads* the file *into* the RAM area.

to seal into – скреплять с

There are “internal” and “external” drives which are both rigid disks *sealed into* the drive unit, either within or attached to the computer.

8. Match the synonyms:

1. to occupy	a. rigid
2. to affect	b. field
3. to clamp	c. to take up
4. to back up	d. to influence
5. hard	e. to fix

- | | |
|-------------|----------------|
| 6. area | f. reliable |
| 7. common | g. entrance |
| 8. secure | h. aim |
| 9. entry | i. to maintain |
| 10. purpose | j. usual |

9. Match the antonyms:

- | | |
|--------------|----------------------|
| 1. often | a. exit |
| 2. common | b. on-line |
| 3. empty | c. premeditated full |
| 4. secure | d. unreliable |
| 5. removable | e. fixed |
| 6. entry | f. temporal |
| 7. off-line | g. flexible |
| 8. permanent | h. seldom |
| 9. rigid | i. rare |
| 10. random | j. |

10. Find in each line the word – synonym to the first word:

- | | | | | |
|--------------------|-----------------|----------------|------------------|-------------|
| to transfer | a) to back up | b) to discover | c) to transmit | d) to coat |
| to consist | a) to include | b) to clamp | c) to distribute | d) to share |
| to start | a) to duplicate | b) to erase | c) to occupy | d) to begin |
| information | a) application | b) image | c) data | d) driver |
| type | a) kind | b) track | c) surface | d) density |
| way | a) ware | b) method | c) purpose | d) average |

11. Find in each line the word – antonym to the first word:

- | | | | | |
|-------------|---------|----------|---------|---------|
| fast | a) high | b) cheap | c) slow | d) also |
|-------------|---------|----------|---------|---------|

- special** a) large b) ordinary c) expensive d) ideal
- towards** a) inside b) out c) with d) back
- top** a) bottom b) version c) memory d) case
- to write** a) to damage b) to erase c) to create d) to archive
- to create** a) to involve b) to ruin c) to carry out d) to enhance

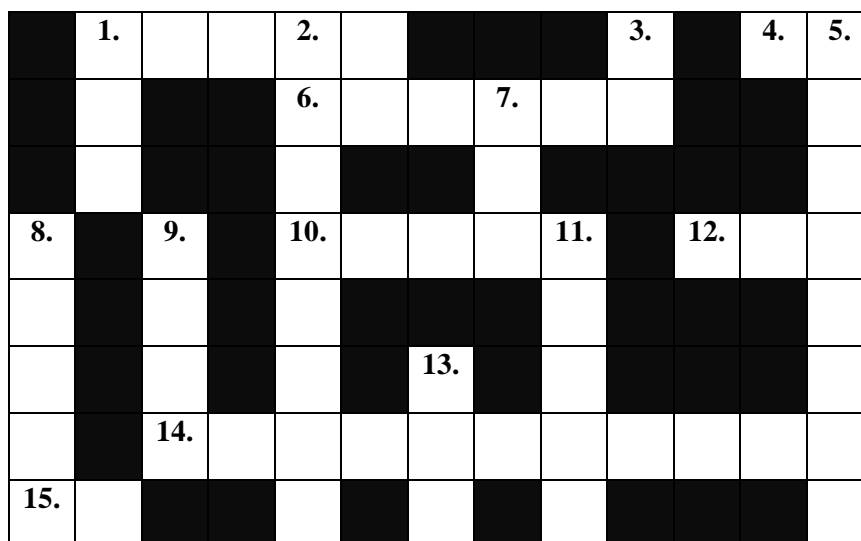
12. Find in each line noun:

1. a) transmit b) processor c) retrieve d) occupy e) digital
2. a) various b) storage c) optical d) distribute e) which
3. a) area b) while c) divided d) modern e) create
4. a) secure b) lot c) represent d) reason e) both
5. a) stable b) held c) duplicate d) erase e) access
6. a) fixed b) versatile c) just d) device e) electromagnet

13. What's the meaning of these abbreviations?

DVD-ROM	DVD	CD-ROM	HDD	CD-RW
CD	CD-MO	WORM	CD+G	DVD-RAM
FD	DVD-E	CD-R	DIVX	CD-DA

14. Read the clues and complete the crossword.



										16.		
17.								18.				
						19.				20.		21.
22.												

Across

1. Acronym for “light amplification by stimulated emission of radiation”.
4. A microcomputer.
6. To write information on a disk, magnetic tape or film.
10. To record and keep for future use.
12. Abbreviation of “binary digit”.
14. Thousandth of a second.
15. The type of computer with a 286 processor introduced by IBM in 1984.
17. Concentric ring marked on the surface of a disk when the disk is formatted.
18. Prefix meaning “very large” or “one thousand million”.
20. Read only memory.
22. The physical mechanism that accepts, reads and writes data on a disk.

Down

1. Acronym for “local area network”.
2. Opposite of “indelible”.
3. Abbreviation of “high density” or “hard disk”.
5. Way of storing a lot of information in a removable form.
7. Abbreviation of “optical character recognition”.
8. All disks must be “initialized” or ... when used for the first time.
9. Indelible optical storage device: “write once, read many”.
11. Not cheap.
13. A flat, circular surface used to hold computer data.

16. Opposite of “soft”.
19. Disk that holds music.
21. A thousand kilobytes.

Word-building

Model 16

Основа существительного + **-ous** → прилагательное

courage - смелость	courageous - смелый
danger - опасность	dangerous - опасный
fame - слава, известность	famous - знаменитый, известный
glory - слава	glorious - славный

Model 17

Основа прилагательного + **-ness** → существительное

black – черный	blackness – чернота
bitter – горький	bitterness – горечь
cold – холодный	coldness – холод
dark – темный	darkness – темнота

15. Look at the groups of words and decide what class each word belongs to: noun, verb, adjective or adverb. Complete the sentences.

magnet	magnetic	magnetically	magnetism	magnetize	magnetized
--------	----------	--------------	-----------	-----------	------------

- ... is the science of magnetic phenomena and properties.
- Floppy and hard disks are considered as ... storage devices.
- Data is recorded on a disk in the form of ... spots called bits.

record	recorder	recording	recorded
--------	----------	-----------	----------

- All disks must be initialized before information can be ... onto them.
- The ... heads follow the tracks and magnetize the coating along each track.
- A disk drive works very much like a tape ... that can both play and record.

fragment	fragmentation	defragmenter	fragmented
----------	---------------	--------------	------------

- After you create, delete and modify a lot of files the hard disk becomes ... with bits and pieces spread all over the disk.
- ... slows down the speed at which data is accessed because the disk drive has to work harder to find the parts of a file stored in many different locations.

9. To reorganize your hard disk, you can use a disk optimizer or ..., this will reorder your files into contiguous clusters.

Практическая работа № 42.

Reading Practice

16. There are many different kinds of storage device for computers and developments are taking place all the time. List the storage devices mentioned in this unit so far. List any other storage devices you know.

17. Work in groups of three. Read following text and complete your sections of the table.

Medium	Advantages	Disadvantages
Floppy disk		
Fixed hard disk		
Removable hard disk		
CD-ROM disk		
Magneto-optical disk		
Magnetic tape		

Text 7 A

STORAGE HARDWARE

18. Read the text. Try to understand it and be ready to answer the questions.

The purpose of storage hardware is to store computer instructions and data in a form that is relatively permanent and retrieve when needed for processing. Storage hardware serves the same basic functions as do office filing systems except that it stores data as electromagnetic signals. The most common ways of storing data are hard disk, floppy disk and CD-ROM.

The floppy drive

Floppy disks are so called because they consist of flexible plastic material which has a magnetizable surface. Floppy drives provide a way to pass files to and from the hard drive or to and from another computer. They are also very cheap, but they are slow and have a limited capacity.

The surface of a disk is divided into concentric circles or “tracks”, which are then divided into “sectors”. When you insert a blank disk into a disk drive, it must be “initialized”, or formatted, before information can be recorded onto it.

This means that magnetic areas are created for each track and sector, along with a catalogue or “directory” which will record the specific location of files.

When you save a file, the operating system moves the read/write heads of the disk drive towards empty sectors, records the data and writes an entry for the directory. Later on, when you open that file, the operating system looks for its entry in the directory, moves the read/write heads to the correct sectors, and reads the file into the RAM area.

Hard Disks

Almost all desktop computers have **hard disks**. Hard disk, often referred to as fixed disks, is a rigid disk coated with magnetic material for storing programs and relatively large amounts of data. Hard disks work in the same way as floppies. But they have important advantages: they can hold much more data and spin at higher speed, so you can store and retrieve information 25 much faster than with floppies. 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.

You have to distinguish between access time (e.g. 9 ms) and “data transfer rate” (the average speed required to transmit data from a disk system to the RAM, e.g. at 10 megabits per second). The transfer rate depends also on the power of your PC.

Fixed disks often use several magnetically coated disks stacked one on top of the other. All of these disk platters inside the sealed case spin at the same rate, but each disk has its own set of read/write heads. While the diskette drive's mechanism clamps onto the diskette and starts it spinning after it is placed in the drive, fixed disks start spinning as soon as the computer is turned on. And since fixed disks spin very fast inside a tightly sealed case, they can provide faster rates of data transfer to the processor.

If you only use word-processing 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 microdrives with special cards.

Optical disks and drives

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 (compact disk read only memory) is a compact disk on which a large amount of digitized read-only data can be stored. They are removable and can hold about 650MB. They are also

cheap to make. However, they are usually read-only. You cannot change the information on them. They are also slow compared to hard disks.

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 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.

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.

The future of optical storage is called DVD (digital versatile disk). A DVD-ROM can hold 17 GB, about 25 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 rewritable disks.

19. Now exchange information with the other students in your group to complete all the sections of the table. Ask questions like these.

- What are the advantages of floppy disks?
- What are the disadvantages of a magnetic tape?
- Do CD-ROMs conform to a standard?
- What is input hardware? What are the examples of input hardware?
- What is mouse designed for? What is a light pen?
- What is modem used for? Can PC-user communicate with other people without a modem?
- Today's computers use secondary storage systems to store data that is not currently being processed. Name and describe three different types of storage systems that use disks.

20. Now read these sentences and decide 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.
6. If you use multimedia applications you need the same storage capacity as required for word processors.
7. Removable cartridges are not transportable.

21. Read the text and match the terms on the left with the explanations on the right.

- | | |
|------------------|---|
| 1. backing store | a) a catalogue of where each piece of data is stored and how to find it |
| 2. floppies | |
| 3. disk drive | |

- 4. formatting
- 5. directory
- 6. read/write heads

- b) recording heads
- c) secondary memory
- d) diskettes
- e) initializing; setting tracks and sectors on magnetic disks
- f) a device which spins disks and contains a read/write head

22. Read the text again and summarize in the table the most relevant information.

	<i>Technical specifications</i>	<i>Use</i>
CD-ROM		
CD-Recorder		
DVD		
Magneto-optical disk		

23. Read these sentences and clauses and look back to find out what the words in bold refer to.

1. ... **they** are secure and stable ...
2. ... **which** represents a lot of savings in distributing materials ...
3. ... **you** cannot write anything onto a CD-ROM disk.
4. You can only “read” **it** ...

Writing Practice

24. Read the text match these headings to the correct paragraphs.

DVD formats	What's a DVD?
DVDs versus CDs	Configurations of data layers
Looking forward	

1.....

DVD stands for digital versatile disk. It's essentially a new type of compact disk which can hold several gigabytes of multimedia elements - video, audio and computer data. DVD uses MPEG-2 to compress video.

2.....

At first sight a DVD is similar to a CD. Both disks are 120 mm in diameter and 1.2 mm thick. They *also* use a laser beam to read data. *However*, they are very different in internal structure and data capacity. In a DVD the tracks are very close in space, *thus* allowing more tracks per disk. The distance between each track is 0.74 micron, *whereas* in a CD the track pitch is 1.6 micron. *In addition*, the pits in which data is stored are smaller, *so* there are more pits per track. *Furthermore*, DVDs can be double-sided, which doubles their potential storage capacity.

3.....

A DVD-ROM holds computer data and is read by a DVD-ROM drive in a computer. DVD-ROM drives are backward-compatible, so they can also play old CD-ROMS, video CDs and CD-R disks.

A DVD-Video disk is the best storage medium for full-length movies. It can support eight different languages, 52 subtitles, and various audio formats. DVD-Video players are connected to TV sets.

A DVD-Audio disk contains sound files, supporting PCM digital audio, Dolby Digital and DTS, a high-quality audio Format used in theatres.

Recordable DVDs come in various formats: DVD-R disks are similar in concept to CD-R (Recordable), i.e. they can record data only once, while the rewritable formats (e.g. DVD-RAM and DVD+RW) can be erased and reused many times. They can all record any kind of information - data files, video and TV programmes.

DIVX means digital video express, a new format promoted by the film industry in America. It's like a pay-per-view DVD allowing you to rent or buy a DIVX disk at low price and view its contents within a limited period of time, DIVX players come with a modem which connects to the phone lines to communicate with the central server.

4.....

The basic pattern is a single-sided, single layer disk with a capacity of 4.7 GB. The single-sided, dual layer disk can hold up to 8.5 GB. The double-sided, single layer disk offers a capacity of 9.4 GB. As the contents are on both sides, the disks must be used in a DVD player capable of reading the two sides. Finally, the double-sided dual layer disk increases the storage capacity up to 17 GB with 8.5 GB on each side.

5.....

There are still too many formats and specifications, but in the near future DVD drives are expected to be compatible with all existing CD and DVD formats. DVDs will gradually replace audio CDs, CD-ROMs and video cassettes.

PC users and movie addicts are waiting with excitement for a universal drive that can play any type of optical disk.

25. Join the sentences with the words in brackets.

1. A virus entered the computer. Many files have been destroyed. (*as a result*)

2. DVDs and CDs are physically similar in size. Their data structure is very different. (*although*)
3. Colour, animation and 3D graphics are essential in many applications. They're used in art, graphic design and engineering. (*for example*)
4. In computers, RAM memory is temporary. The ROM section is permanent. (*however*)

26. Summarize the technical specifications and uses of these DVD formats.



27. Read the text again and find:

1. the compression format used by DVD-video technology;
2. two similarities between CDs and DVDs;
3. two differences between CDs and DVDs;
4. the storage capacity of a basic DVD disk;
5. the storage capacity of a double-sided dual layer DVD.


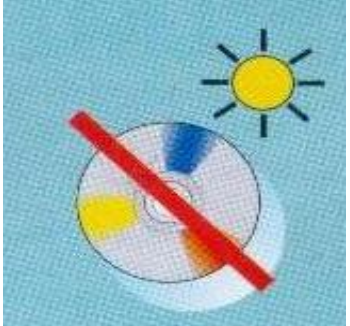
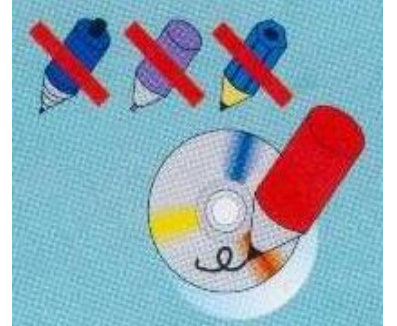

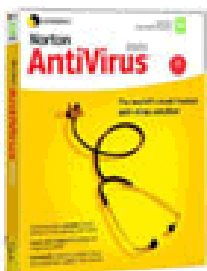
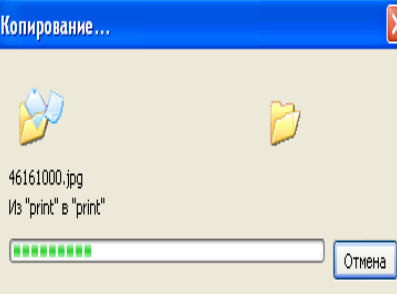
28. Look at the expressions in italics in these sentences and clauses.

1. *Thus*, they are ideal for multimedia applications
2. *Besides*, they are not affected by magnetic fields.
3. *However*, optical drives are slower than hard drives.
4. *In addition*, CD-ROM drives can play music CDs while you work.
5. *Yet* CD-ROM technology has one disadvantage:
6. *For this reason*, it can store a large amount of multimedia software

29. Give the main idea of extract "STORAGE HARDWARE" in 25-30 sentences.

30. Match the instructions to the pictures "Protect your data".

1. Protect your floppies against high temperatures.
2. Check for viruses before opening files you receive from the Web or via e-mail.
3. Keep back-ups (spare copies) of your data.
4. Don't write on the discs.
5. Keep disks away from water and humidity.
6. When handling CDs or DVDs, hold the discs around the edge.

 <p>a)</p>	 <p>b)</p>	 <p>c)</p>
 <p>d)</p>	 <p>e)</p>	 <p>f)</p>

31. In pairs, tell each other what you must or mustn't do to protect your disk.

Example – You mustn't leave them on the top of your computer.

1. in a protective case;
2. into a disk drive very carefully;
3. near strong magnetic fields; they can damage the information stored on them;
4. update your anti-virus program regularly since new viruses are created everyday;
5. password and security devices to protect confidential information;
6. at a temperature of between 10° C and 52° C;
7. bend or fold the disk.

32. Study these rules for CD-ROM and floppy disk care. Tick (✓) things to do and cross (X) things not to do. Then compare your choice with a partner.

1. Hold a CD-ROM by the edges.
2. Keep the optical/silver side of a CD-ROM clean.
3. Smoke when you use your CD-ROM drive.
4. Put floppy disks near a magnet.
5. Keep disks away from the sun and excessive heat.
6. Write the contents on the label on your floppy disk.
7. Put extra labels on floppy disks.
8. Remove by force a disk stuck in the drive.
9. Remove a disk when the drive light is on.