МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ
ПСИХОЛОГО-ПЕДАГОГИЧЕСКИЙ УНИВЕРСИТЕТ

MOSCOW STATE UNIVERSITY
OF PSYCHOLOGY AND EDUCATION

INFORMATION TECHNOLOGY

А.В. ГУЗОВА

УЧЕБНОЕ ПОСОБИЕ ПО АНГЛИЙСКОМУ ЯЗЫКУ ДЛЯ СТУДЕНТОВ 1–2 КУРСОВ

МОСКВА 2023

**ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ
ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ
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Доцент кафедры иностранных языков для гуманитарных и естественно-научных специльностей Северо-Кавказского федерального университета, к.п.н., доцент *Айназарова С.Н.*

Старший преподаватель кафедры «Лингводидактика и межкультурная коммуникация института «Иностранные языки, современные коммуникации и управление», к.ф.н., *Мурадян А.А.*

Гузова, Александра Викторовна

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Данное учебное пособие предназначено для студентов I-II курсов, обучающихся по направлениям «Математическое обеспечение и администрирование информационных систем (Информационные системы и базы данных)» и «Прикладная информатика (Прикладная информатика в психологии)» в рамках дисциплины «Иностранный (английский) язык» и может быть полезно специалистам в сфере информационных технологий.

Цель пособия – выработать навыки устной речи и тем самым создать прочный фундамент для дальнейшего совершенствования знаний по английскому языку.

Учебное пособие состоит из 15 тем. Каждая тема имеет свой основной текст. Основное внимание уделяется системному введению и повторению лексики и развитию навыков устной речи, чтения и перевода. Все тексты, включенные в пособие, представляют собой аутентичные образцы научных статей взятых из различных источников. Оригинальные тексты незначительно сокращены в методических целях, но при этом структура всех частей, а также внешнее оформление полностью сохранены, что дает возможность познакомиться с основными способами и средствами оформления логико-смысловой структуры статей по будущей специальности.

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Методическая записка

Предлагаемое учебное пособие предназначено для студентов I–II курсов обучающихся по направлениям «Математическое обеспечение и администрирование информационных систем (Информационные системы и базы данных)» и «Прикладная информатика (Прикладная информатика в психологии)» в рамках дисциплины «Иностранный (английский) язык» и ставит своей целью дальнейшее углубление и расширение языковой компетенции обучаемых, обогащение их словарного запаса, приобретение навыков правильного понимания богатого лексикой английского языка. При отборе текстов авторы стремились к тому, чтобы предоставить студентам возможность расширить свои знания по специальности.

Структурное построение каждой темы максимально способствует активизации различных видов речи в разнообразных коммуникативных условиях.

Все тексты, включенные в пособие, представляют собой аутентичные образцы научных статей взятых из различных источников. Оригинальные тексты незначительно сокращены в методических целях, но при этом структура всех частей, а также внешнее оформление полностью сохранены, что дает возможность познакомиться с основными способами и средствами оформления логико-смысловой структуры статей по будущей специальности.

Пособие прошло успешную апробацию на 1 и 2 курсах факультета «Информационные технологии» Московского государственного психолого-педагогического университета.

Авторы выражают глубокую признательность рецензентам, высказавшим ценные замечания, которые способствовали окончательной доработке данного издания.

Автор

Contents

COMPUTERS TODAY

UNIT I

1. Practice the pronunciation of the new words and memorize them.

1. addition – сложение, суммирование
2. bar graph – *мат*. гистограмма, граф
3. circuitry – цепь, схема
4. controller – регулятор, модуль управления
5. data – данные, информация
6. disk – диск, дискета
7. division – деление
8. equipment – оборудование, оснащение
9. flexible disk – гибкий диск
10. hard disk – жесткий диск
11. hardware – аппаратное техническое обеспечение
12. input – ввод, вход
13. internal storage – внутренняя память
14. keyboard – клавиатура
15. multiplication – умножение
16. output – вывод, выход
17. pie chart – секторная диаграмма
18. primary (main) storage – оперативная память
19. processor – процессор, машина для обработки данных
20. secondary storage – внешняя память
21. software – программное или математическое обеспечение
22. step-by-step instructions – пошаговые инструкции
23. storage – память
24. subtraction – вычитание
25. unit – блок

2. Practice the pronunciation of the following adjectives and memorize them.

1. additional – добавочный, дополнительный
2. auxiliary – вспомогательный
3. available – пригодный, имеющийся в распоряжении
4. central – основной, расположенный в центре
5. common – общий
6. equal – одинаковый, равный
7. external – внешний, наружный
8. internal – внутренний
9. primary – основной, главный

10. responsible – ответственный
11. specific – особый, специальный

3. Practice the pronunciation of the following verbs and memorize them.

1. carryout выполнять, завершать
2. compare сравнивать
3. convert превращать, преобразовывать
4. direct управлять, контролировать
5. execute выполнять, исполнять
6. hold удерживать
7. interpret передавать, интерпретировать
8. notify извещать, уведомлять
9. perform выполнять
10. process обрабатывать
11. run *зд*. запускать
12. store хранить, накапливать
13. turn преобразовать

4. Match the equivalents.

a)

1. hardware	1. память
2. keyboard	2. техническое обеспечение
3. screen	3. данные
4. input	4. ввод (данных)
5. output	5. вывод (данных)
6. data	6. клавиатура
7. software	7. экран
8. storage	8. программное обеспечение

b)

1. жесткий диск	1. flexible disk
2. процессор	2. processing
3. память	3. hard disk
4. блок управления	4. memory
5. гибкий диск	5. control unit
6. направлять	6. device
7. устройство	7. direct
8. обработка данных	8. processor

5. Read and translate the text.

Text I

ELECTRONIC COMPUTING MACHINES

A computer needs four components in order to operate. They are: hardware, software, data and users.

Hardware consists of the machines and electronic equipment – the keyboard, the video display screen, the computer itself and so on. Software consists of the programs available to run the system. A program is a set of step-by-step instructions that directs the computer to perform specific tasks. Data consists of the raw facts. When raw facts have been turned into useful facts, they are called information.

A computer system consists of the input, processor (to which we add storage) and output.

Input units take data in machine-readable form and send it to the processing unit. Processing is performed by the central processing unit, or processor, that converts input data into information. It executes the computer instructions called for by the program. Output units make the processed data, now called information, available for use in the form of printed reports, columns of figures, pie charts or bar graphs etc.

There are several different kinds of input devices: keyboard, magnetic tape, CD-ROMs and magnetic disks. There are two kinds of magnetic disks: hard and flexible. The central processing unit, or CPU, is hardware that interprets and executes the program instructions and communicates with the input, output and external storage devices. It consists of three parts: the control unit (the controller), the arithmetic/logic unit and primary storage.

The controller directs and coordinates program instructions. It also notifies output devices that information is available for output.

The arithmetic/logic unit, ALU, calculates and compares data, based on instructions from the controller. The ALU controls the speed of calculations.

The two operations performed by the ALU are arithmetic operations and logical operations. Arithmetic operations consist of four standard mathematical calculations – addition, subtraction, multiplication, division. Logical operations consist of three common comparison operations; in comparing numbers the ALU will find that one is equal to (=), less than (<), or greater than (>) the other.

The primary storage unit is also called memory, main storage or internal storage. It holds data for processing, instructions for processing (the program), and processed data waiting to be output.

Secondary or auxiliary storage is found physically outside the processor. Secondary storage can take many forms, but the most common are: magnetic tape, hard disk and flash-cards.

6. Give answers to the following questions on the basis of the text.

1. What main components does a computer need in order to operate?
2. What does the hardware consist of?
3. What does the software consist of?
4. How many types of magnetic disks do you know?
5. What is the processor?
6. What are the main parts of the processor?
7. What is the primary storage unit?
8. What operations are performed by the arithmetic/logic unit?
9. What is the difference between data and information?

7. Which of the listed below statements are true/ false? Specify your answers using the text.

1. A computer needs three components to operate: hardware, software and users.
2. Software consists of the machines and electronic equipment.
3. A program is a set of step-by-step instructions that directs the computer to perform specific tasks.
4. There are four kinds of magnetic disks.
5. The processor consists of three parts: the control unit (the controller), the arithmetic/logic unit and primary storage.
6. ALU is the part of the CPU that stores information.

8. Match the equivalents to the word combinations given in the left column.

a)

1. four components in order to operate	1. программы, способные управлять компьютером
2. a set of step-by-step instructions	2. набор пошаговых команд
3. programs available to run the system	3. 4 составляющих для того, чтобы функционировать
4. to direct the computer to perform specific tasks	4. управлять компьютером для того, чтобы выполнять специальные задачи

b)

1. to take data in machine-readable form	1. преобразовывать вводимые данные в информацию
2. to be performed by thecentral processing unit	2. принимать данные в читабельной (понятной) компьютером форме

3. to convert input datainto information	3. выполняться центральным процессорным блоком
4. in the form of printedreports, columns of figures, pie charts or bar graphs	4. в виде печатных сообщений, колонок цифр, секторных диаграмм или гистограмм

c)

1. a keyboard, a magnetic tape, CD-ROM's and magnetic disks	1. взаимодействовать с блоком ввода, вывода и внешней памятью
2. two kinds of magnetic disks:hard and flexible	2. преобразовать и выполнять команды программы
3. to interpret and execute the program instructions	3. клавиатура, магнитная лента, устройство для чтения компакт-дисков и магнитные диски
4. to communicate with the input, output and external storage devices	4. два типа магнитных дисков: жесткий и гибкий

d)

1. to calculate and compare data	1. состоять из 3-х распространенных сравнений
2. to consist of four standard-mathematical calculations	2. производить вычисления и сравнивать данные
3. to consist of three common comparison operations	3. равно (=), меньше (<) или больше (>),чем другое (значение)
4. to be equal to (=), less than (<) or greater than (>) the other	4. состоять из 4 стандартных математических вычислений
5. to hold data and instructions for processing and processed data to be output	5. хранить данные и команды для обработки и обработанные данные для вывода

9. Find in the text the sentences with the information about:

1. hardware
2. software
3. central processing unit
4. different types of storage

10. Give English equivalents of the following:

Четыре компонента для работы; техническое обеспечение; программное обеспечение, данные и пользователи; клавиатура, экран видеодисплея, компьютер; набор пошаговых команд; выполнять

специальные задачи; ввод, процессор и вывод; превращать входные данные в информацию; выполнять компьютерные команды; в виде печатных сообщений, колонок цифр, секторных диаграмм и гистограмм; несколько различных видов приборов ввода; интерпретировать и выполнять программные команды; осуществлять связь с блоком ввода, вывода и внешней памятью; блок управления, арифметико-логический блок; производить расчеты и сравнивать данные; сложение, вычитание, умножение и деление; три распространенных сравнения; основная память или внутренняя память; хранить данные и инструкции для обработки; внешняя память; магнитная лента, жесткий диск и дискета.

11. Fill in the blanks to complete the sentences. Use the words given under the line.

1. Input units take data in machine readable form and send it to…
2. The central processing unit converts input data into…
3. The arithmetic/logic unit controls the speed of…
4. The two operations performed by the ALU are…
5. The primary storage is also called…
6. Arithmetic operations consist of four standard…

---

information; keyboard, magnetic tape, CD-ROMs and magnetic disks; the processing unit; calculations; arithmetic and logical operations; memory, main storage or internal storage; mathematical calculations

12. Open the brackets translating from Russian into English.

1. The central processing unit executes (компьютерные команды) called for by the program. 2. Output units make the information available for use in the form of (печатных сообщений, колонок цифр, секторных диаграмм или гистограмм). 3. Input units take data in machine-readable form (и отправляют их в центральный процессорный блок). 4. The controller directs and coordinates the rest of the system (в выполнении команд программы). 5. Four standard mathematical calculations are: (сложение, вычитание, умножение, деление). 6. In comparing numbers the ALU will find that one is (равно, меньше чем, или больше. чем другое значение). 7. The main storage holds (данные для обработки, программу и обработанные данные) waiting to be output.

13. Complete the sentences using the information in the right column to make up the story.

a)

1.	A computer needs four components in order to operate	1.	the machines and electronic equipment.
2.	Software consists of…	2.	hardware, software, data and users.

3.	Hardware consists of…	3.	the programs available to run the system.
4.	A program is a set of step-by-step instructions that directs the computer to perform…	4.	the input, processor and output.
5.	A computer system consists of…	5.	specific tasks.
6.	Input units take data in machine-readable form and…	6.	the central processing unit.
7.	Processing is performed by…	7.	send it to the central processing unit.
8.	Output units make the processed data…	8.	available for use.

b)

1.	The central processor consists of three parts…	1.	arithmetic and logical operations.
2.	The controller directs and coordinates…	2.	the control unit, the arithmetic/ logic unit and primary storage.
3.	The arithmetic/ logic unit performs…	3.	the program instructions.
4.	The primary storage unit holds data and instructions…	4.	for processing.

14. Discus the problems of the text on the basis of the given below information about:

a) *the main components of the computers*
four components; in order to operate; hardware; software; data; electronic equipment; the keyboard; the video display screen; programs; to run the system; step-by-step instructions; raw facts; information.

b) *CPU*
CPU; to interpret and execute the program instructions; to communicate; with the input, output and external storage devices; to consist of three parts.

c) *ALU*
ALU; to calculate and compare data; to control the speed of operations; arithmetical operations; logical operations; addition; subtraction; multiplication; division; three common comparison operations.

d) *control unit*
to direct; to coordinate; program instructions; to notify output devices; doesn't store data or programs.

15. Retell the text "Electronic Computing Machines". Use the following phrases to start with.

I'd like to tell you some words about...	Я бы хотел сказать Вам несколько слов о...
It is necessary to say that…	Необходимо сказать, что …
In addition to the above…	В дополнение к вышесказанному...
It is interesting to know that…	Интересно узнать, что…
As far as I know…	Насколько я знаю…
As far as I remember…	Насколько я помню…
As a matter of fact…	Дело в том, что…
It should be noted that…	Следует отметить, что…
Summing up I want to add that…	Подводя итог, я хочу добавить, что.

Text II

I. Read and translate the text

What can computers do?

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 your 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.

Text III

COMPUTERS

1. Practice the pronunciation of the new words and memorize them.

1.	addition [əˈdɪʃn]	– сложение
2.	calculation [kælkjʊˈleɪʃn]	– вычисление
	to make rapid mathematical calculation	– производить быстрые математические вычисления
3.	component [kəmˈpəʊnənt]	– составная часть
4.	conclusion [kənˈkluːʒən]	– вывод
5.	data [ˈdeɪtə]	– данные
6.	division [dɪˈvɪʒən]	– деление
7.	memory [ˈmeməɪ]	– память
8.	multiplication [mʌltɪplɪˈkeɪʃn]	– умножение
9.	processing [ˈprəʊsesɪŋ]	– обработка данных
10.	storage [ˈstɔːrɪʤ],	– память
11.	subtraction [səbˈtrækʃn]	– вычитание
12.	unit [ˈjuːnɪt]	– устройство, блок
	input [‘input] ~	– блок ввода
	output [‘autput] ~	– блок вывода
	storage [ˈstɔːrɪʤ] ~	– блок памяти
13.	user [ˈjuːzə]	– пользователь

2. Practice the pronunciation of the following verbs and memorize them.

1.	to carry out	[ˈkærɪ aʊt]	выполнять
2.	to communicate	[kəˈmjuːnɪkeɪt]	сообщать
3.	to compare	[kəmˈpeə]	сравнивать
4.	to direct	dɪˈrekt]	управлять
5.	to perform	[pəˈfɔːm]	выполнять
6.	to process	[‘prouses]	обрабатывать данные
7.	to solve	[solv]	решать
8.	to store	[stoː]	накапливать
9.	to execute	[ˈeksɪkjuːt]	выполнять, осуществлять
10.	to present	[priˈzent]	представлять
11.	to provide	[prəˈvaɪd]	обеспечивать

3. Read and translate the text.

Text III

COMPUTERS

Today computers do much more than simply compute.

Electronic computing machines are devices to make rapid mathematical calculations, to compare data, to make conclusions and to solve different problems. Computers consist of several functional units: an input device, a central processing unit (the CPU) and an output device.

Input and output devices provide the link between the operator and the machine and since they surround the CPU are also called peripheral devices.

The input device presents the information to the computer in a form understandable to a machine. The output unit is used to communicate the results of any computer processing to the user. The output devices translate the computer output into a form understandable to human beings.

The central processing unit – the CPU – is the centerpiece of the whole computer system. It consists of three components: Arithmetic Logic Unit; Storage Unit; Control Unit. The Arithmetic Logic Unit carries out arithmetical operations like addition, subtraction, multiplication and division, it also performs certain logical actions.

The storage unit (or memory) is used to store the programs (the instructions to the CPU) and the data to be processed.

Let us examine the way the central processing unit, in association with memory executes a computer program. Many personal computers can execute instructions in less than one-millionth of a second, whereas supercomputers can execute instructions in less than one-billionth of a second.

Before an instruction can be executed, program instructions and data replaced into memory from an input device or a secondary storage device. The data will probably make a temporary stop in register. Once the necessary data and instructions are in memory, the central processing unit performs the following four steps for each instructions:

1. The control unit gets the instructions from memory.
2. The control unit decodes the instructions (decides what it means) 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 instructions. That is, the ALU is given control and performs the actual operation on the 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. The control unit eventually directs memory to release the result to an output device or

a secondary storage device. The combination of I-time and E-time is called the machine cycle. The control unit directs all operations inside the computer. It's a well-known fact that computers are widely used in many fields of Science and technology.

4. Answer the following 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. What is the role of control unit in the Decode step?
5. How the CPU executes program instruction

5. Give English equivalents of the following:

производить быстрые математические вычисления; сравнивать данные; делать выводы; решать различные задачи; состоять из нескольких функциональных блоков; обеспечить связь между оператором и машиной; выполнять арифметические и логические операции; накапливать программы и данные, которые должны быть обработаны; управлять всеми операциями внутри компьютера.

6. Complete the sentences using the information in the right column and translate them.

1. Electronic computing machines …	1. rapid mathematical calculations inside the machine
2. Computers make …	2. the link between the operator and the machine
3. Any computer consists of ….	3. several functional units: an input unit, a central processing unit and an output device.
4. The input and output devices provide . . .	4. are devices to make rapid mathematical calculations, to compare data, to make conclusions and to solve different problems
5. The central processing unit consists of…	5. to direct all operations inside the computer
6. The arithmetic logic unit carries …	6. the instructions to the CPU and the data to be processed.
7. The memory unit stores the programs …	7. three components: Arithmetic Logic Unit; Storage Unit; Control Unit.

8.	The function of the control unit is …	8.	arithmetical operations
9.	Many personal computers can execute …	9.	from an input device or a secondary storage device
10.	Program instructions and data are replaced into memory …	10.	the arithmetic or logical instruction.
11.	The control unit fetches (gets) …	11.	instructions in less than one-millionth of a second
12.	The control unit decodes the instructions and directs …	12.	the instructions from memory
13.	The arithmetic logic unit executes …	13.	the result to an output device or a secondary storage device.
14.	The control unit eventually directs memory to release …	14.	the necessary data to be moved from memory to arithmetic logic unit

7. Fill in the blanks to complete the sentences. Use the words given under the line.

1. Computers are devices to make..., to compare..., to make conclusions and to solve ... 2. Electronic computing machines consist of... : an input unit, a central... unit and an ... device. 3. Input and output devices provide ... 4. The central processing unit consists of three elements : an arithmetic logic unit, a storage unit and ... . 5. The function of the arithmetic logic unit is to carry out... 6. The storage unit stores the program and the data ... 7. The control unit is used to direct... inside the machine.

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arithmetical and logical operations; the link between the operator and the machine; all operations; rapid mathematical calculations; different problems; data; three components; processing; output; a control unit; to be processed

8. Open the brackets translating from Russian into English.

1. Electronic computing machines are used (чтобы производить быстрые математические вычисления, сравнивать данные) to make conclusions and to solve different (задачи). 2. Any computer consists of (нескольких функциональных блоков): an input unit, a (центральный процессорный блок) and an output (устройство). 3. (Устройства ввода и вывода) provide the link between the operator and the (машиной). 4. The central processing unit consists of three elements: (арифметико-логическое устройство, блок памяти) and a control unit. 5. The arithmetic logic unit (выполняет арифметические) and logic (действия), 6. (Блок памяти накапливает) the program and the data to be processed. 7. The function of the control unit is to direct (все операции внутри компьютера).

INFORMATION TECHNOLOGY

UNIT II

1. Practice the pronunciation of the new words and memorize them.

1.	increase	[ɪnˈkriːs]	увеличивать, повышать
2.	gain	[ˈgeɪ n]	получать, приобретать
3.	dazzling	[ˈdæzlɪŋ] прич	великолепный
4.	development	[dɪˈveləpmənt]	развитие, разработка,
5.	awareness	[əˈweənɪs]	осознанность
6.	enable	[ɪˈneɪbəl]	включать,задействовать
7.	contemporary classrooms	[kənˈtempərərɪ] прил	современные классные комнаты
8.	technical development	[ˈteknɪkəl dɪˈveləpmənt]	техническая разработка
9.	resulting from		в результате чего
10.	brotherhood	[ˈbrʌðəhʊd] сущ	братство; братский
11.	promotion	[prəˈməʊʃn] сущ	продвижение, способствование
12.	efficiency	[ɪˈfɪʃnsɪ]	эффективность, производительность
13.	establish	[ɪˈstæblɪʃ]	устанавливать,
14.	hard access		труднодоступный
15.	hurriedly	[ˈhʌrɪdlɪ]	поспешно, торопливо
16.	opportunity	[ɒpəˈtjuːnɪtɪ]	возможность
17.	software	[ˈsɒftweə]	программное обеспечение
18.	mutual	[ˈmjuːʧʊəl]	взаимный, совместный
19.	behavioral	[bɪˈheɪvɪərəl]	поведенческий, бихевиористический

2. Practice the pronunciation of the following verbs and memorize them.

1.	confront	[kənˈfrʌnt] гл	противостоять, противодействовать
2.	enhance	[ɪnˈhɑːns] гл	усиливать, повышать
3.	apply	[əˈplaɪ] гл	прикладывать, применять

4.	predict	[prɪˈdɪkt] гл	прогнозировать, предсказывать
5.	establish	[ɪsˈtæblɪʃ] гл	установить, создавать
6.	expand	[ɪksˈpænd] гл	расширять, увеличивать
7.	evaluate	[ɪˈvæljʊeɪt] гл	оценивать, анализировать
8.	accent	[ˈæksənt] гл	акцентировать, подчеркнуть
9.	remain	[rɪˈmeɪn] гл	оставаться, находиться
10.	thrive	[θraɪv] гл	процветать
11.	ensure	[ɪnˈʃʊə] гл	гарантировать, обеспечивать
12.	emphasize	[ˈemfəsaɪz] гл	подчеркивать, акцентировать
13.	gain	[geɪn] гл	получать, приобрать
14.	refer to	[rɪˈfɜː tuː] прич	упоминать, ссылаться на

3. Read and translate the text.

Text I

What is Information technology?

Today knowledge and information are the main keys of obtaining the productivity, competition, wealth and comfort.

So countries have concentrated on approaches for increasing the gaining of better-quality education. In order to develop the human capital, it is necessary to look at our schools and education and see if our education is progressing in step with the world that is changing and developing quickly. The problem is that if we compare the modern world with the last-century, we are confronted with dazzling developments of sciences, business, medical services, communications and many other fields. But visiting our schools, we, surprisingly, see no difference between the contemporary classrooms and the last-century ones; students sitting in rows, holding pencil and paper, noting down hurriedly what the teacher is saying and writing so that they know them by heart and give them back at the time of test quickly. This is while many matters have been changed through the sciences and technical development, but education and the students learning methods and the teachers teaching methods have remained unchanged. The international society for technology in education (ISTE)* emphasizes that the teachers of today should prepare to provide technology-based learning opportunities for the students. In fact, preparation for applying the technology and awareness of technology to enhance the quality of the students learning should be one of the teacher's basic skills.

The most effective forward leap has been for applying IT (information Technology) in the higher education since 1990.

Information technology is referred to the knowledge process and its applying methods, processing, transferring and making information in progress. IT includes gathering, organizing, storing, publishing and using the information in the form of sound, picture graphic, text, number, by using the computer and telecommunication tools. Important changes resulting from IT, has became the source of basic changes in the classes. The most important changes have roots in this fact that technology has enabled students to accent the out-of-class information and this has caused the increase of their motivations for learning.

One of the information systems roles in the education is ensuring that we can provide our necessary information when it is needed. We should thrive to predict the necessary information so that we can access it when needed. Some predictions suggest that IT ends in the developing of «global village», and the others believe that new information technologies will help international accord (mutual understanding), peace and brotherhood.

In today's world education needs modern, moderate and simple technologies in order to meet its needs for its arrival and correct use. Education should perform policies, most important ones are:

1. Expanding human sources of IT through educational programs and promoting skills for increasing work force efficiency in education.
2. Using IT for increasing educational institution efficiency for better education accompanying creativity.
3. Supporting IT, for example supporting costs related to research and expansion in education.
4. Establishing proper atmosphere and participation morale in education by the use of IT.
5. Establishing cooperation and coordination between various parts in the field of using the aforementioned tools.
6. Expanding the culture of using IT through providing and encouraging its consumption in education.

In evaluating kinds of information technologies education should consider matters such as need, properties of scientific efficiency, economy and facilities and skill potentials existing in this case.

4. Give english equivalents of the following:

Знания и информация являются главными ключами; сосредоточить свое внимание на подходах; в ногу со временем; сравнить современный мир с прошлым веком; к нашему удивлению; методы обучения остались неизменными; международное общество технологий в образовании; подготовка к применению технологии; повышения качества обучения; наиболее эффективным шагом вперед; процесс познания; предоставлять

необходимую информацию; сбор, систематизацию, хранение, публикацию и использование информации; важные изменения, вытекающие из него; фактор укрепления независимости и продвижения; удовлетворить свои потребности; продвижение навыков для повышения эффективности; создание надлежащей атмосферы и морального духа.

5. Match the equivalents to the word combinations given in the left column.

a)			
1.	To obtain the productivity, competition, wealth and comfort	1.	улучшить качество обучения студентов
2.	in order to develop the human capital	2.	самый эффективный прорыв вперед
3.	confronted with dazzling developments of sciences, business, medical services	3.	методы обучения остались неизменными
4.	Teaching methods have remained unchanged	4.	столкнувшись с ослепительными достижениями науки, бизнеса, медицинских услуг
5.	to provide technology-based learning opportunities for the students	5.	в целях развития человеческой деятельности
6.	to enhance the quality of the students learning	6.	чтобы получить производительность, конкуренцию, богатство и комфорт
7.	the most effective forward leap	7.	предоставить студентам технологические возможности обучения
b)			
1.	applying IT (information Technology) in the higher education	1.	вызвал повышение их мотивации к обучению
2	source of basic changes	2	предоставьте необходимую информацию
3	technology has enabled students to accent the out-of-class information	3	прогнозировать необходимую информацию
4	caused the increase of their motivations for learning	4	рассматривайте технологию как фактор укрепления независимости и продвижения

5	to provide necessary information	5	применение информацион-ных технологий в высшем образовании
6	to predict the necessary information	6	технология позволила студентам акцентировать внимание на внеклассной информации
7	to consider the technology as a factor of strengthening the independence and promotion	7	источник основных изменений
c)			
1	confronting with structural and behavioral problems	1	создание надлежащей атмосферы
2	expanding human sources of IT	2	расширение культуры использования ИТ
3	using IT for increasing educational institution efficiency	3	при оценке видов информационных технологий образование должно учитывать такие вопросы, как
4	establishing proper atmosphere	4	налаживание сотрудничества и координации между различными частями
5	expanding the culture of using IT	5	столкновение со структурными и поведенческими проблемами
6	in evaluating kinds of information technologies education should consider matters such as …	6	расширение человеческих источников ИТ
7	establishing cooperation and coordination between various parts	7	использование ИТ для повышения эффективности образовательного учреждения

6. Complete the sentences using the information in the right column and translate them.

1.	Teaching methods …	1.	need, properties of scientific efficiency, economy and facilities and skill potentials existing in this case.

2.	One of the information systems roles in the education is …	2.	have remained unchanged
3.	Education needs modern, moderate and …	3.	in the developing of «global village»
4.	Knowledge and information are the main keys of …	4.	ensuring that we can provide our necessary information when it is needed.
5.	Education should consider matters such as …	5.	obtaining the productivity, competition, wealth and comfort
6.	Many countries have concentrated on approaches	6.	sound, picture graphic, text, number, by using the computer and telecommunication tools
7.	IT includes gathering, organizing, storing, publishing and using the information in the form of	7.	simple technologies in order to meet its needs for its arrival and correct use.
8.	Some predictions suggest that IT ends	8.	for increasing the gaining of better-quality education

7. Fill in the blanks to complete the sentences. Use the words given under the line.

1. Today knowledge and information are …. 2. If we compare the modern world with the last-century, … 3. Teaching methods ….. 4. In most parts of the world, the most effective forward leap ….. 5. Information technology is referred to the knowledge process and its ….. 6. One of the information systems roles in the education is … 7. In evaluating kinds of information technologies education should consider matters such as

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need, properties of scientific efficiency, economy and facilities and skill potentials existing in this case; applying methods, processing, transferring and making information in progress; have remained unchanged; ensuring that we can provide our necessary information when it is needed; has been for applying IT (information Technology) in the higher education since 1990; we are confronted with dazzling developments of sciences, business, medical services, communications and many other fields; the main keys of obtaining the productivity, competition, wealth and comfort.

8. Open the brackets translating from Russian into English.

1. (Знания и информация) are the main keys of obtaining the productivity, competition, wealth and comfort. 2. Many countries have concentrated on (подходах к расширению получения более качественного образования). 3. Teaching methods have remained (неизменными). 4. Since 1990, (наибо-

лее эффективным прорывом вперед) has been for applying IT (information Technology) in the higher education since 1990. 5. IT includes (сбор, организация, хранение, публикация и использование информации) in the form of sound, picture graphic, text, number, by using the computer and telecommunication tolls. 6. (Одной из функций информационных систем в образовании) is ensuring that we can provide our necessary information when it is needed. 7. Education needs modern, moderate and simple technologies (для того, чтобы удовлетворить свои потребности) for its arrival and correct use. 8. (Образование должно учитывать такие вопросы, как) need, properties of scientific efficiency, economy and facilities and skill potentials existing in this case.

IMPORTANCE AND ROLE OF IT IN THE EDUCATION

UNIT III

1. Practice the pronunciation of the new words and memorize them.

1.	attainable	[əˈteɪnəbl]	достижимый
2.	by insufficient access		из-за недостаточного доступа
3.	dissemination	[dɪˌsem.ɪˈneɪ.ʃən]	усвоение
4.	draft	[drɑːft]	проект, набросок, черновик
5.	flexibility	[fleksəˈbɪlɪtɪ]	гибкость, универсальность
6.	inflexible	[ɪnˈfleksəbl]	устойчивый
7.	made a leap		сделать прорыв
8.	metacognitive	[metəˈkɒgnɪtɪv]	метакогнитивный
9.	property	[ˈprɒpətɪ]	свойство
10.	remote training	[rɪˈməʊt ˈtreɪnɪŋ]	дистанционное обучение
11.	responsibility	[rɪspɒnsəˈbɪlɪtɪ]	ответственность, обязательство
12.	scope	[skəʊp]	масштаб, размах

2. Practice the pronunciation of the following verbs and memorize them.

1. adapt [əˈdæpt] приспособиться,адаптировать, подгонять
2. conclude [kənˈkluːd] заключать
3. confront[kənˈfrʌnt] противостоять
4. consider [kənˈsɪdə] рассматривать, расценивать
5. determine [dɪˈtɜːmɪn] определять
6. enable [ɪˈneɪbl] включить, активировать
7. encompass [ɪnˈkʌmpəs] окружить, охватывать, включать
8. enrich [ɪnˈrɪʧ] обогащать
9. evaluate [ɪˈvæljʊeɪt] оценивать, анализировать
10. evolve [ɪˈvɒlv] формировать, развивать
11. expand [ɪksˈpænd] расширять, увеличивать
12. expedite [ˈekspɪdaɪt] ускорять, облегчать, содействоваать
13. facilitate [fəˈsɪlɪteɪt] содействовать, способствовать, облегчить
14. increase [increase] увеличить, повысить
15. oblige [əˈblaɪdʒ] вынуждать
16. obtain [əbˈteɪn] получать, приобретать

17. provide [prəˈvaɪd] обеспечивать, снабжать, поставлять
18. replace [rɪˈpleɪs] заменять, замещать
19. select [sɪˈlekt] выбирать, отбирать
20. suppose [səˈpəʊz] предполагать, полагать, думать, считать
21. transfer [ˈtrænsfɜː] перемещать, переносить

3. Read and translate the text.

Importance and role of IT in the education

By considering that education has been using the technology for expanding and developing different processes of the educational system more than one century, it is not surprising that new technology arrival has raised the interest in obtaining knowledge by various methods of presenting knowledge. Today technology-base education is attainable at the universities of developed countries. Smart schools have made a leap in virtual learning. On-line learning and remote training are among new education forms in the new century. By evolving the learning environments at the beginning of 21st century, individuals and societies put heavy responsibility on the shoulder of educational institutions and their traditional structures by their increasing need of education.

Today various informational and communicational technologies have the ability of facilitating the education and learning process. Also there is an evidence stating that information technologies provide effective and inflexible methods for professionally developing teachers.

Beauchomp & Parkinson [boʃɑ̃], in a study under the title of «The students view of sciences during transferring from rich technology environment at the elementary course to the high school with low technology equipment» concluded that although the high school students were annoyed by insufficient access to computers and other information technologies, they enjoyed the course by the efforts of sciences teachers. Most major properties of the education system in information and communication age are:

1. In new education, what is worthy of knowing and what is necessary is stoned. Not the learning of all information.
2. In new education, the teacher helps the student to obtain, select, evaluate and store the information by the use of vast scope of sources.
3. Printed magazines and books are knowledge sources; The drafts determined for writing and publishing are replaced by online books and magazines.
4. Some advantages of using technology and IT in the Education: students learn their lessons by using technical tools in less time.

By the use of information technology and its tools especially computer and planning modern tutorial programs such as virtual tutorial program, possibility of expediting the process of information dissemination, various recognizable

and repeatable learning sources, more flexible structure, information search and also possibility of metacognitive understanding have provided for students, and they can use this device as a tool for their educational activities so that this matter has raised the speed and quality of learning significantly. High flexibility in when and where students and teachers perform their duties. Informational society; where economical, cultural and social life is dependent on information and communication technology.

Advantages of Informational society: 1) enriching spare time; 2) enabling teleworking; 3) providing new opportunities for raising national productivity and competitive atmosphere; 4) increasing employment; 5) life-long education.

Advent of PC (personal computers) and extent access to the internet establishes an environment making global education systems obliged to change their education structure in major ways. The duty of educational systems confronting the changes is clear. Its primary purpose should be increasing the human power against changes, i.e. someone can adapt to continuous change, observing economy, quickly.

The more rapid change, the more attention should be paid to recognizing the pattern of future events. To help humans to remove future shock, we should establish a meta-industrial educational system. For this, instead of searching in the past, we should find our purposes and methods in the future. It is obvious that in 21st century the world will be dominated by modern technology and due to rapid scientific, economic, cultural and political changes, the educational systems will not be able to consider themselves as islands separated from the other social and national organization in the global village. Because the education, both in the view of historical empiricism [ɪˈmpɪrɪsɪz(ə)m] and particular conditions encompassing 21st century, surely, will be the center of changes, evolutions and multiplications of 21st century. Certainly the society doesn't view IT only as an economic variable, but as a possibility for changing education through IT. So one can suppose proposed patterns of IT in education as center on nature of knowledge, functional techniques and a controlling criterion in society.

4. Give answers to the following questions on the basis of the text.

1. What new forms of education in the new century do you know?
2. What can facilitate the process of education and training?
3. Numerate the important properties of the education system in the information and communication age.
4. What can students use as a tool for their educational activities to increase the speed and quality of learning?
5. What is the information society?
6. What are the advantages of the information society?
7. What are the modern IT models in education based on?

5. Give English equivalents of the following.

использует технологии для расширения и развития; появление новых технологий вызвало интерес к получению знаний; совершили скачок в виртуальном обучении; онлайн-обучение и дистанционное обучение; возлагают большую ответственность; есть данные, свидетельствующие о том, что; обучение на протяжении всей жизни; эффективные и негибкие методы; во время перехода; школа с низкотехнологичным оборудованием; старшеклассников раздражал недостаточный доступ к компьютерам; широкий спектр источников; усваивают свои уроки; различные узнаваемые и воспроизводимые источники обучения; возможность метакогнитивного понимания; высокая гибкость; обогащение свободного времени; обеспечение возможности удаленной работы; для повышения национальной производительности и конкурентной атмосферы; больше внимания следует уделять распознаванию характера будущих событий; преодолеть шок будущего; сосредоточены на природе знаний

6. Match the equivalents to the word combinations given in the left column.

a)			
1.	technology for expanding and developing different processes of the educational system	1.	Онлайн-обучение и дистанционное обучение
2.	technology-base education is attainable at the universities	2.	растущая потребность в образовании
3.	on-line learning and remote training	3.	способность облегчать процесс обучения и воспитания
4.	increasing need of education	4.	средняя школа с низкотехнологичным оборудованием
5.	ability of facilitating the education and learning process	5.	информационные технологии обеспечивают эффективные и жесткие методы
6.	information technologies provide effective and inflexible methods	6.	технологическое образование доступно в университетах
7.	the high school with low technology equipment	7.	технология расширения и развития различных процессов образовательной системы
b)			
1.	students were annoyed by insufficient access to computers and other information technologies	1.	виртуальная учебная программа

2.	The teacher helps the student to obtain, select, evaluate and store the information	2.	значительно повысилась скорость и качество обучения.
3.	the drafts determined for writing and publishing are replaced by online books	3.	студенты усваивают свои уроки с помощью технических инструментов за меньшее время
4.	students learn their lessons by using technical tools in less time	4.	Наброски, предназначенные для написания и публикации заменяются онлайн книгами
5.	virtual tutorial program	5.	Учитель помогает ученику получать, отбирать, оценивать и хранить информацию
6.	possibility of expediting the process of information dissemination	6.	студентам не нравился недостаточный доступ к компьютерам и другим информационным технологиям
7.	it is raised the speed and quality of learning significantly	7.	возможность ускорения процесса усвоения информации
c)			
1.	advent of PC	1.	общество не рассматривает ИТ только как экономическую переменную
2.	we should find our purposes and methods in the future	2.	обязанность образовательных систем
3.	the society doesn't view IT only as an economic variable	3.	мы должны найти свои цели и методы в будущем
4.	possibility for changing education through IT	4.	появление ПК
5.	primary purpose should be increasing the human power	5.	глобальные системы образования вынуждены менять свою структуру образования
6.	global education systems obliged to change their education structure	6.	возможность изменения образования с использованием информационных технологий
7.	the duty of educational systems	7.	основной целью должно быть повышение человеческих способностей

7. Complete the sentences using the information in the right column and translate them.

1. Today various informational and communicational technologies …	1. interest in obtaining knowledge by various methods of presenting knowledge
2. It is not surprising that new technology arrival has raised the …	2. societies put heavy responsibility on the shoulder of educational institutions and their traditional structures by their increasing need of education.
3. By evolving the learning environments at the beginning of 21st century, individuals and …	3. can adapt to continuous change, observing economy.
4. Some advantages of using technology and …	4. have the ability of facilitating the education and learning process.
5. Its primary purpose should be increasing the human power against changes, i.e. someone…	5. IT in the Education: students learn their lessons by using technical tools in less time.
6. To help humans to remove future shock, …	6. center on nature of knowledge, functional techniques and a controlling criterion in society.
7. The society doesn't view IT only as an economic variable, …	7. attainable at the universities of developed countries.
8. Today technology-base education is …	8. but as a possibility for changing education through IT.
9. So one can suppose proposed patterns of IT in education as…	9. we should establish a meta-industrial educational system

8. Fill in the blanks to complete the sentences and translate them. Use the words given under the line.

1. Today technology-base education is … 2. There is evidence stating that … 3. Although the high school students were annoyed by insufficient access to computers and other information technologies, … . 4. The drafts determined for writing and publishing are … . 5. Some advantages of using technology and IT in the Education: … 6. Advent of PC (personal computers) and extent access to the internet … . 7. The more rapid change, the more attention should be paid to … .

attainable at the universities of developed countries; information technologies provide effective and inflexible methods for professionally developing teachers; they enjoyed the course by the efforts of sciences teachers; replaced by online books and magazines; students learn their lessons by using technical tools in less time; establishes an environment making global education systems obliged to change their education structure in major ways; recognizing the pattern of future events

9. Open the brackets translating from Russian into English.

1. It is not surprising that new technology arrival has raised the interest in obtaining knowledge (с помощью различных методов представления информации). 2. Today (технологическое образование) is attainable at the universities of developed countries 3. Today various informational and communicational technologies (обладают способностью облегчать) the education and learning process. 4. (Имеются данные, свидетельствующие о том, что информационные технологии обеспечивают) effective and inflexible methods for professionally developing teachers. 5. The more rapid change, (тем больше внимания следует уделять) to recognizing the pattern of future events. 6. To help humans to remove future shock, (мы должны создать метаиндустриальную образовательную систему). 7. (Таким образом, можно предположить, что предлагаемые модели ИТ) in education as center on nature of knowledge, functional techniques and a controlling criterion in society.

PERIPHERAL DEVICES
UNIT IV

Text I

1. Read and translate the text

Types and list of peripheral devices

A Peripheral Device is a computer device or part which is connected to the computer with different connection types. A peripheral device is not a core device for a computer which means a computer can work without a peripheral device connected to it. Peripheral devices generally provide extra function and data input and output functionality to the computer systems.

Before starting to explain and list peripheral devices providing the non-peripheral devices will be more useful because there are some computer parts that are core and critical for a computer system which are not peripheral devices and all other devices are categorized as peripheral devices.

CPU is not a peripheral device because a computer system cannot work without a CPU.

Mainboard is not a peripheral device because the other core computer parts are connected and communicate over a Mainboard.

Memory is not a peripheral device because the data processed is stored inside memory and without a memory CPU and computer cannot work.

Storage or Hard Disk Drive is not a peripheral device because the processes data is stored inside the storage or hard disk drive for long term usage.

Peripheral Device Types (Internal and External)

Peripheral devices can be in different types according to their connection type to the system and data transmission direction. According to connection type peripheral devices are categorized as: Internal Peripheral Devices are generally located inside the computer system case and named internal because of their location. Here are some internal peripheral devices: CD-ROM, Floppy Disk, Graphic Card / Video Card, Network Interface Card, TV Card, Sound Card, Monitor(Only For Laptops).

External Peripheral Devices are located outside of the computer system case or chassis and connected different types of connections and cables: External CD-ROM; External Floppy Disk; Keyboard; Mouse; Paint Device; Printer; Scanner; External Hard Disk / USB Disk; Monitor (Except Laptops).

Peripheral devices can be also categorized according to their data communication direction. They are called Input , Output and Composite .

Input Peripheral Device is a device used to input data into the computer system. Their main purpose is to get different types of input, digitalize it

and forward it to the mainboard for processing: Keyboard, Computer Mouse, Graphic Tablet, Touchscreen, Scanner, Barcode Reader, Microphone, Webcam, Joystick, SD / Micros SD Card Reader, Digital Camera.

Output Peripheral Devices mainly used to show and output information in different formats like Image, Video, Sound to the system user: Monitor / Computer Display, Printer, Projector, Speaker.

Composite Peripheral Devices can both input and output data. These types of devices generally used to transmit data and act as intermediate hop: Floppy Disk Drive, CD-ROM Drive / DVD Drive, Flash Drive, Network Interface Card, Modem.

Peripheral devices are connected to the core computer systems via motherboard via different connection protocols and types. Every connection type has a different cable, plug, and protocol type. Below we will list some popular peripheral connection types.

USB is the most popular and easy connection type and protocol for peripheral devices. In today most of the peripheral devices connect with a USB connection because of its plug and play and multiple port availability.

PCI is another popular connection type for peripheral devices. PCI generally used by the internal peripheral devices which require high data transmission bandwidth with reliability like Graphics Cards, Network Interface Cards, Ethernet Cards.

SATA is generally used by internal peripheral devices like storage devices, hard disk devices.

HDMI is a popular next-generation connection where monitors, displays, and projections are connections.

VGA is an old-style

Abbreviated VGA, Video Graphics Array is a standard type of connection for video devices such as monitors and projectors.

Generally, VGA refers to the types of cables, ports, and connectors used to connect monitors to video cards. Though VGA is still in use today, it's rapidly being replaced by newer interfaces like DVI and HDMI.

2. Give answers to the following questions on the basis of the text I.

1. What is peripheral device?
2. What Is Not Peripheral Device?
3. What do peripheral devices provide?
4. Can a computer system work without a central processor?
5. What types of peripherals do you know?
6. Name the internal peripheral devices.
7. Name the external peripheral devices.
8. What is the main purpose of the peripheral input device?
9. What is the main purpose of the peripheral output device?

Peripheral devices

1. Practice the pronunciation of the new words and memorize them.

1. bus – шина
2. commonly [ˈkɒmənlɪ] обычно
3. comprehensible [kɒmprɪˈhensəbl] понятный
4. convert [ˈkɒnvɜːt] преобразовать
5. deliver [dɪˈlɪvə] доставлять
6. enable [ɪˈneɪbl] включить; дать возможность, обеспечить
7. headphones [ˈhedfəʊn] наушники
8. intelligible [ɪnˈtelɪʤəbl] понятный
9. loudspeaker [laʊdˈspiːkə] динамик
10. make up – составлять
11. partake [pɑːˈteɪk] принимать участие
12. pattern [ˈpætn] образец, шаблон
13. sensor [ˈsensə] датчик сенсор
14. serial [ˈsɪərɪəl] последовательный
15. supplant [səˈplɑːnt] вытеснять
16. trackball [ˈtrækbɔːl] трэкбол (курсор, подобие компьютерной мыши)
17. typewriter пишушая машинка
18. wire [ˈwaɪə] провод

2. Practice the pronunciation of the following word-combinations and memorize them.

1. auxiliary storage device [ɔːgˈzɪljərɪ ˈstɔːrɪʤ dɪˈvaɪs] вспомогательное запоминающее устройство
2. bar-coded data – данные со штрихкода
3. binary code [ˈbaɪnərɪ kəʊd] двоичный код
4. common interface – распространенный интерфейс
5. data path [ˈdeɪtə pɑːθ] канал передачи данных
6. direct-entry mechanism [dɪˈrekt ˈentrɪ ˈmekənɪzm] механизм прямого ввода
7. efficient devices [ɪˈfɪʃnt] эффективные устройства
8. flow valve [fləʊ vælv] – проточный клапан
9. handheld devices – портативные устройства
10. in response [ɪn rɪsˈpɒns] в ответ
11. ink-jet printer – струйный принтер
12. machine controlled by the computer – машина, управляемая компьютером
13. magnetic disk drives [mægˈnetɪk] накопитель на магнитных дисках
14. network interface [ˈnetwɜːk ˈɪntəfeɪs] сетевой интерфейс
15. optical character fonts – шрифты оптических символов

16. paper-tape reader – считыватель бумажных лент
17. peripheral equipment [pəˈrɪfərəl ɪˈkwɪpmənt] периферийное оборудование
18. point-of-sale terminal [pɔɪnt ɒv seɪl ˈtɜːmɪnl] торговый терминал
19. pressure-sensitive pad [ˈpreʃəˈsensɪtɪv] датчик с чувствительностью к давлению
20. punched-card reader [pʌnʧt kɑːd ˈriːdə] считыватель перфокарт
21. retail stores – розничные магазины
22. reverse the process – изменять процесс
23. serial advanced technology attachment (SATA) – последовательный интерфейс обмена данными с накопителями информации
24. special pen – специальное перо с чувствительной панелью
25. tablet computers [ˈtæblɪt] планшетные компьютеры
26. track pad – трэкпад
27. Universal serial bus (USB) – обычная последовательная шина
28. USB hubs – USB-концентраторы
29. wearable device [ˈwe(ə)rəb(ə)l dɪˈvaɪs] переносимое устройство

2. Read and translate the text.

Peripheral devices

Peripheral device, also known as peripheral, computer peripheral, input-output device, or input/output device, any of various devices (including sensors) used to enter information and instructions into a computer for storage or processing and to deliver the processed data to a human operator or, in some cases, a machine controlled by the computer. Such devices make up the peripheral equipment of modern digital computer systems.

Peripherals are commonly divided into three kinds: input devices, output devices, and storage devices (which partake of the characteristics of the first two). An input device converts incoming data and instructions into a pattern of electrical signals in binary code that are comprehensible to a digital computer. An output device reverses the process, translating the digitized signals into a form intelligible to the user. At one time punched-card and paper-tape readers were extensively used for inputting, but these have now been supplanted by more efficient devices.

Input devices include typewriter – like keyboards; handheld devices such as the mouse, trackball, joystick, trackpad, and special pen with pressure-sensitive pad; microphones, webcams, and digital cameras. They also include sensors that provide information about their environment – temperature, pressure, and so forth – to a computer. Another direct-entry mechanism is the optical laser scanner (e.g., scanners used with point-of-sale terminals in retail stores) that can read bar-coded data or optical character fonts.

Output equipment includes video display terminals, ink-jet and laser printers, loudspeakers, headphones, and devices such as flow valves that control machinery, often in response to computer processing of sensor input data. Some devices, such as video display terminals and USB hubs, may provide both input and output. Other examples are devices that enable the transmission and reception of data between computers – e.g., modems and network interfaces.

Most auxiliary storage devices – as, for example, CD-ROM and DVD drives, flash memory drives, and external disk drives also double as input/output devices. Even devices such as smartphones, tablet computers, and wearable devices like fitness trackers and smartwatches can be considered as peripherals, albeit ones that can function independently.

Various standards for connecting peripherals to computers exist. For example, serial advanced technology attachment (SATA) is the most common interface, or bus, for magnetic disk drives. A bus (also known as a port) can be either serial or parallel, depending on whether the data path carries one bit at a time (serial) or many at once (parallel). Serial connections, which use relatively few wires, are generally simpler than parallel connections. Universal serial bus (USB) is a common serial bus.

4. Give russian equivalents of the following.

including sensors; used to deliver the processed data to a human operator; make up the peripheral equipment; converts incoming data and instructions into a pattern of electrical signals in binary code; reverses the process; into a form intelligible to the user; at one time; extensively used for inputting; pressure-sensitive pad; direct-entry mechanism; bar-coded data; flow valves; USB hubs; wearable devices; serial advanced technology attachment; serial connections; common serial bus.

5. Give english equivalents of the following.

современные цифровые компьютерные системы; преобразует поступающие данные и инструкции; изменяет процесс в обратном направлении; в свое время; считыватели перфокарт и бумажных лент; вытеснены более эффективными устройствами; включают клавиатуры, похожие на пишущую машинку; трекпад и специальное перо с чувствительной к нажатию панелью; которые предоставляют информацию об окружающей среде; еще одним механизмом прямого ввода является; данные со штрих-кодом или шрифты; USB-концентраторы; носимые устройства; сетевые интерфейсы.

6. Match the equivalents to the word combinations given in the left column.

a)

1. used to enter information and instructions into a computer for storage or processing	1. доставлять обработанные данные оператору-человеку
2. peripherals are commonly divided into three kinds	2. которые обладают характеристиками первых двух
3. to deliver the processed data to a human operator	3. используемых для ввода информации и инструкций в компьютер для хранения или обработки
4. which partake of the characteristics of the first two	4. периферийные устройства обычно делятся на три вида

b)

1. converts incoming data and instructions into a pattern of electrical signals	1. изменяет процесс в обратном направлении, преобразуя оцифрованные сигналы
2. reverses the process, translating the digitized signals	2. но сейчас они вытеснены более эффективными устройствами.
3. but these have now been supplanted by more efficient devices	3. включать датчики, которые передают информацию об окружающей среде
4. to include sensors that provide information about their environment	4. преобразует поступающие данные и инструкции в набор электрических сигналов

c)

1. used with point-of-sale terminals in retail stores	1. хотя и способные функционировать независимо
2. that enable the transmission and reception of data between computer	2. в зависимости от того, передает ли канал передачи данных один бит за один раз
3. albeit ones that can function independently	3. используемые с торговыми терминалами в розничных магазинах
4. depending on whether the data path carries one bit at a time	4. которые обеспечивают передачу и прием данных между компьютерами

7. Complete the sentences using the information in the right column and translate them.

a)

1.	Peripheral device is a device used to enter …	1. three kinds: input devices, output devices, and storage devices
2.	Peripherals are divided into …	2. the peripheral equipment of modern digital computer systems
3.	Peripheral device is a device used to deliver …	3. information and instructions into a computer for storage or processing.
4.	Such devices make up…	4. the processed data to a human operator.

b)

1.	An input device converts …	1. extensively used for inputting.
2.	An output device reverses …	2. have now been supplanted by more efficient devices
3.	At one time punched-card and paper-tape readers were …	3. the process, translating the digitized signals into a form intelligible to the user.
4.	The punched-card and paper-tape readers …	4. incoming data and instructions into a pattern of electrical signals in binary code

c)

9.	Input devices include …	1. the optical laser scanner
10.	Another direct-entry mechanism is …	2. typewriter-like keyboards; handheld devices such as the mouse, trackball, joystick, trackpad, and special pen with pressure-sensitive pad; microphones, webcams, and digital cameras
11.	Output equipment includes …	3. USB hubs, may provide both input and output
12.	Some devices, such as video display terminals and…	4. video display terminals, ink-jet and laser printers, loudspeakers, headphones, and devices such as flow valves

8. Open the brackets translating from Russian into English.

1. It is not surprising that new technology arrival has raised the interest in obtaining knowledge (с помощью различных методов представления информации). 1. Peripheral device is a device (используемое для ввода информации и инструкций в компьютер) for storage or processing. 2. An input device converts incoming data and instructions (в набор электрических сигналов в двоичном коде). 3. An output device (изменяет процесс в обратном направлении) translating the digitized signals into a form intelligible to the user. 4. (В свое время) punched-card and paper-tape readers were extensively used for inputting. 5. The punched-card and paper-tape readers (в настоящее время вытеснены) by more efficient devices. 6. They also include (датчики, которые предоставляют) information about their environment and so forth – to a computer. 7. (Еще одним механизмом прямого ввода) is the optical laser scanner. 8. For example, (последовательное подключение с использованием передовых технологий) (SATA) is the most common interface.

9. Fill in the blanks to complete the sentences. Use the words given under the line.

1. Peripheral device is a device used to … … for storage or processing.
2. Peripheral device is a device used to deliver … … to a human operator.
3. Peripheral devices make up … … of modern digital computer systems.
4. Peripherals are divided into three kinds:… … .
5. An input device converts … … into a pattern of electrical signals in binary code.
6. An output device reverses the process, translating … .. .
7. At one time … … were extensively used for inputting.
8. The punched-card and paper-tape readers have now been supplanted by … … .
9. Input devices include typewriter-like keyboards; handheld devices such as … … with pressure-sensitive pad; microphones, webcams, and digital cameras.
10. They also include sensors that provide … … and so forth – to a computer.
11. Another direct-entry mechanism is … … .
12. Optical laser scanner can … … or optical character fonts.
13. Output equipment includes … …, and devices such as flow valves.
14. Some devices, such as video display terminals and USB hubs, may … … .
15. Other examples are devices that enable … … between computers – e.g., modems and network interfaces.
16. Most auxiliary storage devices–as, for example, … … also double as input/output devices.

17. Devices such as smartphones, tablet computers, and wearable devices like fitness trackers and smartwatches can be considered as … … .
18. A bus (also known as a port) can be either serial or parallel, depending on … … or many at once (parallel).
19. Serial connections, which use … … , are generally simpler than parallel connections.

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more efficient devices; the mouse, trackball, joystick, trackpad, and special pen; information about their environment; the optical laser scanner; read bar-coded data; video display terminals, ink-jet and laser printers, loudspeakers, headphones; provide both input and output; the transmission and reception of data; CD-ROM and DVD drives, flash memory drives, and external disk drives; peripherals, albeit ones that can function independently; whether the data path carries one bit at a time (serial); relatively few wires; enter information and instructions into a computer; the processed data; the peripheral equipment; input devices, output devices, and storage devices; incoming data and instructions; the digitized signals into a form intelligible to the user; punched-card and paper-tape readers

FIVE GENERATIONS OF MODERN COMPUTERS

UNIT V

1. Practice the pronunciation of the new words and memorize them.

1. generation [ʤenəˈreɪʃn] поколение
2. Government [ˈgʌv(ə)mənt] правительство, государство; управление
3. strategic [strəˈtiːʤɪk] стратегический, стратегически важный
4. missiles [ˈmɪsaɪlz] ракетная техника
5. stride [straɪd] успех, прогресс
6. stride [straɪd] шагать, шествовать
7. impact [ˈɪmpækt] влияние, воздействие, эффект
8. impact [ˈɪmpækt] влиять, воздействовать, оказывать влияние
9. decades [ˈdekeɪdz] десятилетия
10. succeed [səkˈsiːd] преуспеть, добиться успеха
11. code-breaking [kəʊdˈbreɪkɪŋ] взлом кода
12. produce [ˈprɒdjuːs] производить, выпускать, изготавливать
13. concept [ˈkɒnsept] концепция, понятие, принцип, замысел
14. resume [rɪˈzjuːm] возобновиться, продолжить
15. versatility [vɜːsəˈtɪlɪtɪ] многосторонность, разносторонность, универсальность
16. architecture [ˈɑːkɪtekʧə] архитектура, зодчество, структура
17. shrink [ʃrɪŋk] сокращаться, уменьшаться
18. energy-efficient [enəʤɪˈfɪʃnt] энергоэффективный, энергосберегающий
19. sophisticated [səˈfɪstɪkeɪtɪd] утонченный, сложный
20. manage [ˈmænɪʤ] управлять, руководить, справляться
21. semiconductor [semɪkənˈdʌktə] полупроводник; полупроводниковый элемент
22. squeeze [skwiːz] сжимать, сдавливать, стискивать
23. eliminate [ɪˈlɪmɪneɪt] устранить, уничтожать, исключить
24. cumbersome [ˈkʌmbəsəm] громоздкий
25. predecessor [ˈpriːdɪsesə] предшественник

2. Practice the pronunciation of the following word-combinations:

1. entire section [ɪnˈtaɪə sekʃn] целый раздел, весь раздел
2. ballistic charts [bəˈlɪstɪk] баллистические карты
3. complex equations [ˈkɒmpleks ɪˈkweɪʒ(ə)n] сложное уравнение
4. presidential election [prezɪˈdenʃəl ɪˈlekʃn] президентские выборы

5. vacuum tubes [ˈvækjʊəm tjuːbz] вакуумная лампа, электронная лампа
6. massive piece of machine – массивная часть машины
7. distinctive feature [dɪsˈtɪŋktɪv ˈfiːʧə] отличительная черта, особенность
8. breathtaking size [ˈbreθteɪkɪŋ] захватывающие дух размеры
9. solid state design – твердотельный дизайн
10. integrated circuit [ˈɪntɪgreɪtɪd ˈsɜːkɪt] интегральная схема
11. silicon disc – кремниевый диск, пластина
12. «stored memory'' technique – техника «сохраненной памяти»
13. quartz rock [kwɔːts rɒk] кварцевая порода

3. Practice the pronunciation of the new words.

1. Dwight D. Eisenhower [dwaɪt diː ˈaɪzɪnhaʊər] Дуайт Д. Эйзенхауэр
2. Colossus [kəˈlɒsəs] Колосс Родосский (гигантская медная статуя Аполлона).
3. Census Bureau [ˈsensəs bjʊəˈrəʊ] бюро переписи
4. Sperry-Rand [ˈspeərɪ-rænd] Сперри-Рэнд
5. Livermore [lɪvərˈmɔːr] г. Ливермор
6. Livermore Atomic Research Computer (LARC) – Ливерморский компьютер для атомных исследований
7. U.S. Navy Research and Development Center – Центр исследований и разработок ВМС США
8. Electronic Numerical Integrator and Computer (ENIAC) Электронный числовой интегратор и компьютер
9. Burroughs [ˈbʌrəʊz] Беррроуз
10. FORTRAN [ˈfɔːtræn] Фортран, язык Фортран
11. Texas [ˈteksəs] Техас

4. Read and translate the text

FIVE GENERATIONS OF MODERN COMPUTERS

Part I

First Generation Computers (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's impact on the development of the computer industry was

rather limited for two important reasons. First Colossus was not a general-purpose computer; it was only designed to decode secret messages. Second, the existence of the machine was kept secret until decades after the war.

American efforts produced a broader achievement. Howard H. Aiken (1900–1973), a Harvard engineer working with IBM, succeeded in producing an all-electronic calculator by 1944. The purpose of the computer was to create ballistic charts for the U.S. Navy. It was about half as long as a football field and contained about 500 miles of wiring. 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 spurred by the war was the Electronic Numerical Integrator and Computer (ENIAC), produced by partnership between the U.S. government and the University of Pennsylvania. Consisting of 18,000 vacuum tubes, 70,000 resistors and 5 million soldered joints, the computer was such a massive piece of machine that it consumed 160 kilowatts of electrical power, enough energy to dim the lights in an entire section of Philadelphia. Developed by John Pres per 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.

In the mid-1940's 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 as well as the ''conditional control transfer"(передача контроля по условию), that 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 UNI-VAC I (Universal Automatic Computer), built by Remington Rand, became one of the first commercially available computers to take advantage of these advances. Both the U.S. Census Bureau and General Electric owned UNIVACs. One of UNIVACs impressive early achievements was predicting the winner of the 1952 presidential election, Dwight D. Eisenhower.

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 (responsible for their breathtaking size) and magnetic drums for data storage.

Second Generation Computers (1956–1963)

By 1948, 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 [ˈpriːdɪsesə] . The first large-scale machines to take advantage of this transistor technology were early supercomputers, Stretch by IBM and LARC by Sperry-Rand. These computers, both developed for atomic energy laboratories, could handle an enormous amount of data, a capability much in demand by atomic scientists. The machines were costly, however, and tended to be too powerful for the business sector's computing needs, thereby limiting their attractiveness. Only two LARCs were ever installed: one in the Lawrence Radiation Labs in Livermore, California, for which the computer was named (Livermore Atomic Research Computer) and the other at the U.S. Navy Research and Development Center in Washington, D.C. Second generation computers replaced machine language with assembly language, allowing abbreviated programming codes to replace long, difficult binary codes.

Throughout the early 1960's, there were a number of commercially successful second generation computers used in business, universities, and government from companies such as Burroughs, Control Data. Honeywell, IBM. Sperry-Rand, and others. These second generation computers were also of solid state design, and contained transistors in place of vacuum tubes. They also contained all the components we associate with the modern day computer: printers, tape storage, disk storage, memory, operating systems, and stored programs. One important example was the IBM 1401, which was universally accepted throughout industry, and is considered by many to be the Model T of the computer industry. By 1965, most large business routinely processed financial information using second generation computers.

It was the stored program and programming language that gave computers the flexibility to finally be cost effective and productive for business use. The stored program concept meant that instructions to run a computer for a specific function (known as a program) were held inside the computer's memory, and could quickly be replaced by a different set of instructions for a different function. A computer could print customer invoices and minutes later design products or calculate paychecks. More sophisticated high-level languages such as COBOL (Common Business-Oriented Language) and

FORTRAN (Formula Translator) came into common use during this time, and have expanded to the current day. These languages replaced cryptic binary machine code with, words, sentences, and mathematical formulas, making it much easier to program a computer. 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)

Though transistors were clearly an improvement over the vacuum tube, they still generated a great deal of heat, which damaged the computer's sensitive internal parts. The quartz rock 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 disc, 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.

5. Give english equivalents of the following:

ускорило технический прогресс; завершили разработку секретного компьютера для взлома кодов; было довольно ограниченным; для расшифровки секретных сообщений; создании полностью электронного калькулятора; создание баллистических карт; автоматический калькулятор с последовательным управлением; электронный релейный компьютер; для перемещения механических деталей; последовательность вычислений не могла измениться; выполнять как элементарную арифметику, так и более сложные уравнения; электронный цифровой интегратор и компьютер; миллион паяных соединений; электронный автоматический компьютер с дискретной переменной; «условная передача управления» (передача контроля по условию); обеспечивали большую универсальность; координировать все функции компьютера через единый источник; предсказание победителя президентских выборов; своя программа с двоичным кодом; отвечающих за их захватывающие дух размеры; было очень востребовано учеными-атомщиками; что ограничивало их привлекательность; заменили машинный язык языком ассемблера; обрабатывали финансовую информацию; стать экономически эффективными и производительными; концепция сохраненной программы; зашифрованный двоичный машинный код; явно были улучшением по сравнению с; выделяли много тепла, что повреждало чувствительные внутренние части компьютера; запускать множество различных программ одновременно

6. Give russian equivalents of the following.

made greater strides; it was only designed to decode secret messages; was kept secret until decades after the war; to create ballistic charts; 500 miles of wiring; in that sequences of calculations could not change; spurred by the war; initiating concepts in computer design; that remained central to computer engineering for the next 40 years; that allowed the computer to be stopped at any point and then resumed; allowed for greater versatility in computer programming; were made-to-order for the specific task; had a different binary-coded program; early advances in magnetic-core memory; the machines were costly; replaced machine language with assembly language; was universally accepted throughout industry; to finally be cost effective and productive for business use; sophisticated high-level languages; the entire software industry; they still generated a great deal of heat; managed to fit even more components on a single chip; became ever smaller as more components were squeezed onto the chip; that allowed machines to run many different programs at once; with a central program that monitored and coordinated the computer's memory.

Part II

7. Practice the pronunciation of the new words and memorize them

1. efficiency [ɪˈfɪʃnsɪ] эффективность производительность работоспособность
2. reliability [rɪlaɪəˈbɪlɪtɪ] надежность, достоверность
3. minuscule [ˈmɪnəskjuːl] незначительный, крохотный, маленький
4. previously [ˈpriːvɪəslɪ] ранее, заранее, заблаговременно
5. manufacture [mænjʊˈfækʧə] производить, изготовлять, выпускать
6. microprocessor [maɪkrə(ʊ)ˈprəʊsesə] микропроцессор
7. household item [ˈhaʊshəʊld ˈaɪtəm] предмет домашнего обихода
8. microwave oven [ˈmaɪkrəweɪv ʌvn] микроволновая печь
9. electronic fuel injection – электронный впрыск топлива
10. Large scale integration (LSI) – large-scale integration circuit – большая интегральная схема
11. harness [ˈhɑːnɪs] использовать
12. circuitry [ˈsɜːkɪtrɪ] схема цепь
13. ignite [ɪgˈnaɪt] воспламениться, зажигать, загораться
14. expansion [ɪksˈpænʃn] расширение, увеличение, распространение
15. affordable [əˈfɔːdəbl] доступный, возможный, допустимый
16. palmtop [ˈpɑːmtɒp] карманный компьютер
17. cursor [ˈkɜːsə] указатель, курсор мыши, стрелка
18. mimick [‘mɪmɪk] имитировать, подражать
19. envision [ɪnˈvɪʒən] представлять,предусматривать, предполагать
20. wayward [ˈweɪwəd] своенравный, упрямый, непредсказуемый

21. imitate human reasoning – имитировать человеческое мышление
22. resistance [rɪˈzɪstəns] сопротивление, устойчивость, прочность
23. diagnoses [daɪəgˈnəʊsɪs] диагноз, выявление

8. Practice the pronunciation of the following word-combinations:

1. general consumers – обычные потребители
2. user-friendly software packages – удобные для пользователя пакеты программного обеспечения
3. non-technical user – пользователь, не знакомый с техническими тонкостями
4. array of applications – множество приложений
5. word processing [wɜːd ˈprəʊsesɪŋ] обработка текстов, работа с текстом,
6. spreadsheet program [ˈspredʃiːt ˈprəʊgræm] программа электронных таблиц
7. computer circuitry – компьютерная схема
8. artificial intelligence [ɑːtɪˈfɪʃəl ɪnˈtelɪʤəns] искусственный интеллект
9. psychotic breakdown [saɪˈkɒtɪk ˈbreɪkdaʊn] психотический срыв

9. Practice the pronunciation of the new words:

1. Commodore [ˈkɔmədɔː]
2. Radio Shack сеть магазинов радиотоваров (США)
3. Al Gore [æl gɔːr] Альберт Гор
4. HAL9000 – вымышленный компьютер из цикла произведений «Космическая одиссея» Артура Кларка
5. Arthur C. Clarke's novel [ˈɑːθə siː. klɑːk'es ˈnɒvəl] Роман Артура К. Кларка
6. Space Odyssey [‘ɒdɪsɪ] Космическая одиссея

10. Read and translate the text

FIVE GENERATIONS OF MODERN COMPUTERS

Part II

Fourth Generation Computers (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 1980's, 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 onto an area about half the size of a U.S. dime 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. Whereas previously the integrated circuit had had to be manufactured to fit a special purpose, now one microprocessor could be manufactured and then programmed to meet any number of demands. Soon everyday household items such as microwave ovens, television sets and automobiles with electronic fuel injection incorporated microprocessors.

Such condensed power allowed everyday people to harness computer. They were no longer developed exclusively for large business or government contracts. By the mid-1970's, computer manufacturers sought to bring computers to general consumers. These minicomputers came complete with user-friendly software packages that offered even non-technical users an array of applications, most popularly word processing and spreadsheet programs. Pioneers in this field were Commodore, Radio Shack and Apple Computers. In the early 1980's, arcade video games such as Pac Man and home video game systems such as the Atari 2600 ignited consumer interest for more sophisticated, programmable home computers.

In 1981, IBM introduced its personal computer (PC) for use in the home, office and schools. The 1980" s saw an expansion in computer use in all three arenas as clones of the IBM PC made the personal computer even more affordable. The number of personal computers in use more than doubled from 2 million in 1981 to 5.5 million in 1982. Ten years later, 65 million PCs were being used. Computers continued their trend toward a smaller size, working their way down from desktop to laptop computers (which could fit inside a briefcase) to palmtop (able to fit inside a breast pocket). In direct competition with IBM's PC was Appie's Macintosh line, introduced in 1984. Notable for its user-friendly design, 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 computers became more widespread in the workplace, new ways to harness their potential developed. 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, this was one powerful computer that shared time with many terminals for many applications, networked computers allowed individual computers to form electronic co-ops. Using either direct wiring, called a Local Area Network (LAN), or telephone lines, these networks could reach enormous proportions. A global web of computer circuitry, the Internet, for example, links computers worldwide into a single network of information. During the 1992 U.S. presidential election, vice-presidential candidate Al Gore promised to make the development of this so-called "information superhighway" an administrative priority. Though the possibilities envisioned

by Gore and others for such a large network are often years (if not decades) away from realization, the most popular use today for computer networks such as the Internet is electronic mail, or E-mail, which allows users to type in a computer address and send messages through networked terminals across the office or across the world.

Fifth Generation Computers (Present and Beyond)

Defining the fifth generation of computers is somewhat difficult because the field is in its infancy. The most famous example of a fifth generation computer is the fictional HAL9000 from Arthur C. Clarke's novel, 2001: A Space Odyssey. HAL performed all of the functions currently envisioned for real-life fifth generation computers. With artificial intelligence, HAL could reason well enough to hold conversations with its human operators, use visual input, and learn from its own experiences. (Unfortunately, HAL was a little too human and had a psychotic breakdown, commandeering a spaceship and killing most humans on board.)

Though the wayward HAL9000 may be far from the reach of real-life computer designers, many of its functions are not. Using recent engineering advances, computers may be able to accept spoken word instructions and imitate human reasoning. The ability to translate a foreign language is also a major goal of fifth generation computers. This feat seemed a simple objective at first, but appeared much more difficult when programmers realized that human understanding relies as much on context and meaning as it does on the simple translation of words.

Many advances in the science of computer design and technology are coming together to enable the creation of fifth generation computers. Two such engineering advances are parallel processing, which replaces von Neumann's single central processing unit design with a system harnessing the power of many CPUs to work as one. Another advance is superconductor technology, which allows the flow of electricity with little or no resistance, greatly improving the speed of information flow. Computers today have some attributes of fifth generation computers. For example, expert systems assist doctors in making diagnoses by applying the problem-solving steps a doctor might use in assessing a patient's needs. It will take several more years of development before expert systems are in widespread use.

11. Give english equivalents of the following:

единственным местом, куда можно было пойти, втиснула сотни тысяч компонентов в чип; запрограммировать его на удовлетворение любого количества требований; больше не разрабатывались исключительно для крупного бизнеса или государственных контрактов; стремились донести компьютеры до широких слоев населения; поставляются в комплекте с удобными для пользователя программными пакетами; для обработки текстов и электронных таблиц; продолжили тенденцию к уменьшению

размеров; способных поместиться в нагрудном кармане; перемещать значки на экране вместо ввода инструкций; устройства, имитирующего движение руки на экране компьютера; новые способы использования их потенциала; чтобы совместно использовать пространство памяти; используя либо прямую проводку, называемую локальной вычислительной сетью; так называемой «информационной супермагистрали»; часто находятся на расстоянии многих лет (если не десятилетий) от реализации; эта область находится в зачаточном состоянии; может быть далек от досягаемости реальных компьютерных дизайнеров, человеческое понимание в такой же степени зависит от контекста и значения, как и от простого перевода слов; технология сверхпроводников, которая позволяет передавать электричество практически без сопротивления

12. Give russian equivalents of the following.

squeezed hundreds of thousands of components onto a chip; took the integrated circuit one step further; automobiles with electronic fuel injection incorporated microprocessors; were no longer developed exclusively for large business; complete with user-friendly software packages; most popularly word processing and spreadsheet programs; ignited consumer interest; mimicked the movement of one's hand; to harness their potential developed; as opposed to a mainframe computer; often years (if not decades) away from realization; fictional HAL9000; all of the functions currently envisioned for; could reason well enough to hold conversations with its human operators; relies as much on context and meaning as it does on the simple translation of words; by applying the problem-solving steps

13. Give the summary of the text.

HISTORY OF COMPUTER SCIENCE
UNIT VI

I. Practice the pronunciation of the new words and memorize them.

1. predate [priːˈdeɪt] предшествовать
2. fix [fɪks] исправить, установить, зафиксировать, закрепить
3. adoption [ədɒpʃn] принятие, утверждение
4. exist [ɪgˈzɪst] существовать, иметься, находиться
5. antiquity [ænˈtɪkwɪtɪ] древность, античность, глубокая древность
6. sophisticated [səˈfɪstɪkeɪtɪd] утонченный, сложный
7. consider [kənˈsɪdə] рассматривать, учитывать, принимать во внимание
8. launch [lɔːnʧ] запускать, начинать
9. sketch [skeʧ] набросать, нарисовать, наметить, начертить
10. derived [dɪˈraɪvd] полученный, взятый, извлеченный, выводимый
11. infinitely [ˈɪnfɪnɪtlɪ] бесконечно, безмернонесравненно, неизмеримо
12. tailored [ˈteɪləd] приспособленный, специализированный
13. implementation [ɪmplɪmənˈteɪʃn] реализация, внедрение, осуществление
14. tabulator [ˈtæbjʊleɪtə] табулятор
15. eventually [ɪˈvenʧʊ(ə)lɪ] в итоге, в конечном счете
16. unaware [ʌnəˈweə] не подозревающий, не знающий, не осознающий
17. convinced [kənˈvɪnst] убежденный, уверенный
18. hailed [heɪld] превозносимый
19. refer to [rɪˈfɜː tuː] ссылаться, означать
20. predecessor [ˈpriːdɪsesə] предшественник
21. emergence [ɪˈmɜːʤəns] появление, возникновение
22. distinct [dɪsˈtɪŋkt] отчетливый, определенный, особый, различимый
23. application [æplɪˈkeɪʃn] приложение, прикладная программа

2. Practice the pronunciation of the following word-combinations:

1. numerical tasks – многочисленные задачи
2. the binary number system [ˈbaɪnərɪ ˈnʌmbə ˈsɪstɪm] двоичная система двоичная система счисления
3. simplified arithmometer – упрощенный арифмометр
4. in an office environment – в офисной среде
5. Difference Engine [ˈdɪfrəns ˈenʤɪn] разностная машина
6. Analytical Engine [ænəˈlɪtɪkəl ˈenʤɪn] аналитическая машина

7. salient features [ˈseɪlɪənt ˈfiːʧəz] характерные особенности
8. crucial step [ˈkruːʃəl step] решающий шаг, ответственный шаг
9. punched card [pʌnʧt kɑːd] перфокарта
10. the Stepped Reckoner
11. research facility [rɪˈsɜːʧ fəˈsɪlɪtɪ] исследовательский центр
12. Watson Scientific Computing Laboratory at Columbia – Лаборатория научных вычислений Уотсона в Колумбийском университете
13. renovated fraternity house – отреконструированный дом братства Manhattan's West Side Вест-СайдМанхэттена forerunner

3. Read and translate the text.

History of computer science

The earliest foundations of what would become computer science predate the invention of the modern digital computer. Machines for calculating fixed numerical tasks such as the abacus have existed since antiquity, aiding in computations such as multiplication and division. Algorithms for performing computations have existed since antiquity, even before the development of sophisticated computing equipment.

Wilhelm Schickard designed and constructed the first working mechanical calculator in 1623. In 1673, Gottfried Leibniz demonstrated a digital mechanical calculator, called the Stepped Reckoner. Leibniz may be considered the first computer scientist and information theorist, for, among other reasons, documenting the binary number system. In 1820, Thomas de Colmar launched the mechanical calculator industry note when he invented his simplified arithmometer, the first calculating machine ; in an office environment. Charles Babbage started the design of the first *automatic mechanical calculator*, his Difference Engine, in 1822, which eventually gave him the idea of the first *programmable mechanical calculator*, his Analytical Engine. He started developing this machine in 1834, and "in less than two years, he had sketched out many of the salient features of the modern computer". "A crucial step was the adoption of a punched card system derived from the Jacquard loom" making it infinitely programmable. In 1843, during the translation of a French article on the Analytical Engine, Ada Lovelace wrote, in one of the many notes she included, an algorithm to compute the Bernoulli numbers, which is considered to be the first published algorithm ever specifically tailored for implementation on a computer. Around 1885, Herman Hollerith invented the tabulator, which used punched cards to process statistical information; eventually his company became part of IBM. Following Babbage, although unaware of his earlier work, Percy Ludgate in 1909 published the 2nd of the only two designs for mechanical analytical engines in history. In 1937, one hundred years after Babbage's impossible dream, Howard Aiken convinced IBM, which was making all

kinds of punched card equipment and was also in the calculator business to develop his giant programmable calculator, the ASCC/Harvard Mark I, based on Babbage's Analytical Engine, which itself used cards and a central computing unit. When the machine was finished, some hailed it as "Babbage's dream come true".

During the 1940s, with the development of new and more powerful computing machines such as the Atanasoff-Berry computer and ENIAC, the term *computer* came to refer to the machines rather than their human predecessors. As it became clear that computers could be used for more than just mathematical calculations, the field of computer science broadened to study computation in general. In 1945, IBM founded the Watson Scientific Computing Laboratory at Columbia University in New York City. The renovated fraternity house on Manhattan's West Side was IBM's first laboratory devoted to pure science. The lab is the forerunner of IBM's Research Division, which today operates research facilities around the world.[1] Ultimately, the close relationship between IBM and the university was instrumental in the emergence of a new scientific discipline, with Columbia offering one of the first academic-credit courses in computer science in 1946. Computer science began to be established as a distinct academic discipline in the 1950s and early 1960s. The world's first computer science degree program, the Cambridge Diploma in Computer Science, began at the University of Cambridge Computer Laboratory in 1953. The first computer science department in the United States was formed at Purdue University in 1962. Since practical computers became available, many applications of computing have become distinct areas of study in their own rights.

4. Give English equivalents of the following:

самые ранние основы того, что; существовали с глубокой древности; названный «Ступенчатым счетчиком»; благодаря документированию двоичной системы счисления; запустил индустрию механических калькуляторов; его разностная машина; решающим шагом; на основе жаккардового ткацкого станка; бесконечно программируемой; во время перевода французской статьи; одной из многочисленных заметок; алгоритм вычисления чисел Бернулли; который использовал перфокарты для обработки статистической информации; хотя и не зная о его более ранних работах; из двух единственных проектов; после несбыточной мечты; всевозможное оборудование для перфокарт; человеческим предшественником; расширилась до изучения вычислений в целом; по всему миру; в конечном счете; самостоятельными областями изучения.

5. Give Russian equivalents of the following:

The abacus have existed since antiquity; the development of sophisticated computing equipment; documenting the binary number system; simplified

arithmometer; strong enough and reliable enough to be used daily; sketched out many of the salient features; the adoption of a punched card system; infinitely programmable; ever specifically tailored for implementation; unaware of his earlier work; based on Babbage's Analytical Engine; the term *computer* came to refer to the machines; as it became clear that; the renovated fraternity house; the forerunner of IBM's Research Division; distinct areas of study.

6. Fit the meaning and the words:

1) to have existed or happened before another thing	implementation
2) to make something less complicated and therefore easier to do or understand	unaware
3) the act of putting a plan into action or of starting to use something	simplify
4) not knowing that something exists, or not having knowledge or experience of something	distinct
5) a card with holes in patterns that represent information	engine
6) to get something from something else	predate
7) clearly separate and different (from something else)	forerunner
8) a machine that uses energy to produce movement	predecessor
9) something or someone that acts as an early and less advanced model for what will appear in the future, or a warning or sign of what is to follow	derive
10) someone who had a job or a position before someone else, or something that comes before another thing in time or in a series:	punched card

7. Match the words with the opposite meaning:

a) separate, appear, advanced, available, distinct, numerical, emergence, ultimately, implementation, predate, consider.
b) impossible, resembling, infrequent, ending, never, failure, follow, neglect, connected, conceal, behind.

8. Match the words with a similar meaning:

a) to refer, predecessor, equipment, eventually, adoption, feature, establish, calculations, facility, devote, convince, to compute.
b) acceptance, peculiarity, set up, computations, enterprise, dedicate, persuade, calculate, mention, ancestor, outfit, finally.

9. Match the equivalents to the word combinations given in the left column.

a)

1. to predate the invention of the modern digital computer	1. счеты существовали с глубокой древности
2. to launch the mechanical calculator industry	2. документирование двоичной системы счисления
3. the abacus have existed since antiquity	3. изобрел свой упрощенный арифмометр
4. algorithms for performing computations	4. достаточно надежный, чтобы ежедневно использовать в офисе
5. documenting the binary number system	5. алгоритмы для выполнения вычислений
6. invented his simplified arithmometer	6. предшествовать изобретению современного цифрового компьютера
7. reliable enough to be used daily in an office environment	7. запустить индустрию механических калькуляторов

b)

1. had sketched out many of the salient features	1. которые использовали перфокарты для обработки статистической информации
2. the adoption of a punched card system	2. считается первым опубликованным алгоритмом
3. an algorithm to compute the Bernoulli numbers	3. набросал многие из характерных особенностей современного компьютера
4. is considered to be the first published algorithm	4. разработать первый автоматический механический калькулятор
5. to develop his giant programmable calculator	5. алгоритм вычисления чисел Бернулли
6. which used punched cards to process statistical information	6. внедрение системы перфокарт

c)

1. making it infinitely programmable	1. первая лаборатория IBM, посвященная чисто науке.
2. the term computer came to refer to the machines	2. который сегодня управляет исследовательскими объектами

3. the field of computer science broadened to study computation in general	3. делая его бесконечно программируемым
4. IBM's first laboratory devoted to pure science.	4. область компьютерных наук расширилась до изучения вычислений в целом
5. which today operates research facilities	5. стали отдельными областями изучения
6. have become distinct areas of study	6. термин компьютер стал относиться к машинам

10. Complete the sentences using the information in the right column.

a)			
1.	The earliest foundations of what would become computer science predate …	1.	the development of sophisticated computing equipment
2.	Machines for calculating fixed numerical tasks such as …	2.	a digital mechanical calculator, called the Stepped Reckoner
3.	Algorithms for performing computations have existed since antiquity, even before …	3.	documenting the binary number system.
4.	Wilhelm Schickard designed and constructed …	4.	calculating machine strong enough and reliable enough to be used daily in an office environment.
5.	In 1673, Gottfried Leibniz demonstrated …	5.	the invention of the modern digital computer.
6.	Leibniz may be considered the first computer scientist and information theorist, for, among other reasons, …	6.	the first working mechanical calculator in 1623.
7.	In 1820, Thomas de Colmar launched the mechanical calculator industry when he invented his simplified arithmometer, the first …	7.	the abacus have existed since antiquity
b)			
1.	Charles Babbage started the design of the first automatic mechanical calculator, his Difference Engine, in 1822, which eventually gave him the idea of …	1.	which is considered to be the first published algorithm ever specifically tailored for implementation on a computer.

2.	He started developing this machine in 1834, and «in less than two years, he had sketched out …	2.	to process statistical information; eventually his company became part of IBM.
3.	«A crucial step was the adoption of a punched card system …	3.	to develop his giant programmable calculator, the ASCC/Harvard Mark I.
4.	Ada Lovelace wrote, in one of the many notes she included, an algorithm to compute the Bernoulli numbers, …	4.	mechanical analytical engines in history.
5.	Around 1885, Herman Hollerith invented the tabulator, which used punched cards …	5.	the first programmable mechanical calculator, his Analytical Engine.
6.	Percy Ludgate in 1909 published the 2nd of the only two designs for …	6.	derived from the Jacquard loom» making it infinitely programmable.
7.	In 1937, one hundred years after Babbage's impossible dream, Howard Aiken convinced IBM …	7.	many of the salient features of the modern computer».
c)			
1.	The ASCC/Harvard Mark I was based on Babbage's Analytical Engine, …	1.	a distinct academic discipline in the 1950s and early 1960s.
2.	During the 1940s the term computer came …	2.	the University of Cambridge Computer Laboratory in 1953.
3.	As it became clear that computers could be used for more than just mathematical calculations, …	3.	have become distinct areas of study in their own rights.
4.	Computer science began to be established as …	4.	Purdue University in 1962.
5.	The world's first computer science degree program, the Cambridge Diploma in Computer Science, began at …	5.	which itself used cards and a central computing unit.
6.	The first computer science department in the United States was formed at …	6.	the field of computer science broadened to study computation in general.
7.	Since practical computers became available, many applications of computing …	7.	to refer to the machines rather than their human predecessors.

11. Fill in the blanks to complete the sentences. Use the words given under the line. Translate these sentences into Russian.

1. Algorithms for performing computations have existed since ….
2. In 1673, Gottfried Leibniz demonstrated a digital mechanical calculator, … .
3. Thomas de Colmar launched the mechanical calculator industry when he invented his simplified arithmometer, … .
4. He started developing this machine in 1834, and "in less than two years, ….
5. Around 1885, Herman Hollerith invented the tabulator, which used punched cards to process statistical information; ….
6. During the 1940s, with the development of new and more powerful computing machines such as the Atanasoff-Berry computer and ENIAC, the term ….
7. Computer science began to be established as … .
8. Since practical computers became available, many applications of computing …

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have become distinct areas of study in their own rights; a distinct academic discipline in the 1950s and early 1960s; *computer* came to refer to the machines rather than their human predecessors; antiquity, even before the development of sophisticated computing equipment; called the Stepped Reckoner; the first calculating machine strong enough and reliable enough to be used daily in an office environment; he had sketched out many of the salient features of the modern computer"; eventually his company became part of IBM.

12. Переведите слова и словосочетания, данные в скобках, и переведите предложения.

1. The earliest foundations of what would become computer science (предшествовали изобретению современного цифрового компьютера). 2. Algorithms for performing computations have existed since antiquity, (еще до развития сложного вычислительного оборудования). 3. In 1673, Gottfried Leibniz demonstrated a digital mechanical calculator, (названный Ступенчатым счетчиком). 4. (Лейбница можно считать первым ученым-компьютерщиком и теоретиком информации), for, among other reasons, documenting the binary number system. 5. In 1820, Thomas de Colmar launched the mechanical calculator industry (когда изобрел свой упрощенный арифмометр), the first calculating machine strong enough and reliable enough to be used daily in an office environment. 6. He started developing this machine in 1834, and "in less than two years, (он набросал многие характерные особенности) of the modern computer". 7. "A crucial

step was the adoption of a punched card system ("созданной на основе жаккардового ткацкого станка") making it infinitely programmable. 8. In 1843, during the translation of a French article on the Analytical Engine, Ada Lovelace wrote, in one of the many notes she included, an algorithm to compute the Bernoulli numbers, (который считается первым опубликованным алгоритмом, когда-либо специально разработанным для реализации) on a computer. 9. Around 1885, Herman Hollerith invented the tabulator, (который использовал перфокарты для обработки статистической информации); eventually his company became part of IBM. 10. Percy Ludgate in 1909 published the 2nd of the only two designs for mechanical analytical engines in history. 11. In 1937, (через сто лет после несбыточной мечты Бэббиджа), Howard Aiken convinced IBM, which was making all kinds of punched card equipment and was also in the calculator business (разработать свой гигантский программируемый калькулятор ASCC / Harvard Mark I). 12. The ASCC/Harvard Mark I was based on Babbage's Analytical Engine, (которая сама использовала карты и центральный вычислительный блок). 13. (Когда стало ясно, что компьютеры можно использовать не только для математических вычислений), the field of computer science broadened to study computation in general. 14. Since practical computers became available, (многие приложения вычислительной техники стали самостоятельными областями изучения).

13. Read and translate the text.

Text 2

EARLY COMPUTING MACHINES AND INVENTORS

The abacus, which emerged about 5,000 years ago in Asia Minor and is still in use today, may be considered the first computer. This device allows users to make computations using a system of sliding beads arranged on a rack. Early merchants used the abacus to keep trading transactions. But as the use of paper and pencil spread, particularly in Europe, the abacus lost its importance. It took nearly 12 centuries, however, for the next significant advance in computing devices to emerge. In 1642, Blaise Pascal (1623–1662), the 18-year-old son of a French tax collector, invented what he called a numerical wheel calculator to help his father with his duties. This brass rectangular box, also called a Pascaline, used eight movable dials to add sums up to eight figures long. Pascal's device used a base of ten to accomplish this. For example, as one dial moved ten notches, or one complete revolution, it moved the next dial -which represented the ten's column – one place. When the ten's dial moved one revolution, the dial representing the hundred's place moved one notch and so on.

The drawback to the Pascaline, of course, was its limitation to addition.

In 1694, a German mathematician and philosopher, Gottfried Wilhelm von Leibniz (1646–1716), improved the Pascaline by creating a machine that

could also multiply. Like its predecessor, Leibniz's mechanical multiplier worked by a system of gears and dials. Partly by studying Pascal's original notes and drawings, Leibniz was able to refine his machine. The centerpiece of the machine was its stepped-drum gear design, which offered an elongated version of the simple flat gear. It wasn't until 1820, however, that mechanical calculators gained widespread use. Charles Xavier Thomas de Colmar, a Frenchman, invented a machine that could perform the four basic arithmetic functions. Colmar's mechanical calculator, the arithmometer, presented a more practical approach to computing because it could add, subtract, multiply and divide. With its enhanced versatility, the arithmometer was widely used up until the First World War. Although later inventors refined Colmar's calculator, together with fellow inventors Pascal and Leibniz, he helped define the age of mechanical computation. The real beginnings of computers as we know them today, however, lay with an English mathematics professor, Charles Babbage (1791–1871). Frustrated at the many errors he found while examining calculations for the Royal Astronomical Society, Babbage declared, "I wish to God these calculations had been performed by steam!" With those words, the automation of computers had begun. By 1812, Babbage noticed a natural harmony between machines and mathematics: machines were best at performing tasks repeatedly without mistake; while mathematics, particularly the production of mathematic tables, often required the simple repetition of steps. The problem centered on applying the ability of machines to the needs of mathematics. Babbage's first attempt at solving this problem was in 1822 when he proposed a machine to perform differential equations, called a Difference Engine. Powered by steam and large as a locomotive, the machine would have a stored program and could perform calculations and print the results automatically. After working on the Difference Engine for 10 years, Babbage was suddenly inspired to begin work on the first general-purpose computer, which he called the Analytical Engine. Babbage's assistant, Augusta Ada King, Countess of Lovelace (1815–1842) and daughter of English poet Lord Byron, was instrumental in the machine's design. One of the few people who understood the Engine's design as well as Babbage, she helped revise plans, secure funding from the British government, and communicate the specifics of the Analytical Engine to the public. Also, Lady Lovelace's fine understanding of the machine allowed her to create the instruction routines to be fed into the computer, making her the first female computer programmer. In the 1980's the U.S. Defense Department named a programming language ADA in her honor.

Babbage's steam-powered Engine, although ultimately never constructed, may seem primitive by today's standards. However, it outlined the basic elements of a modern general purpose computer and was a breakthrough concept. Consisting of over 50,000 components, the basic design of the Analytical Engine included input devices in the form of perforated cards

containing operating instructions and a "store" for memory of 1,000 numbers of up to 50 decimal digits long. It also contained a ''mill" with a control unit that allowed processing instructions in any sequence, and output devices to produce printed results. Babbage borrowed the idea of punch cards to encode the machine's instructions from the Jacquard loom. The loom, produced in 1820 and named after its inventor, Joseph-Marie Jacquard, used punched boards that controlled the patterns to be woven.

In 1889, an American inventor, Herman Hollerith (1860–1929), also applied the Jacquard loom concept to computing. His first task was to find a faster way to compute the U.S. census. The previous census in 1 880 had taken nearly seven years to count and with an expanding population, the bureau feared it would take 10 years to count the latest census. Unlike Babbage's idea of using perforated cards to instruct the machine, Hollerith's method used cards to store data information which he fed into a machine that compiled the results mechanically. Each punch on a card represented one number, and combinations of two punches represented one letter. As many as 80 variables could be stored on *&* single card. Instead of ten years, census takers compiled their results in just six weeks with Hollerith's machine. In addition to their speed, the punch cards served as a storage method for data and they helped reduce computational errors. Hollerith brought his punch card reader into the business world, founding Tabulating Machine Company in 1896, later to become International Business Machines (IBM) in 1924 after a series of mergers. Other companies such as Remington Rand and Burroghs also manufactured punch readers for business use. Both business and government used punch cards for data processing until the 1960's.

In the ensuing years, several engineers made other significant advances. Vannevar Bush (1890–1974) developed a calculator for solving differential equations in 1931. The machine could solve complex differential equations that had long left scientists and mathematicians baffled. The machine was cumbersome because hundreds of gears and shafts were required to represent numbers and their various relationships to each other. To eliminate this bulkiness, John V. Atanasoff, a professor at Iowa State College (now called Iowa State University) and his graduate student, Clifford Berry, envisioned an all-electronic computer that applied Boolean algebra to computer circuitry. This approach was based on the mid-19th century work of George Boole (1815–1864) who clarified the binary system of algebra, which stated that any mathematical equations could be stated simply as either true or false. By extending this concept to electronic circuits in the form of on or off Atanasoff and Berry had developed the first all-electronic computer by 1940. Their project, however, lost its funding and their work was overshadowed by similar developments by other scientists.

14. Give the summary of the text.

15. Read and translate the text.

Text 3

DEVELOPMENT OF COMPUTERS

In the 19th century the need for rapid calculation expanded throughout the industrial world. Governments taxed and policed larger populations than ever before. Commerce expanded so that there were more money transactions than ever before.

Armies of clerks were employed to calculate and record the mass of transactions conducted by business houses, banks and insurance companies. Scientists and engineers required ever more extensive tables of figures.

To meet the demand, new designs of calculating machine were devised.

In the 20th century electricity was harnessed to drive a variety of calculating machines. But the first general-purpose computing machine that was fully electronic was ENIAC (Electronic Numeral Integrator and Calculator), completed at the University of Pennsylvania in 1945. It employed more than 18,000 thermionic valves, weighed 30 tons and occupied 1,500 sq. ft of floor space.

In the post-war years more computers were built, generally in university research departments. The term 'electronic brain' was coined.

The first part of the economy in which computers became important was finance. In banks and finance houses information began to be recorded directly in machine-readable form by operators at keyboard machines. At first numbers were recorded on punched paper tape or cards; later these were supplanted by magnetic tape and discs. The numbers of clerical staff did not fall, but their productivity rose as the number of transactions they could process swelled. In the early 1980s, for instance, in Britain the National Westminster Bank processed some 2 million cheques and 650,000 credits in each working day.

Large companies computerized their payrolls. Shops and stores kept track of goods with the aid of computers and cut their reserve stocks; hence they could reduce their warehouse costs and free space for a wider variety of goods.

Complex industrial processes such as oil refining and steel-rolling were handed over to the control of the computer. Industrial design depended more and more on the computer. It would be impossible to design a new car or jet airliner with a reasonable expenditure of time and money without computers to carry out the enormous number of calculations involved.

The American company IBM dominated these developments. When delivery of Univac II, announced by IBM's rival Remington Rand in 1955, was delayed until 1957 by production difficulties. IBM captured the market in large computers.

IBM maintained its lead when the 'second generation' of computers appeared around 1960. These employed transistors in place of valves and

were more powerful than their predecessors, yet more compact, reliable and economical of energy. They could be housed in a few cabinets, rather than filling a large air-conditioned room.

The trend towards smallness and cheapness was enormously accelerated when the 'third generation' of computers, based on the silicon chip, appeared around 1965. Electronic components, such as transistors, could now be made in large numbers on a thin square of silicon, typically 1/4 in. square. By 1971 the first microprocessor had appeared in America: the microprocessor was the heart of a computer – the part that does the actual calculating – on a single chip. Other chips could provide memory stores.

When input/output devices, such as a keyboard and printing machine, were added, a complete computing system was obtained that could fit on to a desktop. Such a unit can store about 2 1/2 million characters -letters or numbers – of information. Calculations are completed in seconds and the print-out is between 80–120 characters a second.

A visual display unit – a TV screen that could display text punched in by means of a keyboard, together with the computer's replies – permitted an operator to put instructions and questions to the computer and receive responses.

The computer, now smaller, cheaper and more accessible to ordinary people than ever before, has appeared in the office, on the factory floor and in the home. Computer terminals are seen at airline and theatre reservation desks, in stockbrokers' offices, in factory stockrooms, in power-station control rooms and in banks.

Even the toy departments in large stores sell computers: some create video games on home TV sets; others play chess and draughts – sometimes with the machine speaking its moves. But the increasing power of the computer and its 'software' – its programming – has transformed daily life in ways that can pass unnoticed. Computer-fed weather forecasts are more accurate and range further ahead. Greater volumes of road traffic are handled with less delay, by computerized systems responding to information about the flow of vehicles from automatic sensors.

Some cars are now equipped with a microcomputer that continuously controls the fuel mixture and ignition timing, which optimizes performance and economizes on fuel. There are also "trip computers'' which display details of average speed and fuel consumption since the beginning of the journey.

The defensive networks of the major powers are coordinated by computers. The dangers of present-day reliance on them were vividly illustrated in June 1980, when a single micro-chip in a North American Air Defence Command computer developed a fault. Twice in three days a false warning of enemy missile attack was flashed to US military forces around the world. On both occasions the American war machine was on full alert for three minutes.

The jobs of many skilled workers are threatened by the computer. For example, engineering draught men and machine-tool operators can be bypassed in the production of mechanical components such as gear boxes or car engine blocks. A designer draws rough diagrams on a TV screen linked to a computer. The computer straightens the lines, smoothes the curves, alters the diagram to show different views of the component, and revises it according to the designer's instructions. When the design is finished, the computer can produce magnetic tapes that will control a machine tool. The tool will shape the part with an accuracy superior to that of a human operator.

Libraries of information now exist in electronic form, and are called data banks. A typical magnetic disc can store a million words of text-the equivalent often long novels. Computers retrieve information from them and analyze it in the same way in which they deal with numbers in calculations.

The extension and pooling of data banks pose a threat to the individual's right to privacy. It could happen, for example, that information about a patient's episode of depression could be stored in a data bank serving a network of hospitals. Years later an officer in a government department considering that individual for employment might gain access to the information at the touch of a button and could hardly avow being prejudiced by it.

Certain companies specialize in providing information about individuals' credit-worthiness to finance and hire-purchase companies. These computerised files are now so comprehensive that a high proportion of the population is listed in at least one such data bank, without being – ware of it. Inaccurate information can lead to a person being denied credit without his knowing why.

In the field of crime, the computer can be used in the recognition and apprehension of criminals. Detailed information about a suspect's background may be obtained from a computer and sent by radio to a policeman on the spot – resulting in a speedy arrest. It can also bring together and analyze scattered items of information and so rapidly detect social patterns and trends.

16. Read the text and:

point out the main reasons for the development of computers in the 19th century; the 20th century;
point out the main stages of the development of computers;
describe areas where computers are used today.

17. Give the general idea of the text in English.

COMPUTING LANGUAGES
UNIT VII

1. Practice the pronunciation of the new words and memorize them.

1. acclimated for [ə'klɪmeɪtəd fɔ:] –подстраивать, адаптировать
2. analogous to [əˈnæləgəs] аналогично
3. commodity [kəˈmɒdɪtɪ] зд. вид, слова
4. database [ˈdeɪtəbeɪs] база данных
5. delicate [ˈdelɪkɪt] сложный
6. dragged [drægd] втянутый, перетаскиваемый
7. embedded [ɪmˈbedɪd] встроенный, включенный, встраиваемый
8. excellent [ˈeksələnt] отменный, великолепный, замечательный
9. execution [eksɪˈkju:ʃn] исполнение
10. extensively [ɪksˈtensɪvlɪ] широко, обширно; в значительной степени
11. feature [ˈfi:ʧə] особенность, свойство, черта; характерная особенность
12. formatting [ˈfɔ:mætɪŋ] форматирование
13. indicate [ˈɪndɪkeɪt] указывать означать обозначать
14. intended for – предназначен для
15. movable [ˈmu:vəbl] передвижной, переносной, подвижный
16. newcomers [ˈnju:kʌməz] новичок, новобранец
17. page links – ссылки на страницы
18. precise [prɪˈsaɪs] точный
19. query [ˈkwɪərɪ] запрос
20. respond [rɪsˈpɒnd] отвечать, реагировать, откликаться
21. restate [ri:ˈsteɪt] переформулировать
22. robotics [rəʊˈbɒtɪks] робототехника, робот
23. robustness [rəˈbʌstnɪs] надежность
24. script [skrɪpt] скрипт; файлы сценариев
25. serve [sɜ:v] служить, являться
26. speculate [ˈspekjʊleɪt] размышлять, думать
27. suppose [səˈpəʊz] думать, предположить, считать
28. tools [tu:lz] программные средства; инструменты
29. underline[ʌndəˈlaɪn] подчеркивать
30. virtual reality [ˈvɜ:ʧʊəl rɪˈælɪtɪ] виртуальная реальность

2. Practice the pronunciation of the following word-combinations and memorize them.

1. binary code [ˈbaɪnərɪ kəʊd] двоичный код, бинарный код
2. binary string [ˈbaɪnərɪ strɪŋ] двоичная строка

3. complete program [kəmˈpliːt ˈprəʊgræm] готовая программа, полная программа
4. computer outfit – компьютерное оборудование
5. data visualization [ˈdeɪtə vɪʒʊəlaɪˈzeɪʃn] визуализация данных
6. data wisdom – анализ данных; представление данных
7. dialog box [ˈdaɪəlɒg bɒks] диалоговое окно, диалоговый блок
8. diurnal life [daɪˈɜːnl] повседневная жизнь
9. interface-friendly language – дружественный к интерфейсу язык
10. machine literacy машинная грамотность
11. predefined objects – предопределенные объекты
12. presently tutored – в настоящее время обучается
13. programming medium [ˈmiː.di.əm] – среда программирования
14. scripting language [ˈskrɪptɪŋ ˈlæŋgwɪʤ] язык сценариев, скриптовый язык
15. simplified form [ˈsɪmplɪfaɪd fɔːm] упрощенная форма
16. tag system – система тегов

3. Read and translate the text.

Computing languages

Programming languages are the tools we use to write instructions for computers. Computers "speculate" in binary strings of 1 and 0. Programming languages allow us to restate 1 and 0 into commodity that people can understand and write. A programming language consists of a series of symbols that serve as a link that allows people to restate our studies into instructions that computers can understand.

Programming languages are divided into two different classifications – low-level and high-level.

Low-level programming languages are near to machine code or binary code. Thus, it's more delicate for people to read them (although they're still easier to understand than 1 and 0). The advantage of low- level languages is that they're fast and give precise control over how the computer will serve.

High-level programming languages are near to how people communicate. High Level Programming Languages use words (similar as object, order, execution, class, query, etc.) that are closer to the words we use in our diurnal life. This means that they're easier to program than low-level programming languages, although it takes additional time to restate them into machine-readable form for a computer.

As computers come more important, the difference in execution time between low-level and high-level programming languages is frequently only milliseconds. As a result, high- level languages do their job almost in all scripts.

There are numerous programming languages that allow you to do a variety of effects, from creating virtual reality to creating video games and much further. The most popular programming languages include the following:

Python[1] is a universal general- purpose programming language. It can be used in a wide variety of fields, from data science and machine literacy to web development, and is an excellent first language to learn.

HTML uses a tag system to indicate page links and formatting. For example, the <u> tag tells the program to start underlining the text. Although programs cannot be created using HTML, small programs can be embedded in HTML code using a scripting language such as JavaScript.

Visual Basic is a programming medium, not just a language. It uses the Drive language, a simple language designed to make it easy for people to learn how to program. Visual Basic contains predefined objects, similar as dialog boxes, buttons, and textbook boxes, which can be named from a set of tools, dragged across the screen with the mouse, and placed in the required position. The Drive program code is attached to form a complete program. Visual Basic is used to write general-purpose operations for the Windows operating system.

Delphi is analogous to Visual Basic. It's also a programming medium for developing programs for the Windows operating system. It has predefined objects that **can be named from** a set of tools. In Delphi, still, the code attached to objects is written in Pascal form. You can suppose of Delphi as a kind of" visual Pascal". Like Visual Basic, it's frequently used for general purpose programs.

Java[2] another language that's great for newcomers. Java can be used for numerous purposes, including mobile operations, software development, and large systems development. Java is a programming language firstly developed for programming small electronic devices similar to mobile phones. It can run unchanged on any operating system that has a Java practitioner program. Java is used to write programs for the World Wide Web.

JavaScript is an interface-and interface-friendly language that allows you to produce web operations, develop games and mobile operations. JavaScript is a simplified form of the Java language. It's important and easy to use. Scripts are small programs that can be used to perform simple tasks or to combine other programs. JavaScript is intended for use inside web runners. This can allow a web runner to respond to a mouse click or form input. It can also give a way to navigate through web runners and produce simple robustness[3].

C#[4], Microsoft's popular programming language can be used for a wide range of operations, including game development, enterprise software, video games, mobile apps, and more.

C ++ is one of the most important programming languages and is used in a wide range of industry, including virtual reality, software and game development, robotics and scientific computing.

C++ was developed grounded on the C language. It was developed as a system programming language with features that make it easy to efficiently manage computer outfit. It was used to produce the Microsoft Windows operating system. It's movable, i.e. programs written in C can be fluently acclimated for use in numerous different types of computer systems.

PHP is extensively used server language. This is a great choice if you're interested in creating dynamic web operations and work well with databases and HTML.

R is a statistical programming language popular among data processing specialists. It's used to answer questions with data analysis and produce data visualization.

Swift is Apple's programming language, and it's necessary if you plan to develop operations for iOS and macOS.

Kotlin is an open source programming language developed by JetBrains. It's popular for web development, Android development and further.

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[1]Java [ˈʤɑːvə] – строго типизированный объектно-ориентированный язык программирования

[2]Python [ˈpʌɪθ(ə)n] – пито́н или па́йтон – высокоуровневый язык программирования

[3]produce simple robustness – обеспечить надежность

[4]C# [si ʃɑːrp] – объектно-ориентированный язык программирования

4. Give English equivalents of the following:

Инструменты, которые мы используем; двоичные строки; переформулировать 1 и 0 в слова; которые служат связующим звеном; близки к двоичному коду; все равно легче понять, чем 1 и 0; дают точный контроль; на них проще программировать; требуется дополнительное время; по мере того как; почти во всех сценариях; создавать различные эффекты, общего назначения; от понимания данных и машинной грамотности до веб-разработки; использует систему тегов; подчеркнуть текст; могут быть встроены в HTML-код; среда программирования; предопределенные объекты, такие как диалоговые окна; перетащить по экрану; поместить в требуемое положение; код, прикрепленный к объектам; для программ общего назначения; может использоваться для множества целей; дружественный к интерфейсу язык; для широкого спектра операций; могут быть легко адаптированы; в создании динамических веб-операций; с открытым исходным кодом.

5. Give Russian equivalents of the following:

allow us to restate 1 and 0 into commodity; are near to machine code or binary code; it's more delicate for people to read them; come more important; do their job almost in all scripts; universal general- purpose programming language; from data wisdom and machine literacy to web development; to indicate page links and formatting; to make it easy for people to learn how

to program; contains predefined objects; dragged across the screen with the mouse; to place in the required position; is attached to form a complete program; can be named from a set of tools; software development; large systems development; it can run unchanged; an interface-and interface-friendly; intended for use inside web runners; to give a way to navigate through web runners; produce simple robustness; to efficiently manage computer outfit; can be fluently acclimated for use; work well with databases and HTML; to produce data visualization.

6. Fit the meaning and the words:

1) to cause someone to change to suit conditions	respond
2) a type of language for programming computers that is used for finding and showing websites on the internet	navigate
3) to say or do something as a reaction to something that has been said or done	machine literacy
4) information on the internet about a particular subject, that forms (a part of) a website	delicate
5) fixed into the surface of something	acclimate
6) to say something again or in a different way	interface
7) to move around a website or computer screen, or between websites or screens	scripts
8) the ability to use computers effectively	embedded
9) a connection between two pieces of electronic equipment, or between a person and a computer	restate
10) needing careful treatment, especially because easily damaged	Web page

7. Match the words with the opposite meaning:

a) to attach, to navigate, easy, precise, to respond, to allow, to restate, diurnal, wide, embedded, unchanged

b) to prevent, to discontinue, rare, narrow, unenclosed, varied, to disconnect, to refrain, complex, inexact, to refuse

8. Match the words with a similar meaning:

a) to produce, visualization, purpose, precise, binary, to acclimate, to restate, development, similar, reality, near, delicate, medium

b) dual, to adjust, to rephrase, evolution, analogous, actuality, familiar, sensitive, environment, to deliver, cognition, target, accurate.

9. Match the equivalents to the word combinations given in the left column.

a)

1. to «speculate» in binary strings of 1 and 0.	1. переформулировать 1 и 0 в слова
2. to restate 1 and 0 into commodity	2. близки к машинному коду или двоичному коду
3. a series of symbols that serve as a link	3. людям сложнее их читать
4. near to machine code or binary code	4. размышлять « в двоичных строках 1 и 0.
5. it's more delicate for people to read them	5. дают точный контроль над тем,как будет работать компьютер.
6. give precise control over how the computer will serve.	6. последовательность символов, которая служит связующим звеном

b)

1. are near to how people communicate	1. преобразовать в машинный код для компьютера
2. this means that they're easier to program	2. ближе к словам, которые мы используем в нашей повседневной жизни
3. to restate them into machine code for a computer	3. это означает, что на них проще программировать
4. are closer to the words we use in our everyday lives	4. близки к тому, как люди общаются
5. as computers come more important	5. которые позволяют создавать различные эффекты
6. that allow you to do a variety of effects	6. по мере того как компьютеры приобретают все большее значение

c)

1. from data wisdom and machine literacy to web development	1. предопределенные объекты, которые можно вызвать из набора инструментов
2. small programs can be embedded in HTML code	2. могут быть легко адаптированы для использования в различных типах
3. predefined objects that can be named from a set of tools	3. реагировать на щелчок мыши

4. can run unchanged on any operating system	4. небольшие программы могут быть встроены в HTML-код
5. to respond to a mouse click	5. может работать без изменений в любой операционной системе
6. can be fluently acclimated for use in numerous different types	6. от знаний о данных и машинной грамотности до веб-разработки

10. Complete the sentences using the information in the right column.

a)	
1. Programming languages are the tools we use …	1. different classifications – low-level and high-level
2. Computers «speculate» in …	2. machine code or binary code
3. A programming language consists of a series of symbols that serve as	3. to write instructions for computers
4. Programming languages are divided into two …	4. that are closer to the words we use in our diurnal lives
5. Low- level programming languages are near to…	5. a link that allows people to restate our studies into instructions that computers can understand
6. The advantage of low- level languages is that …	6. binary strings of 1 and 0
7. High- level programming languages are near to …	7. they're fast and give precise control over how the computer will serve.
8. High Level Programming Languages use words (similar as object, order, prosecution, class, query, etc.) …	8. how people communicate.
b)	
1. The most popular programming languages …	1. to make it easy for people to learn how to program.
2. Python can be used in a wide variety of fields, …	2. that has a Java practitioner program.
3. HTML uses a tag system …	3. include the following:
4. Visual Basic uses the Drive language, a simple language designed …	4. for developing programs for the Windows operating system.
5. It is used to write general-purpose operations for …	5. programming small electronic bias similar as mobile phones.

6. Delpi also is programming medium …	6. the Windows operating system
7. Java is a programming language firstly developed for …	7. from data wisdom and machine literacy to web development, and is an excellent first language to learn.
8. It can run unchanged on any operating system …	8. to indicate page links and formatting
c)	
1. JavaScript allows you …	1. including virtual reality, software and game development, robotics and scientific computing
2. JavaScript is intended for …	2. data processing specialists.
3. C ++ is one of the most important programming languages and is used in a wide range of industry, …	3. data analysis and produce data visualization.
4. PHP is extensively used …	4. Apple's programming language.
5. R is a statistical programming language popular among …	5. server language.
6. It's used to answer questions with …	6. to produce web operations, develop games and mobile operations.
7. Swift is …	7. to develop operations for iOS and macOS.
8. It's necessary if you plan …	8. use inside web pages

11. Переведите слова и словосочетания, данные в скобках.

1. Computers «think» in (двоичных строках 1 и 0). 2. A programming language consists of a series of symbols (которые служат связующим звеном, позволяющим людям переформулировать исследования) into instructions that computers can understand. 3. Low-level programming languages (близки к машинному коду или двоичному коду). 4. The advantage of low-level languages is that (быстры и дают точный контроль над тем, как будет работать компьютер). 5. High-level programming languages are near to (как люди общаются). 6. High-level programming languages use words (similar as object, order, execution, class, query, etc.) (которые ближе к словам, которые мы используем в нашей повседневной жизни). 7. This means that they're easier to program in than low-level programming languages, (хотя для их преобразования в машинный код для компьютера требуется дополнительное время). 8. As a result, high-level programming languages (выполняют свою работу почти во всех сценариях). 9. (Существует множество языков программирования, которые позволяют создавать различные эффекты), from creating virtual reality to creating video games and much more.

12. Вставьте вместо точек слова, данные под чертой. Переведите предложения.

1. Programming languages are the tools we use to write …. 2. Computers "think" in …. 3. A programming language consists of a series of symbols that serve as … our studies into instructions that computers can understand. 4. Low-level programming languages are near to … . 5. The advantage of low-level languages is that … 6. High-level programming languages are near to …. 7. As a result, high- level languages do….

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they're fast and give precise control over how the computer will serve; how people communicate; binary strings of 1 and 0; a link that allows people to restate; machine code or binary code; their job almost in all scripts; instructions for computers.

13. Now read the texts again and answer these questions about special features of the languages.

1. Which language uses a system of tags?
2. Which languages are designed to be used inside webpages?
3. Which language was used to write the Windows operating system?
4. What is a 'movable' language?
5. Which language can have small programs embedded in it using JavaScript?
6. What does HTML stand for?
7. Which programming language to learn first?
8. Which languages can only be used in the Windows operating system?
9. Which language cannot be used for writing programs?
10. What programming language does fit your personal interests and strengths?

DATA STRUCTURE
UNIT VIII

1. Practice the pronunciation of the following words and word-combinations and memorize them.

1. abstract data types – абстрактные типы данных
2. abstraction [əbˈstrækʃn] абстракция
3. allocate [ˈæləkeɪt] распределять, назначать, размещать
4. array [əˈreɪ] массив, элемент массива, матрица
5. ascending [əˈsendɪŋ] возрастающий, восходящий
6. blueprint [ˈbluːˌprɪnt] – проект, план
7. compile time [kəmˈpaɪl taɪm] время компиляции
8. continuous manner – непрерывным образом
9. efficiency [ɪˈfɪʃnsɪ] эффективность, производительность, результативность
10. graph [grɑːf] диаграмма; граф
11. implementation [ɪmplɪmənˈteɪʃn] выполнение, реализация
12. indicate [ˈɪndɪkeɪt] указывать, означать, показывать
13. linear data structure – линейная структура данных
14. linked list [lɪŋkt lɪst] связанный список
15. queue [kjuː] очередь, очередность
16. reusability [riːjuːzəˈbɪlɪtɪ] возможность повторного использования
17. sequentially [sɪˈkwenʃəlɪ] последовательно
18. single value [sɪŋgl ˈvæljuː] единственное значение, единичное значение
19. stack [stæk] стек
20. update [ʌpˈdeɪt] обновлять

2. Read and translate the text.

What is Data Structure?

The data structure name indicates itself that organizing the data in memory. There are many ways of organizing the data in the memory and one of the data structures, for example, array in C language. Array is a collection of memory elements in which data is stored sequentially, i.e., one after another. In other words, we can say that array stores the elements in a continuous manner. This organization of data is done with the help of an array of data structures. There are also other ways to organize the data in memory. Let's see the different types of data structures.

To structure the data in memory, *'n'* number of algorithms were proposed, and all these algorithms are known as Abstract data types. These abstract data types are the set of rules.

There are two types of data structures: Primitive data structure and Non-primitive data structure. The primitive data structures are primitive data types. There are three distinct numeric types: integers, floating point numbers, and complex numbers. In addition, Booleans are a subtype of integers. Integers have unlimited precision.

The int[1], char[2], float[3], double[4], and pointer are the primitive data structures that can hold a single value. The non-primitive data structure is divided into two types: Linear data structure and Non-linear data structure.

The arrangement of data in a sequential manner is known as a linear data structure. The data structures used for this purpose are Arrays, Linked lists, Stacks, and Queues. In these data structures, one element is connected to only one another element in a linear form.

When one element is connected to the *'n'* number of elements it's known as a non-linear data structure. The best examples are trees and graphs. In this case, the elements are arranged in a random manner.

Data structures can also be classified as:

* Static data structure: It is a type of data structure where the size is allocated at the compile time. Therefore, the maximum size is fixed.
* Dynamic data structure: It is a type of data structure where the size is allocated at the run time. Therefore, the maximum size is flexible.

The major or the common operations that can be performed on the data structures are:

* Searching: We can search for any element in a data structure.
* Sorting: We can sort the elements of a data structure either in an ascending or descending order.
* Insertion: We can also insert the new element in a data structure.
* Updation: We can also update the element, i.e., we can replace one element with another element.
* Deletion: We can also perform the delete operation to remove the element from the data structure.

A data structure is a way of organizing the data so that it can be used efficiently. Here, we have used the word efficiently, which in terms of both the space and time. For example, a stack is an ADT (Abstract data type) which uses either arrays or linked list data structure for the implementation. Therefore, we conclude that we require some data structure to implement a particular ADT.

An ADT tells what is to be done and data structure tells how it is to be done. In other words, we can say that ADT gives us the blueprint while data structure provides the implementation part. Now the question arises: how can one get to know which data structure to be used for a particular ADT.

As the different data structures can be implemented in a particular ADT, but the different implementations are compared for time and space. For example, the Stack ADT can be implemented by both Array and linked

list. Suppose the array is providing time efficiency while the linked list is providing space efficiency, so the one which is the best suited for the current user's requirements will be selected.

Advantages of Data structures

The following are the advantages of a data structure:

* Efficiency: If the choice of a data structure for implementing a particular ADT is proper, it makes the program very efficient in terms of time and space.
* Reusability: The data structure provides reusability means that multiple client programs can use the data structure.
* Abstraction: The data structure specified by an ADT also provides the level of abstraction. The client cannot see the internal working of the data structure, so it does not have to worry about the implementation part. The client can only see the interface.

Int[1]

Целое, целочисленный тип данных, в информатике – один из простейших и самых распространенных типов данных в языках программирования. Служит для представления целых чисел.

char[2]

Символьный тип (Char) – тип данных, предназначенный для хранения одного символа (управляющего или печатного) в определённой кодировке. Может являться как однобайтовым (для стандартной таблицы символов), так и многобайтовым (к примеру, для Юникода).

float[3]

Число с плавающей запятой (или число с плавающей точкой).

double[4]

Число́ двойной точности (Double precision, Double) – компьютерный формат представления числа с плавающей запятой, занимающий в памяти 64 бита, или 8 байт. Как правило, обозначает числа с плавающей запятой стандарта IEEE 754.

3. Give answers to the following questions on the basis of the text.

1. How many types of data structures do you know?
2. What is the arrangement of data in a sequential manner?
3. What is a linear data structure?
4. What is non-linear data structure?
5. How can be classified data structures?
6. What are the major operations that can be performed on the data structures?
7. What do you know about ADT?
8. What are the advantages of a data structure?

4. Give English equivalents of the following:

само по себе указывает на; в которых данные хранятся последовательно; непрерывным образом; массив структуры данных; представляют собой набор правил; структуры данных, которые могут содержать одно

значение; последовательное расположение данных; один элемент связан только с одним другим элементом; деревья и графы; расположены случайным образом; статическая структура данных; размер которой выделяется во время компиляции; размер которой выделяется во время выполнения; основными или распространенными операциями; в порядке возрастания, либо в порядке убывания; можем обновить элемент; которое относится как к пространству, так и ко времени; для реализации либо массива, либо структуры данных связанного списка; ADT дает нам проект, в то время как структура данных обеспечивает реализацию; различные реализации сравниваются по времени и пространству; массив обеспечивает экономию времени; наилучшим образом соответствует требованиям; возможность повторного использования; внутренняя работа структуры данных

5. Give Russian equivalents of the following:

In which data is stored sequentially; stores the elements in a continuous manner; *'n'* number of algorithms were proposed; the set of rules; can hold a single value; Arrays, Linked list, Stacks, and Queues; one element is connected to only one another element in a linear form; the size is allocated at the compile time; at the run time; either in an ascending or descending order; update the element; so that it can be used efficiently; which uses either arrays or linked list data structure; ADT gives us the blueprint; can be implemented by both Arrays and linked list; for the current user's requirements; provides reusability means; the internal working of the data structure

6. Fit the meaning and the words:

1) something that is made to go into or inside something else	array
2) a group of objects that have been put in a particular order or position	implementation
3) to collect information from different places and arrange it in a book, report, or list	allocate
4) following a particular order	reusability
5) to go down or come down something	Stack
6) an abstract data type that serves as a collection of elements, with two main principal operations	descend
7) the use of existing assets in some form within the software product development process; these assets are products and by-products of the software development life cycle and include code, software components, test suites, designs and documentation	sequential

8) to give a particular amount of time, money, etc. to someone or something, so that it can be used in a particular way	arrangement
9) the act of starting to use a plan or a system	insertion
10) a data structure that stores a set of values identified by an index or a set of indexes that take integer (or integer-reduced) values from a given continuous range	compile

7. Match the words with the opposite meaning:

a) to indicate, sequentially, continuous, to propose, value, arrangement, random, flexible, to delete, efficiently, to require, particular, to compare, to select, internal

b) laboriously, to disapprove of, unspecified, to withhold, discontinuously, intermittent, to differentiate, to disregard, outward, to disapprove, insignificance, disarray, precise, resistant, to restore

8. Match the words with a similar meaning:

a) continuous, value, random, to allocate, compile, flexible, to replace, to remove, array, implementation, to conclude, to require, particular, to compare, efficiency, to select, advantage

b) to accumulate, elastic, to substitute, distinct, to correlate, competence, to choose, benefit, prolonged, significance, to get rid of , collection, fulfillment, to come to an end, to demand, incidental, to distribute

9. Match the equivalents to the word combinations given in the left column.

a)	
1. one of the data structures, for example, array in C language	1. размер выделяется во время компиляции, а максимальный размер фиксирован.
2. the arrangement of data in a sequential manner	2. основные или общие операции, которые могут быть выполнены со структурами данных
3. array stores the elements in a continuous manner	3. размер выделяется во время выполнения
4. the size is allocated at the compile time and the maximum size is fixed	4. массив хранит элементы непрерывным образом
5. the size is allocated at the run time	5. одна из структур данных, например, массив на языке Си.
6. the major or the common operations that can be performed on the data structures	6. расположение данных в последовательном порядке

b)	
1. a way of organizing the data so that it can be used efficiently	1. обеспечивает возможность повторного использования, что означает, что несколько клиентских программ могут использовать структуру данных.
2. which uses either arrays or linked list data structure for the implementation	2. ADT дает нам схему, в то время как структура данных обеспечивает часть реализации
3. tells what is to be done and data structure tells how it is to be done	3. способ организации данных таким образом, чтобы их можно было эффективно использовать
4. ADT gives us the blueprint while data structure provides the implementation part	4. указанный ADT также обеспечивает уровень абстракции
5. provides reusability means that multiple client programs can use the data structure	5. так что нет необходимости беспокоиться о части реализации.
6. specified by an ADT also provides the level of abstraction	6. указывает, что должно быть сделано, а структура данных указывает, как это должно быть сделано
7. so it does not have to worry about the implementation part.	7. который использует либо массивы, либо структуру данных связанного списка для реализации

10. Complete the sentences using the information in the right column.

a)			
1	The data structure name indicates itself …	1	Primitive data structure and Non-primitive data structure.
2	Array is a collection of memory elements in which …	2	a non-linear data structure.
3	In other words, we can say that …	3	is allocated at the run time.
4	To structure the data in memory, ‘n’ number of algorithms were proposed, and …	4	a linear data structure.
5	There are two types of data structures: …	5	is allocated at the compile time and the maximum size is fixed.
6	The arrangement of data in a sequential manner is known as …	6	that organizing the data in memory.

7	When one element is connected to the 'n' number of elements it's known as …	7	array stores the elements in a continuous manner.
8.	Static data structure is a type of data structure where the size …	8	data is stored sequentially, i.e., one after another.
9.	Dynamic data structure is a type of data structure where the size …	9	… all these algorithms are known as Abstract data types.
b)			
1.	The major or the common operations that can be performed on the data structures are: …	1.	… data structure provides the implementation part.
2.	A data structure is a way of organizing the data so that …	2.	… makes the program very efficient in terms of time and space.
3.	A stack is an ADT (Abstract data type) which uses either arrays or …	3.	… multiple client programs can use the data structure.
4.	An ADT tells what is to be done and data structure tells …	4.	Searching, Sorting, Insertion, Updation, Deletion.
5.	We can say that ADT gives us the blueprint while …	5.	… how it is to be done.
6.	If the choice of a data structure for implementing a particular ADT is proper, it …	6.	… it can be used efficiently.
7.	The data structure provides reusability means that …	7.	… linked list data structure for the implementation.

11. Вставьте вместо точек слова, данные под чертой. Переведите предложения.

1. There are many ways of organizing the data in the memory and … 2. Array is a collection of memory elements … …, i.e., one after another. 3. In other words, we can say that array… ….. 4. To structure the data in memory, *'n'* number of algorithms were proposed, and … …. 5. The int[1], char, float, double, and pointer are … … that can hold a single value. 6. The arrangement of data in a sequential manner is known as … …. 7. When one element is connected to the *'n'* number of elements it's known as …. 8. Static data structure is a type of data structure … …. 9. Dynamic data structure is a type of data structure where … … . 10. We can sort the elements of a data structure … … . 11. We can also update the element, i.e., … … . 12. We can also perform the delete operation … …. 13. A data structure is … … can be

used efficiently. 14. A stack is an ADT (Abstract data type) which uses … … for the implementation. 15. In other words, we can say that … … while data structure provides the implementation part. 16. As the different data structures can be implemented in a particular ADT, … … for time and space. 17. Suppose the array is providing time efficiency while … … so the one which is the best suited for the current user's requirements will be selected.

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where the size is allocated at the compile time; the size is allocated at the run time; either in an ascending or descending order; we can replace the element with another element; to remove the element from the data structure; a way of organizing the data so that it; either arrays or linked list data structure; ADT gives us the blueprint; but the different implementations are compared; the linked list is providing space efficiency; one of the data structures, for example, array in C language; in which data is stored sequentially; stores the elements in a continuous manner; all these algorithms are known as Abstract data types; the primitive data structures; a linear data structure; a non-linear data structure.

12. Переведите слова и словосочетания, данные в скобках и переведите предложения.

1. The data structure name (само по себе указывает на) that organizing the data in memory. 2. Array is a collection of memory elements (в которых данные хранятся последовательно), i.e., one after another. 3. In other words, we can say that (массив хранит элементы непрерывным образом). 4. (Для структурирования данных в памяти было предложено *n* алгоритмов), and all these algorithms are known as Abstract data types. 5. The int[1], char, float, double, and pointer are the primitive data structures (которые могут содержать одно значение). 6. (Последовательное расположение данных известно как) as a linear data structure. 7. The data structures used for this purpose are (Массивы, Связанные списки, Стеки и Очереди). 8. In these data structures, (один элемент связан только с одним другим элементом) in a linear form. 9. Static data structure is a type of data structure where the size (выделяется во время компиляции). 10. Dynamic data structure is a type of data structure where the size (выделяется во время выполнения). 11. A data structure is (это способ организации данных таким образом, чтобы) it can be used efficiently. 12. A stack is an ADT (который использует для реализации либо массивы, либо структуру данных) for the implementation. 13. An ADT (указывает что должно быть сделано) and data structure tells how it is to be done. 14. In other words, we can say that ADT gives us the blueprint (в то время как структура данных обеспечивает часть реализации). 15. As the different data structures can be implemented in a particular ADT, but (различные реализации сравниваются по времени и пространству). 16. For example, the Stack ADT can

be implemented (как с помощью массивов, так и связанного списка). 17. Suppose the array is providing time efficiency while the linked list is providing space efficiency, (поэтому будет выбран тот, который наилучшим образом соответствует требованиям текущего пользователя).

13. Read and give the adequate translation of the text.

Text 2

Data Warehousing

Data warehousing provides a solid foundation for consolidating historical, current and future data, allowing an organization to generate reports, conduct advanced analysis and do some data mining. Many businesses continuously collect large amounts of data. But in order to use that information, a functional set of processes and procedures must be put in place to make sense of it.

Whether you're a data warehouse developer or you're hearing the term data warehousing for the first time, understanding the basics of data warehousing – including what it means, how it's used and the benefits it can provide – is essential.

Once data is properly analyzed, it can be used to create a clearer picture of the positive and negative impacts that common trends and patterns have on an enterprise. That sounds simple enough, but ensuring that data is useful is one of the major challenges in data warehousing.

A data warehouse is a centralized storage unit (database) that defines and assembles data and all its in-depth details. These details might include information pertaining to an organization's customer base, service providers, suppliers, transactions or business processes through the use of an integrated data model.

Data warehousing pulls data from various sources that are made available across an enterprise; this data can then be analyzed in a variety of different ways. A data warehouse is an integrated, nonvolatile, time-variant and subject-oriented collection of information. What this means is that a data warehouse should achieve the following goals: capture and deliver access to business metadata; improve data quality and minimize generated report inconsistencies; integrate data from many different sources and provide for data sharing; increase the speed and performance of all reporting needs by merging historical and current data effectively and efficiently.

A data warehouse provides enhanced business intelligence techniques by taking data from various sources and allowing business users to quickly access critical data from one shared location. The type of data collected in a data warehouse is subject-oriented, integrated and identified or synchronized within a specific time period.

When it comes to data warehousing, there are four key types of data.

Nonvolatile data delivers operational updates that are not made available in the data warehouse environment. This is a separate unit of data that is transformed by the operational environment of a data warehouse. Nonvolatile data needs to be loaded and accessed initially, but it does not require any control mechanisms, recovery or transaction processing.

Time-variant data ensures that all information stored in the data warehouse is current and generated in real time. All key structures in the data warehouse contain an element of time by providing information from a horizon perspective, such as the past 5 to 10 years.

Subject-oriented data is organized based on a business's major subject categories, such as customers, sales, products and services. Subject orientation provides a simple and concise assessment of specified subject issues by focusing on the model and analyses of data that will be used by the organization's key decision makers.

Integrated data is made up of multiple, mixed sources, such as relational databases, online transaction records and flat files. Once the specified sources have integrated successfully, data cleaning is applied. This ensures consistency in attribute measures, naming conventions, encoding structures and key terms through data convention.

Statistical Software and Business Intelligence

Statistical software is also referred to as business intelligence (BI) software. For many companies, there is no specific software selection process, while others abide by a corporate standard or have a database or reporting tool already in place that just needs to be activated. The process used when selecting the appropriate analytical software begins with creating a BI strategy and complying with the overall business requirements already set in place.

Data Mining involves digging deep into data to produce useful insights to make evidence and fact-based decisions. In technical terms, data mining can be used to find correlations or patterns among various fields from within large relational databases. More specifically, it is the process of analyzing information from multiple perspectives and summarizing it into useful data. In a best-case scenario these insights can help a business cut costs, increase sales and influence other key performance indicators.

Data mining is a powerful technology that can be used to discover several different dimensions, categories and relationships that exist among different data sources and records. For example, in the retail sector, data mining could help a company recognize sales patterns and customer behavior, thus allowing them to exploit the information to their advantage. One infamous example is retailer Target's ability to determine which of its shoppers may be expecting, enabling the store to send coupons for baby items at a time when parents tend to begin shopping for them.

When integrating and applying data warehousing techniques, business analytics methodologies allow organizations to enhance their overall business strategies and allow for optimized decision making through the use of BI software. Analytics play a vital role in any organization, and many different procedures, including data mining and other various analytical methods, can be used to support and generate appropriate data collection services and marketing. New opportunities are explored through data warehousing techniques by improving customer service, simplifying inventory management, cross-promoting products that cater to individual customer needs, and providing critical product and service analysis.

Data warehousing is what allows organizations to find the answers to complex questions in large sets of data. That's the power of digital data collection and storage.

14. Give answers to the following questions on the basis of the text.

1. What Is Data Warehousing?
2. What goals should the Data Warehousing achieve?
3. What are data types?
4. What key data types do you know?
5. What is Statistical Software?
6. What does data mining involve?
7. Where is data mining used?
8. What is Data Warehousing in a nutshell?

15. Give the general idea of the text in English.

Text 3

1. Read and give the adequate translation of the text.

2. Divide the text into logical parts and give each part a subhead.

1. Most of the information we encounter in everyday life is structured in some way. The commonest example is the words of our language, which are linked together in phrases, sentences and other more complex structures. The rules for constructing these structures are extremely complicated, yet we apply them by intuition.
2. Other examples of structured information include dictionaries, telephone directories and encyclopedias. These are all large stores of information which would be useless if the information were not strictly arranged according to a few simple rules. The structure of a collection of information makes it easy to locate individual items of information, and to use new items, or delete items. The same reasoning applies to structured information stored in computers.
3. A pointer is a data item which indicates the location of another data item. It may be thought of as an arrow. Pointers are used to build data

structures. They provide the links which join elements of the structure. Of particular significance are pointers to the front and back of a data structures. Occasionally it is required that a pointer does not point to anything; in this situation, the pointer is said to have a null value.

4. A string is a sequence of characters regarded as a single data item. Strings may be of fixed or variable length. The length of a string is indicated either by the number of characters in the string placed at the front of the string, or by special character called an end-of-string marker at the end. Operations on strings are of two types: operations which join two or more strings to produce a single string, and operations which divide a string to produce two or more substrings.
5. An array is a set of data items of identical types, stored together. The number of elements in the array is fixed when the array is created. Each element is accessed by an index, which indicates the position of the element in the array. Arrays can have more than one dimension. A two-dimensional array may be thought of as having rows and columns like a matrix. Two indices are required to locate an item in the array, corresponding to row and column indices in a matrix.
6. An array is a static data structure, that is to say, it stays the same size once it has been created. Data structures which change in size once they have been created are called dynamic data structures. A string can be a static or a dynamic data structure. The structures introduced below are dynamic data structures; they generally require pointers for their implementation.
7. You have probably seen the way in which plates are sometimes stored in restaurants. A pile of plates is supported on a spring. As a new plate is put on the top of the pile, it pushes the rest down. When a plate is taken from the pile, the next plate pops up. Such a structure is a stack in the computing sense of the word. A stack is the collection of data items which may only be accessed at one end, called the top of the stack.
8. Only two operations may be carried out on a stack. Adding a new item, called pushing or stacking the item, involves placing it on the top of the stack. Removing an item involves popping it from the stack.
9. If a number of items are pushed onto a stack, and then popped from the stack, the last item added will be the first one removed. For this reason a stack is called a last-in-first-out (LIFO) stack. Other names for a stack are push-down stack and push-down list.
10. When a stack is stored in a computer memory, the elements do not move up and down as the stack is pushed and popped. Instead, the position of the top of the stack changes. A pointer called a stack pointer indicates the position of the top of the stack.
11. Another pointer is used to indicate the base of the stack. This pointer, called the stack base, keeps the same value as long as the stack is in existence.

12. The stack is the most important data structures in computing. Stacks are used in calculations, for translating from one computer language to another, and for transferring control from one part of a program to another.
13. Inspite of the American origin of many ideas associated with computers, that great British institution, the queue, has found its way into the theory of computing. Everyone knows how a queue works: newcomers join at the rear, service is provided at the front, and no pushing-in is allowed. Exactly the same rules apply to queues of data stored in a computer memory: data items are added at the back and removed from the front. A queue is a first-in-first-out (FIFO) data structure.
14. Although queues are used slightly less frequently than stacks, they do have a variety of applications. These include queuing data items in transit between a processor and a peripheral device, or intermediate points in a data communications network.
15. A list is a set of data items stored in some order. Data items may be inserted or deleted at any point of the list in this respect, a list is less restrictive than a stack or queue. The simplest way of implementing a list makes use of a pointer from each item to the one following it in the list. There is also a pointer to the start of the list, while the last item in the list has a null pointer.
16. A data structure of this type is also known as a linked list. A list element consists of a data item and its pointer. In many applications a list element contains a number of data items. Since elements can easily be added to the rear or removed from the front of the linked list, this structure may also be used to implement a queue. Inserting an element into a list is achieved by adjusting the pointers to include the new element. Removing an element is achieved in a similar way.
17. Data items in a list are in order, in the sense that one data item is behind another in the list. Lists are, however, frequently used in cases where the data items are in numerical or alphabetical order. Such lists are called ordered lists.
18. We are all familiar with the phrases ‘family tree’ and ‘getting to the top of the tree’. In this sense it is a structure implying a hierarchy, with each element of the tree being linked to elements below it.
19. Each data item in a tree is at a node of the tree. The node at the top of the tree is called the root. Each node may be connected to one or more subtrees, which also have a tree structure. A node at the bottom of the tree, which has no subtrees, is called a terminal node, or a leaf.
20. A number of operations may be carried out on trees. Two binary trees may be joined to an additional node, which becomes the root of a larger binary tree, with the original trees as subtrees. A tree may be traversed in several ways. Traversing a tree is accessing its elements in a systematic way.

21. Trees have a number of applications in computing. The modules of many programs are linked together in a tree structure. Trees are also used to represent arithmetic expressions, and for sorting and searching. Some computers regard their entire memory as if it were partitioned into a tree structure.
22. The essential feature of a tree is that each node is connected to subtrees, which themselves have the structure of a tree. In other words, wherever you are in a tree, the structure 'below' you is a tree. In this sense a tree is a recursive data structure, and can be manipulated by recursive programs. This is the property of trees that make them so important from a computing point of view.
23. A number of programming languages require that the type of each data item be declared before the data item used in a program.

3. Answer the questions:

1. The length of the strings may be defined in either of two ways. What terms are used?
2. Indicate the difference in behaviour between static and dynamic structures.
3. Explain the principles of LIFO.
4. By contrast, say what is meant by FIFO?
5. Why is it useful to think of a pointer as an arrow?
6. What do you understand by the term "null value"?
7. How do we indicate the length of a string?
8. Is it possible to vary the number of elements in an array?
9. In general terms, what do dynamic structures need in order to implement them successfully?
10. Name the different uses of stack.
11. Mention two applications of queues and say which you think are used more often, queues or stacks.
12. How is it that a list is more versatile or freer than either a stack or a queue?
13. In what way does a list resemble a queue?
14. How does one remove or insert an element into a list?
15. What is meant by an ordered list?
16. Mention two or three application of trees in computing.
17. What is it that must be stated before the data item can be used in a program?

SOFTWARE
UNIT IX

Text I

Software and types of software with examples

1. Read and give the adequate translation of the text.

At present, there are a plethora of high-tech technologies along with software accessible to the people. There are endless types of software which can be overwhelming for any person, especially who doesn't understand these different types of software. A software or computer software essentially is a type of programs which enable the users to perform some particular specific task or actually used to operate their computer. It essentially directs all the peripheral devices on the entire computer system- what exactly to do and how exactly to perform a task. Software plays a key role of a mediator between the user and the computer hardware. In the absence of software, a user essentially can't perform any task on a computer.

Generally, there are two main classifications of software, which are namely, *System Software* along with the *Application Software*. Let's discuss them.

System Software

In case of a system software, it helps the user as well as the hardware to function and even interact with each other easily. Essentially, it is a software which is used to manage the behaviour of the computer hardware in order to offer basic functionalities which are needed by the user. In simpler word, it can be said that system software is essentially an intermediator or even a middle layer between the user as well as the hardware.

These software sanctions an environment or platform for the other software to easily work in. Hence, it is the reason why the system software is quite important in the management of the entire computer system. Whenever you turn on the computer first, it is this system software which gets initialized and then gets loaded in the system's memory. System software essentially runs in the background, and it isn't actually utilized by the end-users. Due to this reason, the system software is also known popularly as "low-level software.

Few of the common system software examples are:

a. Operating System. Being a prominent example for system software, it is essentially a collection of software which handles resources as well as offers general services for various other applications which actually run over them. There are different types of operating systems like embedded, real-time, distributed, single-user, multi-user, mobile, internet and much

more. Full stack web development services develop apps to operate on a mobile operating system like Android and iOS. Some of the key examples of operating systems are as follows: MS Windows, macOS, Linux, iOS, Android, CentOS, Ubuntu, Unix

b. Device Drivers. This type of software controls particular hardware which is essentially attached to the system. Different hardware devices which require a driver to connect to a system easily consist of displays, printers, sound cards, hard disks, keyboard, and mice. Few of the examples of such drivers are: BIOS Driver, Motherboard Drivers, Display Drivers, ROM Drivers, Printer Drivers, USB Drivers, Sound Card Driver, VGA Drivers.

c. Firmware is actually a permanent software which is embedded in the system's read-only memory. It is essentially a set of instructions which are permanently stored onto to the hardware device. It offers vital information regarding how a particular device interacts with different other hardware. Some of the examples of firmware are: Computer Peripherals, Embedded Systems, UEFI, BIOS.

d. Utility. These software are designed to assist in analysing, as well as optimizing, along with configuring and maintaining a given computer system. It provides support to the computer infrastructure. Software like disk cleanup and management tools, anti-viruses, defragmenters, compression tools etc. are all utility software. Some of its examples are: Norton Antivirus, McAfee Antivirus, WinRAR, WinZip, Piriform CCleaner , Windows File Explorer, Directory Opus, Razer Cortex.

2. Application Software are also popularly known as end-user programs or even productivity programs which assist the user in completing various tasks like conducting online research, making notes, designing graphics, maintaining accounts, carrying out calculations or even playing computer games. They essentially lie above the system software. They are actually used by the end-user as well as have specific functionality or tasks which they are designed to perform. This software are often developed through custom software development, based on the requirements of the users. There is a variety of application software. Some of them are:

a. Word Processors. Such applications are meant for documentation. It also assists in storing as well as formatting and even printing of the documents. Key examples of such software are: MS Word, Apple iWork-Pages, Corel WordPerfect, Google Docs

b. Database Software is used to create as well as manage a database and also known as Database Management System or in short, DBMS. Such software assists in the data organization. Some of the examples of DBMS are: MS Access, FileMaker, dBase, Clipper, MySQL, FoxPro.

c. Multimedia Software is a software which is able to play, create as well as record images, audio or even video files. This software are utilized for animation, video editing, graphics as well as image editing. Due to the high

demand for such software, every software product development company has vast avenues in developing them. Some of the examples of such software are: Adobe Photoshop, Picasa, VLC Media Player, Windows Media Player, and Windows Movie Maker.

d. Web Browsers are utilized to browse the internet. Web browsers assist the users in locating as well as retrieving data well across the web. Some of the key examples of them are: Google Chrome, Mozilla Firefox, Internet Explorer, Opera, UC Browser, Safari.

2. Give answers to the following questions on the basis of the text.

1. What is software?
2. What role does software play?
3. What are the main classifications of software there are?
4. What software is used to control the behavior of computer equipment?
5. Name some common examples of system software
6. Where application software is used?
7. What application software do you know?

3. Give Russian equivalents of the following:

a plethora of high-tech technologies; can be overwhelming for any person; a mediator between the user and the computer hardware; to function and even interact; in order to offer basic functionalities; a middle layer between the user as well as the hardware; hence, it is the reason why; which gets initialized and then gets loaded; runs in the background; "low-level software; handles resources; run over them; embedded, real-time, distributed, single-user, multi-user, mobile, internet; require a driver to connect to a system easily; which is embedded in the system's read-only memory; permanently stored onto to the hardware device; along with configuring and maintaining; developed through custom software development; manage a database; Database Management System; retrieving data

4. Give English equivalents of the following:

бесконечное множество типов программного обеспечения; фактически используются для управления их компьютером; направляет все периферийные устройства во всей компьютерной; система играет ключевую роль посредника; системное программное обеспечение; прикладное программное обеспечение; легко функционировать и даже взаимодействовать друг с другом; проще говоря, можно сказать, что; является посредником или даже промежуточным звеном; для легкой работы другого программного обеспечения; следовательно, именно по этой причине; всякий раз, когда; работает в фоновом режиме; которые фактически работают над ними; такие как встроенные; по сути, подключено к системе; для простого подключения к системе; для оказания помощи в анализе,

а также оптимизации; ведение учетных записей; лежат выше системного программного обеспечения; основанной на требованиях пользователей; СУБД; из-за высокого спроса; находить и извлекать данные

5. Find the definitions.

1.	to use something in an effective way	intermediator
2.	the act or process of removing a dirty or dangerous substance, esp. when it has been left in the environment as a result of an accident	retrieving
3.	the act of making a computer file use less space when it is stored, using special software	database
4.	a computer system that does a particular task inside a machine or larger electrical system	application
5.	a computer program that is used to do a particular task	maintain
6.	a computer program or part of a computer program that can make copies of itself and is intended to prevent the computer from working normally	utilize
7.	to continue to have; to keep in existence, or not allow to become less	cleanup
8.	a computer program that is designed for a particular purpose	compression
9.	a large amount of information stored in a computer system in such a way that it can be easily looked at or changed	embedded systems
10.	to find and bring back something	utility
11.	between two other related things, levels, or points	virus

6. Match the equivalents to the word combinations given in the left column.

a)			
1.	software accessible to the people	1.	работает в фоновом режиме и фактически не используется конечными пользователями.
2.	to enable the users to perform some particular task	2.	предлагает общие услуги для других приложений, которые фактически работают над ними
3.	plays a key role of a mediator between the user and the computer hardware	3.	управлять поведением компьютерного оборудования

4.	to manage the behaviour of the computer hardware	4.	которое инициализируется, а затем загружается в системную память
5.	which gets initialized and then gets loaded in the system's memory	5.	играет ключевую роль посредника между пользователем и компьютерным оборудованием
6.	runs in the background	6.	программное обеспечение, доступное для людей
7.	offers general services for various other applications which actually run over them	7.	позволяют пользователям выполнять какую-то конкретную задачу
b)			
1.	full stack web development services develop apps	1.	встроено в системную память, доступную только для чтения
2.	which is essentially attached to the system.	2.	информация о том, как конкретное устройство взаимодействует с различными аппаратными средствами.
3.	devices which require a driver to connect to a system easily	3.	предназначены для оказания помощи при анализировании
4.	which is embedded in the system's read-only memory	4.	набор инструкций, которые постоянно сохраняются на аппаратном устройстве
5.	a set of instructions which are permanently stored onto to the hardware device	5.	сервисы веб-разработки с полным стеком разрабатывают приложения
6.	information regarding how a particular device interacts with different other hardware	6.	которое, по сути, подключено к системе
7.	are designed to assist in analysing	7.	устройства, которым требуется драйвер для простого подключения к системе
c)			
1.	which assist the user in completing various tasks	1.	используется для анимации, редактирования видео, графики, а также редактирования изображений

2.	lie above the system software	2.	имеет широкие возможности для их разработки
3.	assists in storing as well as formatting	3.	используется для просмотра Интернета.
4.	are utilized for animation, video editing, graphics as well as image editing	4.	которые помогают пользователю выполнять различные задачи
5.	has vast avenues in developing them	5.	лежат выше системного программного обеспечения
6.	utilized to browse the internet.	6.	помогает в хранении, а также в форматировании

7. Complete the sentences using the information in the right column and translate them.

a)			
1.	A software or computer software essentially is a type of programs which enable the users …	1.	gets initialized and then gets loaded in the system's memory
2.	It essentially directs all the peripheral devices on the entire computer system …	2.	it isn't actually utilized by the end-users
3.	Software plays a key role of a mediator between …	3.	platform for the other software to easily work in.
4.	In the absence of software, a user essentially can't …	4.	the hardware to function and even interact with each other easily
5.	There are two main classifications of software, which are namely, …	5.	the user and the computer hardware
6.	System software helps the user as well as …	6.	to perform some particular task or actually used to operate their computer.
7.	These software sanctions an environment or …	7.	perform any task on a computer
8.	Whenever you turn on the computer first, it is this system software which ..	8.	what exactly to do and how exactly to perform a task.
9.	System software essentially runs in the background, and …	9.	System Software along with the Application Software.
b)			
1.	Operating System is essentially a collection of software which …	1.	interacts with different other hardware.

2	There are different types of operating systems like …	2.	along with configuring and maintaining a given computer system.
3.	Device Drivers controls particular hardware which …	3.	all utility software.
4.	Different hardware devices which require a driver to connect to …	4.	embedded, , single-user, multi-user, distributed, real-time, mobile, internet and much more.
	Firmware is a permanent software which is embedded in …	5.	the system's read-only memory.
6.	It offers vital information regarding how a particular device …	6.	a system easily consist of displays, printers, sound cards, hard disks, keyboard, and mice.
7.	Utility is designed to assist in analysing, as well as optimizing, …	7.	is essentially attached to the system.
8.	Software like disk cleanup and management tools, anti-viruses, defragmenters, compression tools etc. are …	8.	handles resources as well as offers general services for various other applications which actually run over them.
c)			
1.	Application Software are also popularly known as end-user programs or even productivity programs …	1.	Database Management System or in short, DBMS.
2.	This software are often developed through …	2.	record images, audio or even video files.
3.	Word Processors are meant for documentation, storing, …	3.	image editing.
4.	Database Software is used to create as well as manage a database and also known as …	4.	retrieving data well across the web.
5.	Multimedia Software is a software which is able to play, create as well as	5.	formatting and even printing of the documents.
6.	This software is utilized for animation, video editing, graphics as well as …	6.	custom software development, based on the requirements of the users
7.	Web Browsers are utilized to …	7.	which assist the user in completing various tasks
8.	Web browsers assist the users in locating as well as …	8.	browse the internet.

8. Fill in the blanks to complete the sentences. Use the words given under the line.

1. A software or computer software essentially is a type of programs which enable the users … . 2. Software plays a key role of a mediator between … . 3. There are two main classifications of software, which are namely, … . 4. Software which is used to … in order to offer basic functionalities which are needed by the user. 5. Whenever you turn on the computer first, it is this system software which gets initialized and then … . 6. The system software is also known popularly as … . 7. Operating System is essentially a collection of software which handles resources as well as … . 8. Full stack web development services develop apps to operate on.. . 9. Different hardware devices which require a driver to connect to a system easily consist of … . 10. It is essentially a set of instructions which …. 11. It offers vital information regarding … different other hardware. 12. These software are … along with configuring and maintaining a given computer system. 13. They are actually used by the end-user as well as … which they are designed to perform. 14. It is used to create as well as manage a database and also known as … .

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how a particular device interacts with; displays, printers, sound cards, hard disks, keyboard, and mice; offers general services for various other applications which actually run over them; have specific functionality or tasks; Database Management System or in short, DBMS; manage the behavior of the computer hardware*; System Software* along with the *Application Software*; to perform some particular task or actually used to operate their computer; the user and the computer hardware; gets loaded in the system's memory; low-level software; a mobile operating system like Android and iOS; are permanently stored onto to the hardware device; designed to assist in analyzing, as well as optimizing.

9. Open the brackets translating from Russian into English.

1. At present, существует (множество высокотехнологичных технологий) along with software accessible to the people. 2. Software (играет ключевую роль посредника между пользователем) and the computer hardware. 3. Generally, there are two main classifications of software, which are namely, (Системное программное обеспечение и Прикладное программное обеспечение). 4. In case of a system software, (это помогает пользователю, а также аппаратному обеспечению) to function and even interact with each other easily. 5. Whenever you turn on the computer first, (именно это системное программное обеспечение инициализируется) and then gets loaded in the system's memory. 6. System software (по сути, работает в фоновом режиме), and it isn't actually utilized by the end-users.

7. Being a prominent example for system software, это, (по сути, набор программного обеспечения, которое обрабатывает ресурсы) as well as offers general services for various other applications which actually run over them. 8. (Службы веб-разработки с полным стеком) develop apps to operate on a mobile operating system like Android and iOS. 9. This type of software (управляет определенным оборудованием) which is essentially attached to the system. 10. (По сути, это набор инструкций, которые постоянно сохраняются на) the hardware device. 11. These software are designed to assist (в анализе, а также оптимизации, наряду с настройкой и обслуживанием) a given computer system. 12. (Они фактически используются конечным пользователем, а также имеют определенную функциональность) or tasks which they are designed to perform. 13. It also assists in (хранении, форматировании и даже печати документов). 14. (Программное обеспечение базы данных) assists in the data organization. 15. Due to the high demand for such software, every software product development company (имеет широкие возможности для их разработки). 16. Web browsers assist the users (находить и извлекать данные) well across the web.

10. Give the summary of the text I.

Text II

What software is and the types of software

1. Read the text and be ready to answer questions:

1. How can software be classified?
2. What do you know about Freeware? Give examples
3. What do you know about the Shareware?
4. What is the source code?
5. What types of software are available to users along with their source code?

However, there also exists another classification of the software. They can easily be classified on the basis of their availability as well as sharability. Their classification is as below:

1. Freeware

These software are available free of cost. A user can easily download them from the internet and can easily use them without paying any charges or fees. However, they don't provide any type of liberty to modify the entire software or charging a fixed fee for its distribution. A best software development company can develop its own freeware to reach out to more customers. Some of the examples of this software are: Adobe Reader, Skype, ImgBurn, Audacity, Team Viewer, Yahoo Messenger

2. Shareware

This software is distributed freely to users on a fixed trial basis. It generally comes with a set time limit, and on the expiration of the time limit, the user is finally asked to pay a fixed fee for the continued services. There are different types of shareware such as Freemium, Donationware, Adware, Demoware etc. Few of the examples of shareware are: Adobe Acrobat, PHP Debugger, WinZip, Getright

3. Open-source

Such types of software are usually available to users along with their source code which means that the user can easily modify and distribute the software as well as add additional features to them. They can either be chargeable or free. Few of the examples of such software are: Mozilla Firefox, Thunderbird, GNU Compiler Collection, Moodle, Apache Web Server.

Conclusion

With the increasing role of software in the daily lives of the people, full stack web development services are now offering the latest software to fulfill their demands. As we know, there are various types of software where the market of system software is already saturated with big players like Microsoft, Apple etc. while application software have stiff competition with established players and new players competing to gain the extra edge. Mentioned above is the explanation of what a software is and the types of software. A soft development company can venture into the development of any of these software to earn big profits.

2. Speak on the text II.

OPERATING SYSTEMS
UNIT X

1. Practice the pronunciation of the following words and word-combinations and memorize them.

1. access – доступ
2. compatible – совместимый
3. complex – сложный
4. consumer – потребитель
5. decade – декада, десятилетие
6. enhance – увеличивать, расширять
7. multiple users – многочисленные пользователи
8. on top of DOS – «сверху», на основе ДОС
9. realize – понять, осознать
10. ship – поставлять, доставлять
11. simultaneously – одновременно
12. smart – умный
13. version [ˈvɜ:.ʒən] версия
14. with a click of a mouse – одним щелчком кнопки мыши

Text I

2. Read and give the adequate translation of the text.

FIRST OPERATING SYSTEMS

When computers were first introduced in the 1940's and 50's, every written program had to provide instructions that told the computer how to use devices such as the printer, how to store information on a disk, as well as how to perform several other tasks not necessarily related to the program. The additional program instructions for working with hardware devices were very complex, and time-consuming. Programmers soon realized it would be smarter to develop one program that could control the computer's hardware, which other programs could have used when they needed it. With that, the first operating system was born.

Today, operating systems control and manage the use of hardware devices such as the printer or mouse. They also provide disk management by letting you store information in files. The operating system also lets you run programs such as the basic word processor. Lastly, the operating system provides several of its own commands that help you to use the computer.

DOS is the most commonly used PC operating system. DOS is an abbreviation for **disk operating system**. DOS was developed by a company

named Microsoft. MS-DOS is an abbreviation for «Microsoft DOS» When IBM first released the IBM PC in 1981, IBM licensed DOS from Microsoft for use on the PC and called it PC-DOS. From the user's perspective, PC-DOS and MS-DOS are the same, each providing the same capabilities and commands.

The version of DOS release in 1981 was 1.0. Over the past decade, DOS has undergone several changes. Each time the DOS developers release a new version, they increase the version number.

Windows NT (new technology) is an operating system developed by Microsoft. NT is an enhanced version of the popular Microsoft Windows 3.0, 3.1 programmes. NT requires a 386 processor or greater and 8 Mb of RAM. For the best NT performance, you have to use a 486 processor with about 16 Mb or higher. Unlike theWindows, which runs on top of DOS, Windows NT is an operating system itself. However, NT is DOS compatible. The advantage of using NT over Windows is that NT makes better use of the PC's memory management capabilities.

OS/2 is a PC operating system created by IBM. Like NT, OS/2 is DOS compatible and provides a graphical user interface that lets you run programs with a click of a mouse. Also like NT, OS/2 performs best when you are using a powerful system. Many IBM-based PCs are shipped with OS/2 preinstalled.

UNIX is a multi-user operating system that allows multiple users to access the system. Traditionally, UNIX was run on large computers to which users accessed the systems using terminals and not PC's. UNIX allowed each user to simultaneously run the programs they desired. Unlike NT and OS/2, UNIX is not DOS compatible. Most users would not purchase UNIX for their own use.

Windows 95 & 98 (Windows 2000) were the most popular user-oriented operating systems with a friendly interface and multitasking capabilities. Windows 95 and 98 are DOS compatible, so all programs written for DOS could work under that operating system.

Windows 95 requires 486 processor with 16 megabytes of RAM or Pentium 75–90 with 40 megabytes of free hard disk space.

3. Give answers to the following questions on the basis of the text.

1. What are the basic functions of operating system?
2. What does the abbreviation DOS mean? Who developed it?
3. What is Windows NT? What are its features?
4. What is OS/2? Who developed it? Could you compare NT and OS/2?
5. What is Unix? What is its difference from other OS?
6. What do you know about Windows 95, 98 (2000)?
7. Which operating systems are compatible with DOS?
8. What prompted the development of the first operating systems?

4. Give English equivalents of the following:

не обязательно связанных с программой; отнимали много времени; программисты вскоре поняли; обеспечивают управление дисками; позволяет запускать такие программы, как; сокращение от дисковой операционной системы; с точки зрения пользователей; каждый из которых предоставляет одни и те же возможности и команды; претерпела несколько изменений; для достижения наилучшей производительности; NT совместима с DOS; позволяет запускать программы одним щелчком мыши; также, как и NT, OS/2 работает лучше всего, когда; поставляются с предустановленной OS/2; получать доступ к системе; для собственного использования; с удобным интерфейсом и возможностями многозадачности; расширенная версия Windows 98.

5. Give Russian equivalents of the following:

every program written had to provide instructions; not necessarily related to the program; soon realized it would be smarter to develop one program; could have used when they needed it; by letting you store information; IBM first released the IBM PC; NT is an enhanced version; has undergone several changes; provides a graphical user interface; allows multiple users to access the system; to which users accessed the systems; allowed each user to simultaneously run the programs; would not purchase UNIX for their own use; the most popular user-oriented operating systems;

6. Fit the meaning and the words:

1) a connection between two pieces of electronic equipment, or between a person and a computer	time-consuming
2) the act of buying something	release
3) able to be used with a particular type of computer, machine, device, etc.	perspective
4) happening or being done at exactly the same time	enhanced
5) taking a lot of time to do or complete	compatible
6) to give freedom or free movement to someone or something	interface
7) to put a computer program onto a computer so that can use it	purchase
8) better than before	simultaneously
9) a piece of equipment consisting of a keyboard and screen, used for communicating with the part of a computer systems that deals with information	install
10) to compare something to other things so that it can be accurately and fairly judged	terminal

7. Match the words with the opposite meaning:

a) to compare, to free, accurately, to install, additional, complex, time-consuming, several, management, to enhance, compatible, to allow, to access, capability

b) to discharge, incompetence, uncomplicated, rapid, none, to disregard, to engage, mismanagement, to lessen, inconsistent, inexactly, to remove, mandatory

8. Match the words with a similar meaning:

a) equipment, deals with, instructions, device, to realize, management, several simultaneously, to complete, multiple, to require, to release

b) supervision, numerous, to demand, to liberate, facility, plural, at the same time, to accomplish, to concern, guidance, appliance, to recognize

9. Match the equivalents to the word combinations given in the left column.

a)

1. to perform several other tasks not necessarily related to the program	1. чтобы обеспечить управление дисками, позволяя вам хранить информацию в файлах
2. realized it would be smarter to develop one program	2. предоставлять те же возможности и команды
3. to provide disk management by letting you store information in files	3. позволяет запускать такие программы, как базовый текстовый процессор
4. lets you run programs such as the basic word processor	4. для выполнения нескольких других задач, не обязательно связанных с программой
5. provide the same capabilities and commands	5. чтобы выпустить новую версию, они увеличивают номер версии
6. to release a new version, they increase the version number	6. осознали, что было бы разумнее разработать одну программу

b)

1. NT is an enhanced version	1. позволяет лучше использовать возможности управления памятью ПК
2. which runs on top of DOS	2. одновременно запускает нужные им программы

3. makes better use of the PC's memory management capabilities	3. удобный интерфейс и возможности многозадачности
4. simultaneously runs the programs they desired	4. поставляются с предустановленной OS/2
5. a friendly interface and multitasking capabilities	5. NT – это улучшенная версия
6. are shipped with OS/2 preinstalled	6. работать в новой операционной системе
7. work under the new operating system	7. который работает поверх DOS

10. Complete the sentences using the information in the right column.

a)

1	Programmers soon realized it would be smarter to develop one program that could …	1	disk operating system.
2	Today, operating systems control and manage the use of …	2	increase the version number.
3	They also provide disk management by letting you …	3	control the computer's hardware, which others programs could have used when they needed it.
4	The operating system also lets you run programs such as …	4	use on the PC and called it PC-DOS.
5	Lastly, the operating system provides several of its own commands that …	5	the same capabilities and commands.
6	DOS is an abbreviation for …	6	hardware devices such as the printer or mouse.
7	When IBM first released the IBM PC in 1981, IBM licensed DOS from Microsoft for …	7	help you to use the computer
8.	From the user's perspective, PC-DOS and MS-DOS are the same, each providing …	8	the basic word processor.
9.	Each time the DOS developers release a new version, they …	9	store information in files.

b)

1	Windows NT (new technology) is …	1	better use of the PC's memory management capabilities.
2	NT is an enhanced version of the popular …	2	lets you run programs with a click of a mouse

3	For the best NT performance, you have to use …	3	you are using a powerful system.
4	Unlike theWindows, which runs on top of DOS, Windows NT is …	4	shipped with OS/2 preinstalled.
5	The advantage of using NT over Windows is that NT makes …	5	Microsoft Windows 3.0, 3.1 programmes.
6	Like NT, OS/2 is DOS compatible operating system and provides a graphical user interface that ...	6	an operating system itself.
7	Also like NT, OS/2 performs best when …	7	a 486 processor with about 16 Mb or higher.
8.	Many IBM-based PCs are …	8	an operating system developed by Microsoft.

c)

1	UNIX is a multi-user operating system that …	1	a friendly interface and multitasking capabilities.
2	Traditionally, UNIX was run on a larger mini computers to which users	2	even little kids learn how to use it very quickly
3	UNIX allowed each user to simultaneously run …	3	may work under the new operating system.
4	Unlike NT and OS/2, UNIX is …	4	allows multiple users to access the system.
5	Windows 95 & 98 (Windows 2000) are the most popular user-oriented operating systems with …	5	not DOS compatible.
6	The usage of Windows 95 and its enhanced version Windows 98 is so simple that …	6	the programs they desired.
7	Windows 95 and 98 are DOS compatible, so all programs written for DOS …	7	accessed the systems using terminals and not PC's.

11. Fill in the blanks to complete the sentences. Use the words given under the line. Translate these sentences into Russian.

1. Every program written had to provide instructions that told the computer … … , as well as how to perform several other tasks not necessarily related to

the program. 2. The additional program instructions for working with … , and time-consuming. 3. Programmers soon realized it would be smarter to develop one program …, which others programs could have used when they needed it. 4. They also provide disk management by … . 5. Lastly, the operating system … that help you to use the computer. 6. DOS is the most commonly used … . 7. From the user's perspective, … , each providing the same capabilities and commands. 8. Over the past decade, DOS … several changes. 9. Each time the DOS developers … , they increase the version number. 10. NT is … of the popular Microsoft Windows 3.0, 3.1 programmes. 11. Unlike the Windows, … , Windows NT is an operating system itself. 12. The advantage of using NT over Windows … the PC's memory management capabilities. 13. Like NT, OS/2 is DOS compatible and … … with a click of a mouse. 14. Many … OS/2 preinstalled. 15. UNIX is … … to access the system. 16. UNIX allowed each user … … they desired. 17. Windows 95 & 98 (Windows 2000) … … with a friendly interface and multitasking capabilities.

PC-DOS and MS-DOS are the same; has undergone; release a new version; an enhanced version; are the most popular user-oriented operating systems; how to use devices such as the printer, how to store information on a disk; provides a graphical user interface that lets you run programs; IBM-based PCs are shipped with; a multi-user operating system that allows multiple users; to simultaneously run the programs; hardware devices were very complex; that could control the computer's hardware; letting you store information in files; provides several of its own commands; PC operating system; which runs on top of DOS; is that NT makes better use of

12. Переведите слова и словосочетания, данные в скобках и переведите предложения.

1. The additional program instructions for working with hardware devices (были очень сложными и отнимали много времени).
2. Programmers soon realized что было бы разумнее разработать одну программу, (которая могла бы управлять аппаратным обеспечением компьютера), which others programs could have used when they needed it.
3. (Они также обеспечивают управление дисками) by letting you store information in files.
4. Lastly, the operating system provides several of its own commands (которые помогают вам использовать компьютер).
5. Over the past decade, (DOS претерпела несколько изменений).
6. Each time (когда разработчики DOS выпускают новую версию), they increase the version number.
7. The advantage of using NT over Windows is that что NT (лучше использует возможности управления памятью ПК).

8. Many IBM-based PCs (поставляются с предустановленной OS/2).
9. UNIX is a multi-user operating system that (позволяет нескольким пользователям получать доступ к системе).
10. Traditionally, (UNIX запускалась на главных компьютерах) to which users accessed the systems using terminals and not PC's.
11. UNIX allowed each user to (одновременно запускать нужные ему программы).

13. Speak on the text I.

Text II

14. Read and translate the text II.

How Operating Systems Work

The operating system of a computer or other device allows it to handle multiple tasks at once. When you turn on your computer, it's nice to think that you're in control. There's the trusty mouse, which you can move anywhere on the screen, summoning up your music library or internet browser at the slightest whim. Although it's easy to feel like a director in front of your desktop or laptop, there's a lot going on inside, and the real person behind the curtain handling the necessary tasks is the operating system

Microsoft Windows powers most of the computers we use for work or personal use. Macintosh computers come pre-loaded with macOS. Linux and UNIX operating systems are popular for digital content servers, but many distributions or distros, have become increasingly popular for everyday use. Regardless of your choice, without an operating system, you're not going to get anything done.

Other devices have their own operating systems. Google's Android and Apple's iOS are the most common smartphone OSes as of the 2020s, although some manufacturers have developed their own, mostly based on the Android operating system. Apple ships iPads with iPadOS, Apple watches with watchOS and Apple TV uses tvOS. And there are all kinds of other devices that have their own operating systems – think Internet of Things devices, smart TVs and the systems that run car infotainment systems. And that doesn't even include the complex systems needed in self-driving cars

The purpose of an operating system is to organize and control hardware and software so that the device it lives in behaves in a flexible but predictable way. In this article, we'll tell you what a piece of software must do to be called an operating system, show you how the operating system in your desktop computer works and give you some examples of how to take control of the other operating systems around you.

COMPUTER VIRUS
UNIT XI

1. Read the text and be ready to answer questions:

1. What do you know about computer viruses?
2. Have you ever encountered viruses?
3. How were you able to detect them?
4. Did you manage to remove viruses?
5. Have you been able to identify the type of virus?
6. What two examples of malware do you know?
7. How does the virus spread?

Text I

Computer viruses

A computer virus is malicious code that replicates by copying itself to another program, computer boot sector or document and changes how a computer works. A virus spreads between systems after some type of human intervention. Viruses replicate by creating their own files on an infected system, attaching themselves to a legitimate program, infecting a computer's boot process or infecting user documents. The virus requires someone to knowingly or unknowingly spread the infection. In contrast, a computer worm is standalone program that does not require human interaction to spread. Viruses and worms are two examples of malware, a broad category that includes any type of malicious code.

A virus can be spread when a user opens an email attachment, runs an executable file, visits an infected website or views an infected website advertisement, known as malvertising. It can also be spread through infected removable storage devices, such as Universal Serial Bus (USB) drives. Once a virus has infected the host, it can infect other system software or resources, modify or disable core functions or applications, and copy, delete or encrypt data. Some viruses begin replicating as soon as they infect the host, while other viruses will lie dormant until a specific trigger causes malicious code to be executed by the device or system.

Many viruses also include evasion or obfuscation capabilities designed to bypass modern antivirus and antimalware software and other security defenses. The rise of polymorphic malware development, which can dynamically change its code as it spreads, has made viruses more difficult to detect and identify.

2. Give English equivalents of the following:

вредоносный код; загрузочный сектор компьютера; после какого-либо вмешательства человека; вирусы размножаются, подключаясь к закон-

ной программе; заражая процесс загрузки компьютера; чтобы кто-то сознательно или неосознанно; компьютерный червь; два примера вредоносных программ;

известную как вредоносная реклама; зараженные съемные устройства хранения данных; накопители с универсальной последовательной шиной; зашифровать данные; другие вирусы будут находиться в состоянии покоя;

вызовет выполнение вредоносного кода устройством или системой; возможности уклонения или обфускации; для обхода современного антивирусного и антивирусного программного обеспечения; рост разработки полиморфных вредоносных программ; усложнил обнаружение и идентификацию вирусов.

3. Give Russian equivalents of the following:

malicious code; computer boot sector; some type of human intervention; replicate by creating their own files; standalone program; runs an executable file; removable storage devices; Universal Serial Bus drive; modify or disable core functions or applications; lie dormant until a specific trigger causes malicious code; obfuscation capabilities designed to bypass modern antivirus

4. Fit the meaning and the words:

1.	computer hardware or software able to operate independently of other hardware or software	replicate
2.	the use of online advertising to spread malware	intervention
3.	a process that encodes content (e.g., messages, files) to protect its confidentiality and integrity	legitimate
4.	computer software that is designed to damage the way a computer works	knowingly
5.	the protection of information against being stolen or used wrongly or illegally	standalone
6.	while understanding the meaning of what you are doing	malvertising
7.	the action of becoming intentionally involved in a difficult situation, in order to improve it or prevent it from getting worse	malware
8.	allowed according to law, or reasonable and acceptable	encrypt data
9.	to copy or repeat something	security

Text II

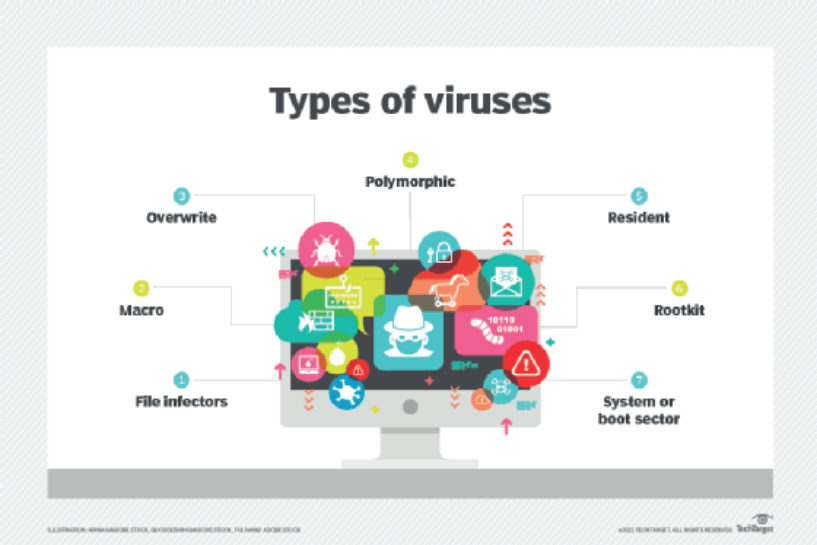
1. Practice the pronunciation of the following words and word-combinations and memorize them.

1. alter [ˈɒl.tər] – видоизменять
2. antimalware [æntɪməˈlweər] антивредоносный
3. antimalware software – антивирусное программное обеспечение
4. antivirus software [æntɪˈvaɪərəs ˈsɒftweər] антивирусное программное обеспечение
5. application's data – данные приложения
6. attachment [əˈtætʃmənt] приложение; вложение
7. boot disk virus – вирус загрузочного диска
8. bypass [ˈbaɪpɑːs] обходить
9. default [dɪˈfɔːlt] по умолчанию
10. destroy [dɪsˈtrɔɪ] уничтожать; сломать
11. disable [dɪsˈeɪbl] отключать, блокировать
12. disable macros – отключить макросы
13. disk OS(DOS) boot – загрузка дисковой ОС
14. embed [ɪmˈbed] встраивать, интегрировать
15. enable [ɪˈneɪbl] включить, задействовать, давать возможность
16. evade [ɪˈveɪd] избежать, обойти
17. executable code [ɪgˈzekjʊtəbl kəʊd] исполняемый код
18. execution [eksɪˈkjuːʃn] выполнение, осуществление
19. legitimate macro sequences – допустимые последовательности макросов
20. macro [ˈmækrəʊ] макрос; макроэлемент
21. malicious code [məˈlɪʃəs kəʊd] вредоносный; вредоносная программа
22. malware [ˈmælweər] вредоносная программа
23. master boot record (MBR)- главная загрузочная запись
24. mitigate [ˈmɪtɪgeɪt] устранять, облегчить, ослабить
25. random access memory [ˈrændəm ˈækses ˈmeməɪ] оперативное запоминающее устройство
26. rebooting the system – перезагрузка системы
27. residential virus – постоянно находящийся в оперативной памяти
28. scenario [sɪˈnɑːrɪəʊ] сценарий
29. security product [sɪˈkjʊərɪtɪ ˈprɒdʌkt] продукт безопасности
30. signatures of malware – сигнатуры вредоносных программ
31. system or boot sector viruses – вирусы системного или загрузочного секторов
32. threat detection products – продукты обнаружения угроз
33. trigger – запускать
34. unauthorized rootkit – несанкционированный руткит

35. underlying code – базовый код; основной код
36. USB thumb drives [sb θʌm draɪvz] USB-накопители; флэш-накопители USB
37. wholly contained programs – полностью автономные программы

2. Read and give the adequate translation of the text II.

Types of computer viruses



File infectors. Some file infector viruses attach themselves to program files, usually selected COM or EXE files. Others can infect any program for which execution is requested, including SYS, OVL, PRG and MNU files. When the infected program is loaded, the virus is loaded as well. Other file infector viruses arrive as wholly contained programs or scripts sent as an attachment to an email note.

Macro viruses. These viruses specifically target macro language commands in applications such as Microsoft Word and other programs. In Word, macros are saved sequences for commands or keystrokes that are embedded in the documents. Macro viruses, or scripting viruses, can add their malicious code to the legitimate macro sequences in a Word file. Microsoft disabled macros by default in more recent versions of Word; as a result, hackers have used social engineering to convince targeted users to enable macros and launch the virus.

Overwrite viruses. Some viruses are designed specifically to destroy a file or application's data. After infecting a system, an overwrite virus begins overwriting files with its own code. These viruses can target specific files or applications or systematically overwrite all files on an infected device. An overwrite virus can install new code in files and applications that programs them to spread the virus to additional files, applications and systems.

Polymorphic viruses. A polymorphic virus is a type of malware that has the ability to change or apply updates to its underlying code without changing its basic functions or features. This process helps a virus evade detection from many antimalware and threat detection products that rely on identifying signatures of malware; once a polymorphic virus's signature is identified by a security product, the virus can then alter itself so it will no longer be detected using that signature.

Resident viruses. This type of virus embeds itself in the memory of a system. The original virus program isn't needed to infect new files or applications. Even if the original virus is deleted, the version stored in memory can be activated when the operating system (OS) loads a specific application or service. Resident viruses are problematic because they can evade antivirus and antimalware software by hiding in the system's random access memory (RAM).

Rootkit viruses. A rootkit virus is a type of malware that installs an unauthorized rootkit on an infected system, giving attackers full control of the system with the ability to fundamentally modify or disable functions and programs. Rootkit viruses were designed to bypass antivirus software, which typically scanned only applications and files. More recent versions of major antivirus and antimalware programs include rootkit scanning to identify and mitigate these types of viruses.

System or boot sector viruses. These viruses infect executable code found in certain system areas on a disk. They attach to the disk OS (DOS) boot sector on diskettes and USB thumb drives or the master boot record (MBR) on hard disks. In a typical attack scenario, the victim receives a storage device that contains a boot disk virus. When the victim's OS is running, files on the external storage device can infect the system; rebooting the system will trigger the boot disk virus. An infected storage device connected to a computer can modify or even replace the existing boot code on the infected system so that, when the system is booted next, the virus will be loaded and run immediately as part of the MBR. Boot viruses are less common now as today's devices rely less on physical storage media.

3. Give answers to the following questions on the basis of the text.

1. What is a computer virus?
2. How does the virus spread between systems?
3. How do viruses reproduce?

4. What is a computer worm?
5. What does the virus do once the virus has infected the host?
6. What do many viruses include?
7. What has complicated the detection and identification of viruses?

4. Complete the sentences using the information in the right column.

a)			
1.	attach themselves to program files, usually selected COM or EXE files.	1.	отправляемых в виде вложения к сообщению электронной почты
2.	for which execution is requested	2.	нацелены на команды макроязыка в таких приложениях, как
3.	the infected program is loaded, the virus is loaded as well	3.	сохраненные последовательности команд или нажатий клавиш
4.	file infector viruses arrive as wholly contained programs	4.	загружается зараженная программа, загружается и вирус
5.	sent as an attachment to an email note	5.	прикрепляются к программным файлам, обычно к выбранным COM- или EXE-файлам
6.	target macro language commands in applications such as	6.	для которой запрашивается выполнение
7.	saved sequences for commands or keystrokes	7.	вирусы, заражающие файлы, поступают в виде полностью автономных программ
b)			
1.	can add their malicious code to the legitimate macro sequences	1.	который программирует их для распространения вируса на дополнительные файлы
2.	disabled macros by default in more recent versions	2.	который обладает способностью изменять или применять обновления к своему базовому коду
3.	have used social engineering to convince targeted users to enable macros	3.	могут быть нацелены на определенные файлы или приложения
4.	can target specific files or applications	4.	отключила макросы по умолчанию в более поздних версиях

5.	that programs them to spread the virus to additional files	5.	использовали схемы социальной инженерии, чтобы убедить целевых пользователей включить макросы
6.	has the ability to change or apply updates to its underlying code	6.	могут добавлять свой вредоносный код к допустимым последовательностям макросов
c)			
1.	to evade detection from many antimalware and threat detection products	1.	предоставляя злоумышленникам полный контроль над системой с возможностью фундаментального изменения или отключения функций
2.	virus can then alter itself so it will no longer be detected using that signature	2.	для обхода антивирусного программного обеспечения, которое обычно сканировало только приложения
3.	are problematic because they can evade antivirus and antimalware software	3.	избежать обнаружения многими средствами защиты от вредоносных программ и обнаружения угроз
4.	giving attackers full control of the system with the ability to fundamentally modify or disable functions	4.	включают сканирование на наличие руткитов для выявления и устранения этих типов вирусов
5.	to bypass antivirus software, which typically scanned only applications	5.	вирус может изменить себя так, что он больше не будет обнаруживаться с помощью этой сигнатуры.
6.	include rootkit scanning to identify and mitigate these types of viruses	6.	представляют собой проблему, поскольку они могут обойти антивирусное и антивирусное программное обеспечение

5. Complete the sentences using the information in the right column.

a)			
1	When the infected program is loaded, …	1	hackers have used social engineering to convince targeted users to enable macros and launch the virus.

2	Other file infector viruses arrive as wholly contained programs or …	2	to destroy a file or application's data.
3	Macro viruses specifically target macro language commands in applications such as …	3	systematically overwrite all files on an infected device
4	Macro viruses, or scripting viruses, can add their malicious code to …	4	to spread the virus to additional files, applications and systems
5	Microsoft disabled macros by default in more recent versions of Word; as a result, …	5	scripts sent as an attachment to an email note.
6	Overwrite viruses are designed specifically…	6	the virus is loaded as well.
7	These viruses can target specific files or applications or …	7	Microsoft Word and other programs
8.	An overwrite virus can install new code in files and applications that programs them …	8	the legitimate macro sequences in a Word file
b)			
1	Polymorphic virus is a type of malware that has the ability to change or apply updates to …	1	can then alter itself so it will no longer be detected using that signature.
2	This process helps a virus evade detection from many antimalware and threat detection products that …	2	the memory of a system.
3	Once a polymorphic virus's signature is identified by a security product, the virus …	3	by hiding in the system's random access memory (RAM).
4	Resident virus embeds itself in …	4	its underlying code without changing its basic functions or features.
5	Resident viruses are problematic because they can evade antivirus and antimalware software …	5	rely on identifying signatures of malware.
c)			
1.	A rootkit virus is a type of malware that installs an unauthorized rootkit on an infected system, giving attackers …	1.	executable code found in certain system areas on a disk.

2.	More recent versions of major antivirus and antimalware programs include …	2.	contains a boot disk virus.
3.	System or boot sector viruses infect	3.	full control of the system with the ability to fundamentally modify or disable functions and programs.
4.	In a typical attack scenario, the victim receives a storage device that …	4.	when the system is booted next, the virus will be loaded and run immediately as part of the MBR.
5.	An infected storage device connected to a computer can modify or even replace the existing boot code on the infected system so that, …	5.	rootkit scanning to identify and mitigate these types of viruses.

6. Translate the words and phrases given in parentheses.

1. (Некоторые вирусы, заражающие файлы) attach themselves to program files, usually selected COM or EXE files.
2. Other file infector viruses (поступают в виде полностью автономных программ или скриптов) sent as an attachment to an email note.
3. These viruses (специально нацелены на команды макроязыка) in applications such as Microsoft Word and other programs.
4. Macro viruses, or scripting viruses, can add their malicious code (к допустимым последовательностям макросов) in a Word file.
5. After infecting a system, an overwrite virus (начинает перезаписывать файлы своим собственным кодом).
6. An overwrite virus can install new code in files and applications (который программирует их для распространения вируса) to additional files, applications and systems.
7. A polymorphic virus is a type of malware (который обладает способностью изменять или применять обновления к своему базовому коду) without changing its basic functions or features.
8. Once a polymorphic virus's signature is identified by a security product, the (вирус может изменить себя так, что он больше не будет обнаруживаться) using that signature.
9. Resident viruses (представляют собой проблему) because they can evade antivirus and antimalware software (прячась в системной оперативной памяти).
10. A rootkit virus is a type of malware (которое устанавливает несанкционированный руткит в зараженную систем), giving attackers

full control of the system (с возможностью фундаментального изменения или отключения) functions and programs.

11. Rootkit viruses were designed (для обхода антивирусного программного обеспечения), which typically scanned only applications and files.
12. More recent versions of major antivirus and antimalware programs (включают сканирование на наличие руткитов для выявления и устранения) these types of viruses.
13. These viruses (заражают исполняемый код) found in certain system areas on a disk.
14. (Когда операционная система жертвы запущена), files on the external storage device can infect the system; rebooting the system will trigger the boot disk virus.

7. Insert the words given under the line instead of dots. Translate the sentences.

1. Others can infect any program for which …, including SYS, OVL, PRG and MNU files.
2. When the infected program is loaded, … as well.
3. Macro viruses, or scripting viruses, can add their malicious code to … in a Word file.
4. Microsoft disabled macros by default in more recent versions of Word; as a result, hackers have used social engineering … and launch the virus
5. These viruses can target specific files or applications or systematically … on an infected device.
6. This process helps a virus evade detection from many antimalware and threat detection products that … .
7. Even if the original virus is deleted, the version stored in memory can be activated when … or service
8. Resident viruses are problematic because … by hiding in the system's random access memory (RAM)
9. Rootkit viruses were designed to … , which typically scanned only applications and files.
10. System or boot sector viruses infect … on a disk.
11. An infected storage device connected to a computer can modify or … so that, when the system is booted next, the virus will be loaded and run immediately as part of the MBR.

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rely on identifying signatures of malware; the operating system (OS) loads a specific application; they can evade antivirus and antimalware software; bypass antivirus software; execution is requested; the virus is loaded; the legitimate macro sequences; to convince targeted users to enable macros;

overwrite all files; executable code found in certain system areas; even replace the existing boot code on the infected system

Text III

1. Read the text and answer the question: how does a computer virus spread?

The distinguishing characteristic of a virus is it spreads from system to system after a user takes some action that either intentionally or accidentally facilitates that spread. This spread is known as *virus propagation*, and there are many different techniques viruses can use to propagate between systems. The simplest example occurs when a virus is contained within an executable file that a user downloads from the internet, receives in an email message or copies from a removable storage device. As soon as the user executes that file, the virus springs into action, running malicious code that infects the user's system.

Other viruses can spread through more complex mechanisms. In those cases, a virus running on an infected system may take action to begin its own propagation. For example, a virus might copy itself to all removable media installed on a system, attach itself to email messages sent to a user's contacts or copy itself to shared file servers. In those cases, the lines become blurred between viruses, which require human assistance to spread, and worms, which spread on their own by exploiting vulnerabilities. The key difference is the virus will always require a human to take an action that enables that final step in the propagation process, while a worm does not require this human assistance.

Viruses can also spread between systems without ever writing data to disk, making them more difficult to detect with virus protection and virus removal mechanisms. These fileless malware viruses are often launched when a user visits an infected website and then run completely within the target system's memory, carrying out their malicious payload and then disappearing without a trace.

2. Give a two-minute summary of the text III.

Text IV

1. Read the text and be ready to give the general idea of the text in English.

How do computer viruses attack?

Virus propagation is only half the equation. Once a virus gains a foothold on a newly infected system, it begins to carry out whatever exploit the virus author designed it to perform. This is the payload delivery process, where the virus attacks the target system. Depending on the techniques the virus

uses and the privileges of the user who created the infection, the virus may be able to take any action it desires on the target system. This is one of the main reasons that security professionals encourage organizations to follow the principle of least privilege (POLP) and not grant users administrative rights on their own systems. This type of access can magnify the damage caused by a virus.

The payload a virus carries may violate one or more of the principles of cybersecurity: confidentiality, integrity and availability(CIA triad). Confidentiality attacks seek to locate sensitive information stored on the target system and share it with the attacker. For example, a virus might search the local hard drive (HD) for Social Security numbers, credit card numbers and passwords, and then funnel those back to the attacker. Integrity attacks seek to make unauthorized modifications or deletions of information stored on the system. For example, a virus might delete files stored on a system or make unauthorized modifications to the OS to avoid detection. Availability attacks seek to deprive the legitimate user access to the system or the information it contains. For example, ransomware is a type of virus that encrypts information on the user's HD, preventing legitimate access. It then demands the payment of a ransom in exchange for the decryption key.

Viruses may also join a system to a botnet, placing it under the control of the attacker. Systems joined to botnets are commonly used to conduct distributed denial of service (DDoS) attacks against websites and other systems.

2. Give English equivalents of the following:

распространение вируса; процесс доставки полезной нагрузки; выполнять любые действия, которые он пожелает; следовать принципу наименьших привилегий; увеличить ущерб, наносимый вирусом; полезная нагрузка; атаки на конфиденциальность; атаки на целостность; атаки на доступность; лишить законного пользователя доступа к системе; требует выплаты выкупа в обмен на ключ дешифрования; присоединять систему к ботнету, ставя ее под контроль злоумышленника; используются для проведения распределенных атак типа «отказ в обслуживании».

3. Give Russian equivalents of the following:

only half the equation; gains a foothold on a newly infected system; the payload delivery process; attacks the target system; encourage organizations; the principle of least privilege; not grant users administrative rights; magnify the damage; the payload a virus carries; CIA triad; locate sensitive information; unauthorized modifications; deprive the legitimate user; ransomware; the decryption key; encrypt information on the user's HD

4. Translate the following sentences from Russian into English:

1. Вирус может иметь возможность выполнять любые действия, которые он пожелает, в целевой системе.
2. Специалисты по безопасности рекомендуют организациям следовать принципу наименьших привилегий и не предоставлять пользователям административные права в своих собственных системах.
3. Полезная нагрузка, которую несет вирус, может нарушать один или несколько принципов кибербезопасности: конфиденциальность, целостность и доступность
4. Вирус может искать на локальном жестком диске номера социального страхования, номера кредитных карт и пароли, а затем передавать их обратно злоумышленнику.
5. Вирус может удалять файлы, хранящиеся в системе, или вносить несанкционированные изменения в операционную систему, чтобы избежать обнаружения.
6. Программа-вымогатель – это тип вируса, который шифрует информацию на жестком диске пользователя, предотвращая законный доступ.
7. Вирусы также могут присоединять систему к ботнету, ставя ее под контроль злоумышленника.

Text V

1. Read and translate the text.

The following measures can help you prevent a virus infection:

- Install current antivirus and antispyware software, and keep it up to date.
- Run daily scans of antivirus software.
- Disable autorun to prevent viruses from propagating to any media connected to the system.
- Regularly patch the OS and applications installed on the computer.
- Don’t click on web links sent via email from unknown senders.
- Don’t download files from the internet or email from unknown senders.
- Install a hardware-based firewall.

The following are indications that your computer might be infected by a virus:

- The computer takes a long time to start up, and performance is slow.
- The computer experiences frequent crashes or shutdown and error messages.
- The computer behaves erratically, such as not responding to clicks or opening files on its own.

- The computer's HD is acting strangely – for example, constantly spinning or making continual noise.
- Email is corrupted.
- The amount of storage on the computer is reduced.
- Files and other data on the computer have gone missing.

In the event your personal computer (PC) becomes infected with a virus, you can take the following steps to remove it:

1. Enter Safe Mode. The process will depend on the version of Windows you're running.
2. Delete temporary files. While in Safe Mode, use the Disk Cleanup tool to delete temporary files.
3. Download an on-demand and a real-time virus scanner.
4. Run the on-demand scanner followed by the real-time scanner. If neither scanner removes the virus, then it might need to be removed manually. This should only be done by an expert who is experienced at using Windows Registry and knows how to view and delete system and program files.
5. Reinstall any files or programs damaged by the virus.

2. Give answers to the following questions on the basis of the text.

1. How do you prevent computer viruses?
2. How do you remove a computer virus?
3. What are indications that you may be infected with a computer virus?

Text VI

1. Read the text and be ready to answer questions:

History of computer viruses

The first known computer virus was developed in 1971 by Robert Thomas, an engineer at BBN Technologies. Known as the Creeper virus, Thomas' experimental program infected mainframes on the Advanced Research Projects Agency Network (ARPANET), displaying the teletype message: "I'm the creeper: Catch me if you can."

The first computer virus to be discovered in the wild was Elk Cloner, which infected Apple II OSes through floppy disks and displayed a humorous message on infected computers. Elk Cloner, which was developed by 15-year-old Richard Skrenta in 1982, was designed as a prank, but it demonstrated how a potentially malicious program could be installed in an Apple computer's memory and prevent users from removing the program.

The term *computer virus* wasn't used until a year later. Fred Cohen, a graduate student at the University of Southern California (USC), wrote an academic paper titled "Computer Viruses – Theory and Experiments"

and credited his academic advisor and RSA Security co-founder Leonard Adleman with coining the term *computer virus* in 1983.

2. Give the general idea of the text VI in English.

Text VII

1. Read and give the adequate translation of the text.

Famous computer viruses

Notable examples of early computer viruses include the following:

- The **Brain virus**, which initially appeared in 1986, is considered to be the first Microsoft DOS (MS-DOS) PC virus. Brain was a boot sector virus. It spread through infected floppy disk boot sectors, and once installed on a new PC, it would install itself to the system's memory and subsequently infect any new disks inserted into that PC.
- The **Jerusalem virus**, also known as the **Friday the 13th virus**, was discovered in 1987 and spread throughout Israel via floppy disks and email attachments. The DOS virus would infect a system and delete all files and programs when the system's calendar reached Friday the 13th.
- The Melissa virus, which first appeared in 1999, was distributed as an email attachment. If the infected systems had Microsoft Outlook, the virus would be sent to the first 50 people in an infected user's contact list. This virus also affected macros in Microsoft Word and disabled or lowered security protections in the program.
- The **Archiveus Trojan**, which debuted in 2006, was the first known case of a ransomwarevirus that used strong encryption to encrypt users' files and data. Archiveus targeted Windows systems, used Rivest-Shamir-Adleman (RSA) encryption algorithms – whereas earlier versions of ransomware used weaker and easily defeated encryption technology – and demanded victims purchase products from an online pharmacy.
- The Zeus Trojan, or **Zbot**, one of the most well-known and widely spread viruses in history, first appeared in 2006 but has evolved over the years and continues to cause problems as new variants emerge. The Zeus Trojan was initially used to infect Windows systems and harvest banking credentials and account information from victims. The virus spreads through phishing attacks, drive-by downloads and man-in-the-browser. The Zeus malware kit was adapted by cybercriminals to include new functionality to evade antivirus programs, as well as spawn new variants of the Trojan, such as ZeusVM, which uses steganography techniques to hide its data.
- The **Cabir virus** is the first verified example of a mobile phone virus for the now-defunct Nokia Symbian OS. The virus was believed to be created by a group from the Czech Republic and Slovakia called 29A, who sent

it to a number of security software companies, including Symantec in the U.S. and Kaspersky Lab in Russia. Cabir is considered a proof-of-concept (POC) virus because it proves that a virus can be written for mobile phones, something that was once doubted.

2. Give the summary of the text.

WINDOWS
UNIT XII

Text I

1. Read and translate the text.

Windows

Microsoft Windows (or simply Windows) is a software program that makes your IBM PC (or compatible) easy to use. It does this by simplifying the computer's *user interface.*

The word *interface* refers to the way you give your computer commands, the way you interact with it.

Usually the interface between you and the computer consists of the screen and the keyboard: you interact with the computer by responding to what's on the screen, typing in commands at the DOS command line to do your work

DOS often isn't very intelligent at interpreting your commands and most people consider it awkward or intimidating as a user interface. These commands can be confusing and difficult to remember. Who wants to learn lots of computer commands just to see what's on your disk, copy a file, or format a disk?

Windows changes much of this. What's been missing from the PC is a program that makes the computer easy to use. Windows is just such a program. With Windows, you can run programs, enter and move data around, and perform DOS-related tasks simply by using the mouse to point at objects on the screen. Of course, you also use the keyboard to type in letters and numbers.

Windows interprets your actions and tells DOS and your computer what to do.

In addition to making DOS housekeeping tasks such as creating directories, copying files, deleting files, formatting disks, and so forth, easier, Windows makes running your favorite *applications* easier, too. (An application is a software package that you use for a specific task, such as word processing. WordPerfect is an example of an application).

Windows owes its name to the fact that it runs each program or document in its own separate *window*. (A window is a box or frame on the screen.) You can have numerous windows on the screen at a time, each containing its own program and/or document. You can then easily switch between programs without having to close one down and open the next.

Another feature is that Windows has a facility – called the Clipboard – that lets you copy material between dissimilar document types, making it easy *to cut* and *paste* information from, say, a spreadsheet into a company

report or put a scanned photograph of a house into a real estate brochure. In essence, Windows provides the means for seamlessly joining the capabilities of very different application programs. Not only can you paste portions of one document into another, but by utilizing more advanced document-linking features those pasted elements remain "live". That is, if the source document (such as some spreadsheet data) changes, the results will also be reflected in the secondary document containing the pasted data.

As more and more application programs are written to run with Windows, it'll be easier for anyone to learn how to use new programs. This is because all application programs that run in Windows use similar commands and procedures.

Windows comes supplied with a few of its own handy programs. There's a word-processing program called Write, a drawing program called Paintbrush, a communications program called Terminal for connecting to outside information services over phone lines, small utility programs that are helpful for keeping track of appointments and notes, a couple of games to help you escape from your work, and a few others.

Years of research went into developing the prototype of today's popular graphical user interfaces. It was shown in the early 1980s that the graphical user interface, in conjunction with a hand-held pointing device (now called the mouse), was much easier to operate and understand than the older-style keyboard-command approach to controlling a computer. A little-known fact is that this research was conducted by the Xerox Corporation and first resulted in the Xerox Star computer before IBM PCs or Macintoshes existed. It wasn't until later that the technology was adapted by Apple Computer for its Macintosh prototype, the Lisa.

2. Give English equivalents of the following:

это программное обеспечение, которое упрощает использование; вы взаимодействуете с компьютером; не очень хорошо интерпретирует ваши команды; запускать программы; в дополнение к упрощению домашних задач; программный пакет; пример приложения; легко переключаться между программами; еще одна особенность заключается в том, что; помещать отсканированную фотографию; предоставляет средства для беспрепятственного объединения возможностей; вставлять части одного документа в другой; результаты также будут отражены во вторичном документе; используют аналогичные команды и процедуры; коммуникационная программа; намного проще в управлении и понимании; малоизвестным фактом является то, что; эта технология была адаптирована; это было только позже, когда.

3. Give Russian equivalents of the following:

isn't very intelligent at interpreting your commands; consider it awkward or intimidating; In addition to making DOS housekeeping tasks; owes its name to

the fact that; housekeeping tasks such as creating directories; have numerous windows on the screen at a time; by utilizing more advanced document-linking features; in the secondary document containing the pasted data; supplied with a few of its own handy programs; as more and more application programs; It wasn't until later that; to help you escape from your work; small utility programs that are helpful for keeping track of appointments and notes

4. Fit the meaning and the words:

1) a noticeable or important characteristic or part	interface
2) a computer program that is designed for a particular purpose	supply
3) a computer program that is solid together with instructions on how to use it	utility programs
4) causing problems, worry, or embarrassment	feature
5) a computer program that is used to do a particular task	application
6) to provide something that is needed or wanted, or to provide someone with what the person needs or wants	software package
7) making you feel frightened or nervous	awkward
8) a connection between two pieces of electronic equipment, or between a person and a computer	intimidating

5. Match the words with the opposite meaning:

a) simply, compatible, to simplify, to refer, to respond, intelligent, awkward, to intimidate, to remember, to move, action, to delete, separate, dissimilar, to cut, seamlessly, to utilize, to reflect, to escape, to exist

b) joint, similar, to combine, inconsistently, hardly, incompatible, to withhold, to remain, to disappear, to complicate, to ignore, to disregard, to hang, illiterate, elegant, to forget, to stay, immobility, to restore, to abandon

6. Match the words with a similar meaning:

a) program, easy, to interact, screen, to interpret, to consider, to perform, application, to owe, feature, facility, to paste, capability, to remain, secondary, in conjunction, approach, to conduct, to adapt

b) attribute, attachment, to insert, to keep in touch, monitor, to describe, to deal with, to execute, appliance, to be obliged, capacity, to hold on, additional, in collaboration, technique, to carry, to adjust, application, relaxed

7. Match the equivalents to the word combinations given in the left column.

a)

1. you interact with the computer by responding to what's on the screen	1. считайте это неудобным или пугающим в качестве пользовательского интерфейса
2. confusing and difficult to remember	2. своим названием он обязан тому факту, что запускает каждую программу
3. makes the computer easy to use	3. множество окон на экране одновременно
4. consider it awkward or intimidating as a user interface	4. запутанный и трудный для запоминания
5. owes its name to the fact that it runs each program	5. вы взаимодействуете с компьютером, реагируя на то, что отображается на экране
6. numerous windows on the screen at a time	6. делает компьютер простым в использовании

b)

1. provides the means for seamlessly joining the capabilities	1. поставляется с несколькими собственными удобными программами
2. by utilizing more advanced document-linking features	2. в сочетании с портативным указательным устройством
3. as more and more application programs are written to run with Windows	3. чтобы помочь вам отвлечься от вашей работы
4. supplied with a few of its own handy programs	4. за счет использования более продвинутых функций связывания документов
5. utility programs that are helpful for keeping track of appointments	5. предоставляет средства для беспрепятственного объединения возможностей
6. to help you escape from your work	6. поскольку все больше и больше прикладных программ пишется для работы с Windows
7. in conjunction with a hand-held pointing device	7. служебные программы, которые полезны для отслеживания встреч

8. Complete the sentences using the information in the right column.

a)

1	Microsoft Windows (or simply Windows) is a software program that …	1	perform DOS-related tasks simply by using the mouse to point at objects on the screen.
2	The word interface refers to the way you …	2	it runs each program or document in its own separate window.
3	Usually the interface between you and the computer …	3	a specific task, such as word processing.
4	you interact with the computer by responding to what's on the screen, …	4	most people consider it awkward or intimidating as a user interface.
5	DOS often isn't very intelligent at interpreting your commands and …	5	consists of the screen and the keyboard
6	With Windows, you can run programs, enter and move data around, and …	6	makes your IBM PC (or compatible) easy to use
7	An application is a software package that you use for …	7	give your computer commands, the way you interact with it.
8.	Windows owes its name to the fact that …	8	typing in commands at the DOS command line to do your work

b)

1	You can then easily switch between programs without …	1	a few of its own handy programs
2	Windows provides the means for …	2	anyone to learn how to use new programs.
3	Not only can you paste portions of one document into another, but …	3	the Xerox Star computer before IBM PCs or Macintoshes existed.
4	As more and more application programs are written to run with Windows, it'll be easier for …	4	much easier to operate and understand than the older-style keyboard-command approach to controlling a computer.
5	Windows comes supplied with …	5	by utilizing more advanced document-linking features those pasted elements remain «live».

6	It was shown in the early 1980s that the graphical user interface, in conjunction with a hand-held pointing device (now called the mouse), was …	6	seamlessly joining the capabilities of very different application programs.
7	A little-known fact is that this research was conducted by the Xerox Corporation and first resulted in …	7	having to close one down and open the next.

9. Вставьте вместо точек слова, данные под чертой. Переведите предложения.

1. Usually the interface between you and the computer consists of …. 2. With Windows, you can run programs, enter and move data around, and perform … to point at objects on the screen. 3. An application is a software package that you use for …, such as word processing. 4. Windows owes its name to the fact that … in its own separate *window*. 5. You can have numerous windows on the screen at a time,… . 6. You can then easily switch between … one down and open the next. 7. Another feature is that Windows has a facility – called the Clipboard -…, making it easy *to cut* and *paste* information from, say, a spreadsheet into a company report or put a scanned photograph of a house into a real estate brochure. 8. Not only can you paste portions of one document into another, but by … those pasted elements remain "live". 9. That is, if the source document (such as some spreadsheet data) changes, the results will also be reflected in the secondary document containing the pasted data. 10. Windows comes supplied with a few of its own… .

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each containing its own program and/or document; programs without having to close; the screen and the keyboard; utilizing more advanced document-linking features; handy programs; DOS-related tasks simply by using the mouse; a specific task; it runs each program or document; that lets you copy material between dissimilar document types

10. Open the brackets translating from Russian into English.

1. Microsoft Windows (or simply Windows) is a software program (которая упрощает использование вашего IBM PC). 2. The word *interface* refers to the way (как вы отдаете команды своему компьютеру), the way you interact with it. 3. You interact with the computer (реагируя на то, что отображается на экране), typing in commands at the DOS command line to do your work. 4. DOS often isn't very intelligent at interpreting your commands and most people consider it (неудобным или пугающим в качестве пользовательского интерфейса). 5. Windows (обязана своим названием тому факту, что) it runs each program or document in its own separate *window*.

6. (У вас может быть несколько окон на экране одновременно), each containing its own program and/or document. 7. (Затем вы можете легко переключаться) between programs without having to close one down and open the next. 8. Another feature is that Windows has a facility – (называемое Буфером обмена)- that lets you copy material between dissimilar document types. 9. In essence, Windows provides the means (для плавного объединения возможностей) of very different application programs. 10. Not only can you paste portions of one document into another, (но и использовать более продвинутые функции связывания документов) those pasted elements remain "live". 11. Windows comes supplied with a few of its own handy programs. Windows поставляется с несколькими собственными удобными программами. 12. Years of research (ушли на разработку прототипа) of today's popular graphical user interfaces.

Text II

1. Practice the pronunciation of the following words and word-combinations and memorize them.

1. interact – взаимодействовать
2. accomplish – выполнять, достигать
3. weapon – оружие
4. replace – замещать
5. recycle bin – корзина
6. crash – ломаться, давать сбои
7. remove – удалять
8. co-workers – коллеги, сослуживцы
9. rarely – редко
10. plug – подключать
11. frequently – часто
12. support – поддержка
13. necessity – необходимость
14. flash – вспышка, зд. in a flash – моментально
15. give smth. a thought – подумать о чем- либо
16. brand-name – торговая марка
17. calm – спокойный
18. shortcut – кратчайший путь
19. sacrifice – жертвовать
20. advancement – прогресс, продвижение

2. Read and translate the text II.

Windows 95

Windows 95 is a new operational system with an easy interface based on the expanding windows principle which uses icons to graphically represent files and their types.

Windows 95 makes the way you and your computer interact easy. Most everyday tasks are now easier to accomplish than ever before. For example, the second mouse button has become a powerful weapon. The old Windows 3.0 Program Manager and File Manager have been replaced. The desktop tools that replace them are very like those found on a Macintosh. For example, there is a Recycle Bin that makes it easier to recover accidentally deleted files.

Your computer probably will crash less running Windows 95 than it did with Windows 3.1 and 3.0 or even DOS. Most memory related problems have been removed. Built-in networking features make it easy to reliably share files with co-workers across the room or across the world And MS-DOS as we know it is so well hidden that you'll rarely give it a thought. Yes, you can still run DOS programs and older Windows applications but most users will probably want to spend most of their time using Windows 95 applications instead.

Microsoft says that it is moving forward to the time *when* we'll all think more about our data and less about the specific name-brand programs used to create them.

Window 95 plug-and-play capability makes it easy to upgrade your computer hardware. And portable computer users will like what Microsoft has done to make their lives calmer.

A new Windows shortcuts capability makes it easy to reach frequently used files and other necessities. A new Find feature helps you to locate and examine the contents of files in a flash.

Most of this is accomplished without sacrificing performance. In fact, many things (like printing) usually happen faster now, due to 32-bit support and other Windows 95 advancements.

3. Give answers to the following questions on the basis of the text.

1. What is Windows 95?
2. What new principles are used in Windows 95?
3. What is a Recycle Bin feature?
4. What problems has Windows 95 solved?
5. Is it possible to run old DOS programs under Windows 95?
6. What is a «plug-n-play» capability?
7. What is a «shortcut» capability?
8. What is a «Find» feature?
9. Why many things work faster now with Windows 95?

Text III

1. Study the following words and word-combinations and memorize them.

1. Endpoint Manager – диспетчер конечных точек
2. FOD packages – пакеты с продуктами питания
3. IR cameras – ИК-камеры
4. Languages and Optional Features – "Языки и дополнительные функции"
5. Security baselines – базовые показатели безопасности
6. Snap Groups – группы привязки
7. Snap Layouts – привязка макетов
8. Taskbar [ˈtɑːskbər] панель задач
9. The Application Security [æplɪˈkeɪʃn sɪˈkjʊərɪtɪ] безопасность приложений
10. The Features on Demand – "Функции по требованию"
11. The security and privacy features – функции безопасности и конфиденциальности
12. The Windows Security app – приложение безопасности Windows
13. Updated Taskbar topic – обновленая тема панели задач
14. Windows Insider program Программа Windows Insider
15. Windows Server Update Services (WSUS) Службы обновления Windows Server
16. Windows Subsystem for Android- подсистема Windows для Android

2. Read and translate the text III.

Windows 11

Windows 11 is the client operating system, and includes features that organizations should know. Windows 11 is built on the same foundation as Windows 10. If you use Windows 10, then Windows 11 is a natural transition. It's an update to what you know, and what you're familiar with. It offers innovations focused on enhancing end-user productivity, and is designed to support today's hybrid work environment.

Only LIP languages distributed as .cabs can be used in manufacturing. 5 LIP languages are now available as .cabs.

The Features on Demand ISO has been replaced with the Languages and Optional Features ISO. This ISO includes FOD packages and languages packs.

Windows 11 has a new way to configure the apps that are pinned to the Start menu. Updated Taskbar topic to reflect changes to the Taskbar.

Gives guidance on how to create a custom wallpaper that is optimized for the Windows 11 experience.

New installations on compatible systems have memory integrity turned on by default, though device manufacturers and end users have the ultimate control of whether the feature is enabled. Covers the improved experience for users who work with multiple apps at a time.

The security and privacy features in Windows 11 are similar to Windows 10. Security for your devices starts with the hardware, and includes OS security, application security, and user & identity security. There are features available in the Windows OS to help in these areas. This section describes some of these features.

The **Windows Security** app is built into the OS. This app is an easy-to-use interface, and combines commonly used security features. For example, you get access to virus & threat protection, firewall & network protection, account protection, and more.

Security baselines include security settings that already configured, and ready to be deployed to your devices. If you don't know where to start, or it's too time consuming to go through all the settings, then you should look at Security Baselines.

The Application Security features help prevent unwanted or malicious code from running, isolate untrusted websites & untrusted Office files, protect against phishing or malware websites, and more.

Windows Hello for Business helps protect users and identities. It replaces passwords, and uses a PIN or biometric that stays locally on the device. Device manufacturers are including more secure hardware features, such as IR cameras and TPM[1] chips. These features are used with Windows Hello for Business to help protect user identities on organization devices.

Microsoft Teams is included with the OS, and is automatically available on the taskbar. Users select the chat icon, sign in with their personal Microsoft account, and start a call.

Snap Layouts, Snap Groups: when you open an app, hover your mouse over the minimize/maximize option. When you do, you can select a different layout for the app. This feature allows users to customize the sizes of apps on their desktop. And, when you add other apps to the layout, the snapped layout stays in place. When you add your apps in a Snap Layout, that layout is saved in a Snap Group. In the taskbar, when you hover over an app in an existing snap layout, it shows all the apps in that layout. This feature is the Snap Group. You can select the group, and the apps are opened in the same layout. As you add more Snap Groups, you can switch between them just by selecting the Snap Group.

Start menu: The Start menu includes some apps that are pinned by default. You can customize the Start menu layout by pinning (and unpinning) the apps you want. For example, you can pin commonly used apps, such as Outlook, Microsoft Teams and more.

Taskbar: You can also pin (and unpin) apps on the Taskbar. For example, you can pin commonly used apps, such as Outlook, Microsoft Teams and more.

Starting with Windows 11, users in the Windows Insider program can download and install **Android™ apps** from the Microsoft Store. This feature is called the **Windows Subsystem for Android**, and allows users to use Android apps on their Windows devices, similar to other apps installed from the Microsoft Store.

Users open the Microsoft Store, install the **Amazon Appstore** app, and sign in with their Amazon account. When they sign in, they can search, download, and install Android apps.

Your Windows 10 apps will also work on Windows 11.

In the **Settings** app > **Apps**, users can manage some of the app settings. For example, they can get apps anywhere, but let the user know if there's a comparable app in the Microsoft Store. They can also choose which apps start when they sign in.

Like Windows 10, Windows 11 receives monthly quality updates.

You have options to install updates on your Windows devices, including Endpoint Manager, Group Policy[2], Windows Server Update Services (WSUS), and more. Some updates are large, and use bandwidth. Delivery optimization helps reduce bandwidth consumption. It shares the work of downloading the update packages with multiple devices in your deployment. Windows 11 updates are smaller, as they only pull down source files that are different. You can create policies that configure delivery optimization settings. For example, set the maximum upload and download bandwidth, set caching sizes, and more.

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[1]**Trusted Platform Module** (**TPM**, also known as ISO/IEC 11889) is an international standard for a secure cryptoprocessor, a dedicated microcontroller designed to secure hardware through integrated cryptographic keys.

[2]**Group Policy** is a feature of the Microsoft Window NT family of operating systems (including Windows 7, Windows 8.1, Windows 10, Windows 11, and Windows Server 2003+) that controls the working environment of user accounts and computer accounts.

3. Give answers to the following questions on the basis of the text.

1. What's new in Windows 11?
2. What are the main differences between Windows 1 and Windows 10?
3. How does the Windows 1 protection system work?
4. Is it possible to install Android programs on Windows 11?
5. What are new customization options?
6. What is new in design?
7. What do you know about Windows Security?
8. What do Security baselines include?
9. What are the functions in Windows Hello for Business?

4. Give English equivalents of the following:

built on the same foundation as Windows 10; focused on enhancing end-user productivity; includes FOD packages and languages packs; has a new way to configure the apps that are pinned to; how to create a custom wallpaper; have memory integrity turned on by default; combines commonly used security features; you get access to virus & threat protection, firewall & network protection, account protection; security settings that already configured, and ready to be deployed to your devices; replaces passwords, and uses a PIN or biometric; hover your mouse over the minimize/maximize option; you add other apps to the layout; some apps that are pinned by default; you can pin commonly used apps; let the user know if there's a comparable app; helps reduce bandwidth consumption

5. Give Russian equivalents of the following:

естественный переход; инновации, направленные на повышение производительности конечных пользователей; способ настройки приложений; оптимизированных для работы с Windows 11; на совместимых системах целостность памяти включена по умолчанию; оохватывает улучшенный интерфейс для пользователей; аналогичны функциям Windows 10; безопасность операционной системы, безопасность приложений и безопасность пользователей и идентификационных данных; встроено в операционную систему; сочетает в себе часто используемые функции безопасности; готовы к развертыванию на ваших устройствах; ознакомиться с базовыми показателями безопасности; предотвратить запуск нежелательного или вредоносного кода, изолировать ненадежные веб-сайты и ненадежные файлы; использует PIN-код или биометрические данные; автоматически доступна на панели задач; макеты привязки, группы привязки; опцию свернуть / развернуть; выбрать другой макет для приложения; которые закреплены по умолчанию; загружать и устанавливать приложения; называется подсистемой Windows для Android; искать, загружать и устанавливать приложения для Android; помогает снизить потребление полосы пропускания; разделяет работу по загрузке пакетов обновлений; настраивают параметры оптимизации доставки; установите максимальную пропускную способность загрузки и выгрузки

6. Fit the meaning and the words:

1) to make or change something according to a customer's or user's particular needs	to deploy
2) the quality of being whole and complete	bandwidth
3) to put a computer program onto a computer so that the computer can use it	to configure

4) the process of buying and using goods, or the amount that is bought and used	features
5) a typical quality or an important part of something	consumption
6) to arrange or make changes to a computer system, a piece of computer equipment or software, etc. to make it able to do a particular task or work in a particular way	to install
7) the ability or time to deal with a situation, especially one that involves a large amount of information or a number of problems	integrity
8) computer software that is designed to damage the way a computer works	to customize
9) the way that something will happen or appear automatically, especially on a computer, if you do not make any different choices	phishing
10) to use something or someone, especially in order to achieve a particular effect	malware
11) an attempt to trick someone into giving information over the internet or by email that would allow someone else to take money out of their bank account	default

7. Match the words with the opposite meaning:

a) to include, foundation, transition, to update, familiar with, to support, to distribute, available, to replace, to pin, to reflect, to create, to optimize, compatible, integrity, default, ultimate, to enable, multiple, security

b) to weaken, unsuitable, dishonesty, advantage, auxiliary, to collect, engaged, to remove, to detach, to hide, to destroy, to refuse, single, vulnerability, to exclude, liquidation, stagnation, to ruin, incompetent, to abandon

8. Match the words with a similar meaning:

a) to improve, security, to combine, to deploy, to prevent, malicious, to isolate, phishing, malware, identity, hybrid, update, to enhance, to distribute, package, integrity, to enable, to prevent, to hover

b) to utilize, to avoid, infection, to **modernize,** similarity, combined, to boost, to hand out, box, honesty, to facilitate, to forbid, to drift, cruel, to disconnect, network fraud, to advance, protection, to collaborate

9. Match the equivalents to the word combinations given in the left column.

a)	
1. it's an update to what you know	1. включает в себя продуктовые наборы и языковые пакеты

2. innovations focused on enhancing end-user productivity	2. раздел панели задач для отражения изменений
3. only lip languages distributed as .cabs	3. в Windows 11 появился новый способ настройки приложений
4. includes FOD packages and languages packs	4. только языки LIP, распространяемые как .cabs
5. windows 11 has a new way to configure the apps	5. это обновление того, что вы знаете
6. taskbar topic to reflect changes	6. инновации, направленные на повышение производительности конечных пользователей
b)	
1. gives guidance on how to create a custom wallpaper	1. функции безопасности и конфиденциальности
2. on compatible systems have memory integrity turned on by default	2. охватывает улучшенный интерфейс для пользователей
3. covers the improved experience for users	3. простой в использовании интерфейс, сочетающий в себе часто используемые функции безопасности
4. the security and privacy features	4. безопасность операционной системы, безопасность приложений, безопасность пользователей и идентификационных данных
5. security for your devices starts with the hardware	5. дает рекомендации по созданию пользовательских обоев
6. OS security, application security, and user & identity security	6. безопасность ваших устройств начинается с аппаратного обеспечения
7. an easy-to-use interface, and combines commonly used security features	7. в совместимых системах по умолчанию включена целостность памяти
c)	
1. you get access to virus & threat protection, firewall & network protection, account protection	1. просмотр всех настроек занимает слишком много времени
2. already configured, and ready to be deployed	2. функции безопасности приложений помогают предотвратить запуск нежелательного или вредоносного кода

3. it's too time consuming to go through all the settings	3. ненадежные веб-сайты и ненадежные файлы office
4. the application security features help prevent unwanted or malicious code from running	4. производители устройств включают более безопасные аппаратные средства
5. untrusted websites & untrusted office files	5. настраивать размеры приложений на своем рабочем столе
6. device manufacturers are including more secure hardware features	6. уже настроен и готов к развертыванию
7. to customize the sizes of apps on their desktop	7. к защите от вирусов и угроз, брандмауэра и сетевой защите, защите учетных записей и многому другому

10. Complete the sentences using the information in the right column.

a)

1	Windows 11 is the client operating system, and includes …	1	device manufacturers and end users have the ultimate control of whether the feature is enabled.
2	If you use Windows 10, …	2	changes to the Taskbar.
3	It offers innovations focused on enhancing end-user productivity, and …	3	with the Languages and Optional Features ISO.
4	Only LIP languages distributed as .cabs …	4	features that organizations should know
5	The Features on Demand ISO has been replaced …	5	that are pinned to the Start menu.
6	Windows 11 has a new way to configure the apps …	6	can be used in manufacturing.
7	Updated Taskbar topic to reflect …	7	is designed to support today's hybrid work environment.
8.	New installations on compatible systems have memory integrity turned on by default, though …	8	then Windows 11 is a natural transition

b)

1	Covers the improved experience for users who …	1	virus & threat protection, firewall & network protection, account protection, and more.
2	Security for your devices starts with the hardware, and includes …	2	that already configured, and ready to be deployed to your devices.

3	The Windows Security app is an easy-to-use interface, and …	3 then you should look at Security Baselines.
4	For example, you get access to …	4 unwanted or malicious code from running, isolate untrusted websites & untrusted Office files, protect against phishing or malware websites, and more.
5	Security baselines include security settings …	5 combines commonly used security features.
6	If you don't know where to start, or it's too time consuming to go through all the settings, …	6 OS security, application security, and user & identity security.
7	The Application Security features help prevent …	7 work with multiple apps at a time.

c)

1	Windows Hello for Business helps …	that are pinned by default.
2	Snap Layouts, Snap Groups allow users …	as Outlook, Microsoft Teams and more
3	When you add your apps in a Snap Layout …	download and install Android™ apps from the Microsoft Store.
4	The Start menu includes some apps …	but let the user know if there's a comparable app in the Microsoft Store and also can choose which apps start when they sign in.
5	On Taskbar you can pin commonly used apps, such …	that layout is saved in a Snap Group.
6	Starting with Windows 11, users in the Windows Insider program can …	to customize the sizes of apps on their desktop.
7	In the Settings app > Apps, users can manage some of the app settings, can get apps anywhere, …	protect users and identities.

11. Вставьте вместо точек слова, данные под чертой. Переведите предложения.

1. Windows 11 has … that are pinned to the Start menu. 2. New installations on compatible systems have… , though device manufacturers and end users have the ultimate control of whether the feature is enabled. 3. Security for your devices starts with …, and user & identity security. 4. This app is an easy-to-use interface, and…. 5. The Application Security features help …,

isolate untrusted websites & untrusted Office files, protect against phishing or malware websites, and more. 6. These features are used with … user identities on organization devices. 7. In the taskbar, when you hover over an app in an existing snap layout, it… . 8. This feature is called the Windows Subsystem for Android, and allows users…, similar to other apps installed from the Microsoft Store. 9. Like Windows 10, … . 10.Windows 11 updates are smaller, as they only … .

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prevent unwanted or malicious code from running; Windows Hello for Business to help protect; shows all the apps in that layout; to use Android apps on their Windows devices; Windows 11 receives monthly quality updates; pull down source files that are different; a new way to configure the apps; memory integrity turned on by default; the hardware, and includes OS security, application security; combines commonly used security features;

12. Open the brackets translating from Russian into English.

1. It offers innovations (направленные на повышение производительности конечных пользователей), and is designed to support today's hybrid work environment.
2. The Features on Demand ISO has been replaced with ("Языки и дополнительные функции") ISO.
3. Windows 11 has a new way to configure the apps (прикрепленных к меню «Пуск»). В Windows 11 появился новый способ настройки приложений, прикрепленных к меню «Пуск».
4. (Содержит рекомендации по созданию пользовательских обоев) that is optimized for the Windows 11 experience.
5. New installations on compatible systems have (целостность памяти включена по умолчанию), though device manufacturers and end users have the ultimate control of whether the feature is enabled.
6. Security for your devices starts with the hardware, and includes (безопасность операционной системы, безопасность приложений), and user & identity security.
7. This app is an easy-to-use interface, and (сочетает в себе часто используемые функции безопасности).
8. For example, you get access (к защите от вирусов и угроз, брандмауэру и сетевой защите, защите учетных записей), and more.
9. Security baselines include security settings (которые уже настроены и готовы к развертыванию) to your devices.
10. The Application Security features help (предотвратить запуск нежелательного или вредоносного кода), isolate untrusted websites & untrusted Office files, protect against phishing or malware websites, and more.

11. Device manufacturers (включают более безопасные аппаратные средства), such as IR cameras and TPM chips.
12. Users (выбирают значок чата, входят в систему со своей личной учетной записью Майкрософт), and start a call.
13. In the taskbar, (выбирают значок чата, входят в систему со своей личной учетной записью Майкрософт), it shows all the apps in that layout.
14. You can customize the Start menu layout (закрепив (и открепив) нужные приложения).
15. Delivery optimization helps (снизить потребление полосы пропускания).
16. Windows 11 updates are smaller, (поскольку они удаляют только те исходные файлы) that are different.

Text IV

1. Read the text below, say what is new in Windows security.

Windows security

Security and privacy depend on the operating system, which protects the system and information from the moment it starts, providing fundamental protection from the chip to the cloud. Windows 11 is the most secure Windows with extensive security measures designed to ensure security. These measures include built-in advanced encryption and data protection, reliable network and system security, as well as intelligent protection measures against ever-changing threats. Let's analyze the main security innovations in Windows 11.

Hardware encryption capability. To keep sensitive data safe, Windows 11 isolates important system components behind additional protective barriers that are separate from normal processes. As a result, information such as encryption keys and user credentials is protected from unauthorized access and hacking. In Windows 11, hardware and software protect the operating system comprehensively, with virtualization-based security (VBS) and Secure Boot built in and enabled by default on new processors. Even if attackers enter the system, they will not gain access to the data.

Moving away from passwords. Windows Hello will also strengthen the protection of users. It replaces passwords and uses a PIN or biometric data (facial features, fingerprint, iris, etc.) that remain locally on the device. Windows Hello can also use more secure hardware features, such as IR cameras and TPM chips.

Furthermore, Windows services such as Azure Active Directory and Endpoint Manager will be used to remove passwords, create more secure policies, and ensure security compliance.

Trusted Platform Module (TPM). The Trusted Platform Module (TPM) is one of the most important security features in Windows 11. It is a chip

that protects sensitive data such as encryption keys, user credentials, etc., behind a hardware barrier. This module will help protect your computer from malware, ransom ware and other cyber-attacks. The TPM chip is added to the processor or integrated into the computer's motherboard. Microsoft has made the TPM the minimum requirement to run Windows 11. It turns out that you will be able to upgrade to Windows 11 only if your computer has embedded TPM chips.

Bitlocker Disk. Encryption BitLockeris a data protection feature that integrates into the operating system and prevents threats of data theft or disclosure of information on lost, stolen or improperly decommissioned computers. BitLocker provides maximum protection when used with a Trusted Platform Module (TPM) version 1.2 or higher.

Encrypted hard drive. The encrypted hard drive uses fasten cryption, which is provided by BitLocker drive encryption to enhance security and data management.

By transferring cryptographic operations to the hardware, the Encrypted Hard Drive feature improves Bit Locker performance and reduces CPU and power consumption. Thanks to the fact that the encrypted hard drives feature encrypts data quickly, the organization's devices can expand BitLocker deployments with minimal impact on performance.

PCs with a secure kernel. Personal computers with a protected kernel have an additional layer of security under the OS. They combine identity, virtualization-based security, an operating system, and hardware and firmware protection. Such computers are twice as resistant to malware infection and firmware attacks. In addition, a secure kernel allows users to boot securely, protect themselves from firmware vulnerabilities, block unauthorized access, etc.

2. Give answers to the following questions on the basis of the text

1. What does Windows Security and Privacy depend on?
2. Name the security measures in Windows.
3. What are the main security innovations in Windows 11?
4. How does Windows 11 hardware and software provide comprehensive protection of the operating system?
5. What software can help improve protection?
6. What protects sensitive data?
7. What improves Bit Locker performance and reduces CPU and power consumption?
8. What do you know about personal computers with a protected kernel?

3. Speak on the text IV.

NETWORK TYPES
UNIT XIII

1. Study the following words and word-combinations and memorize them.

1. composed of [kəmˈpəʊzd ɒv] состоит из; в составе
2. copper wire [ˈkɒpə ˈwaɪə] медный провод; медная проволока
3. encompass [ɪnˈkʌmpəs] охватывать, включать, затрагивать
4. Ethernet [ˈiːθərnt] локальная сеть, сеть Ethernet
5. fiber optic [faɪbə ˈɒptɪk] оптическое волокно; оптоволоконный
6. municipal computer network – муниципальная компьютерная сеть
7. physical proximity [ˈfɪzɪkəl prɒkˈsɪmɪtɪ] физическая близость
8. provision of access – предоставление доступа
9. Radio Frequency IDentification (RFID) Радиочастотная идентификация
10. remote areas [rɪˈməʊt ˈeərɪəz] удаленные районы, отдаленные участки
11. share resources [ˈʃeər rɪˈzɔːsɪz] совместное использование ресурсов
12. transmit [trænzˈmɪt] передавать, переносить
13. virtually [ˈvɜːʧʊəlɪ] практически, фактически

2. Read and translate the text.

Text I

Basic Network Types

Computer networks keep changing the way we live and do things in the 21st century. This is because virtually every computing activity or information sharing we do today depends on one form of network or another.

Computer networks are composed of interconnected computing devices that can exchange data and share resources with each other. Networking encompasses a wide range of methodologies and application areas. Let's pay attention to some of them.

A Personal Area Network (PAN) allows devices to exchange data over short distances. PAN combines devices such as mice, keyboards, printers, smartphones, tablets, etc. The most common connection technology is Bluetooth (the technology was named after the Viking king Harald I Bluetoothed, who united peoples in modern Denmark and Skåne).

PAN can also be created using other technologies that allow the exchange of data over short distances (for example, RFID – Radio Frequency

IDentification – a method of automatic identification of objects, in which data stored in transponders or RFID tags are read using radio signals).

A Local Area Network (LAN) is a computer network that typically covers a small area in one or more buildings.

The term "local" in this context refers to joint local management (does not necessarily mean the physical proximity of components to each other). A local area network can be a home network, a collection of computers and other devices in a small office or large enterprise.

Wired connections are widely used in THE LAN, most of which are made using copper wires, and some are fiber optic. Typically, wired networks operate at speeds from 100 Mbps to 1 Gbps. More modern LANs can operate at 10 Gbps. The most common wired connection standard is the IEEE 802.3 standard, commonly referred to as Ethernet.

In local area networks, along with wired technologies, wireless connections are widely used according to the IEEE 802.11 standard, better known as Wi-Fi. Wireless Wi-Fi networks operate at speeds ranging from a few tens to hundreds of megabits per second.

Metropolitan area networks (MAN) connect computers within a city. As an example, consider a cable television system in which, thanks to certain changes, it became possible to transmit digital data and, over time, the system turned into a municipal computer network.

A Wide Area Network (WAN) covers large areas, connects local networks that can be located in geographically remote areas. A wide area network is similar to a large wired local computer network, but there are important differences:

– management of local networks and provision of access to the interconnection of data transmission is carried out by various organizations;
– networks using different types of network technologies can be connected;
– with the help of communication channels, individual computers can communicate with local networks, or entire networks.

3. Give English equivalents of the following:

продолжают менять то, как мы живем; это связано с тем, что; состоят из взаимосвязанных вычислительных устройств; совместно использовать ресурсы друг с другом; сетевое взаимодействие; объединяет такие устройства, как; в честь короля викингов Харальда I Синезубого, который объединил народы в современной Дании и Сконе); радиочастотная идентификация; считываются с помощью радиосигналов; не обязательно означает физическую близость компонентов друг к другу; выполняются с использованием медных проводов, а некоторые – волоконно-оптических; с помощью каналов связи

4. Give Russian equivalents of the following:

keep changing the way we live; are composed of interconnected computing devices; encompasses a wide range of methodologies and application areas; to exchange data over short distances; in which data stored in transponders; refers to joint local management; large enterprise; commonly referred to as Ethernet; along with wired technologies; wireless connections are widely used according to the IEEE 802.11 standard; the system turned into a municipal computer network; in geographically remote areas.

5. Fit the meaning and the words:

1) a brand name for a system for connecting electronic equipment such as mobile phones, computers, and electronic organizers to each other and to the internet using radio signals	virtually
2) an electronic device that gives out a radio signal when it receives a similar signal telling it to	fiber optic
3) the process of sending digital or analog data over a communication medium to one or more computing, network, communication or electronic devices	transmit
4) a system for connecting computers into networks (groups of computers that are used together)	proximity
5) to broadcast something, or to send out or carry signals or messages using radio, television, etc.	transponder
6) a flexible, transparent fiber made by drawing glass (silica) or plastic to a diameter slightly thicker than of a human hair	data transmission
7) using computer technology over the internet, and not involving people physically going somewhere	Ethernet
8) the state of being near in space or time	Bluetooth

6. Match the equivalents to the word combinations given in the left column.

a)	
1. keep changing the way we live and do things	1. состоят из взаимосвязанных вычислительных устройств,
2. this is because virtually every computing activity or information sharing depends on one form of network or another	2. совместно использовать ресурсы друг с другом
3. are composed of interconnected computing devices	3. сетевое взаимодействие охватывает широкий спектр методологий и областей применения

4. share resources with each other	4. при котором данные, хранящиеся в транспондерах или RFID-метках, считываются с помощью радиосигналов
5. Networking encompasses a wide range of methodologies and application areas	5. продолжают менять то, как мы живем и что делаем
6. in which data stored in transponders or RFID tags are read using radio signals	6. это связано с тем, что практически каждая вычислительная деятельность или обмен информацией, которые мы делаем сегодня, зависят от
b)	
1. that typically covers a small area in one or more buildings	1. в локальной сети широко используются проводные соединения
2. refers to joint local management (does not necessarily mean the physical proximity of components to each other)	2. наряду с проводными технологиями, широко используются беспроводные соединения в соответствии с
3. wired connections are widely used in THE LAN	3. как правило, проводные сети работают со скоростью
4. typically, wired networks operate at speeds	4. которая обычно охватывает небольшую площадь в одном или нескольких зданиях
5. along with wired technologies, wireless connections are widely used according to	5. относится к совместному местному управлению (не обязательно означает физическую близость компонентов друг к другу)
c)	
1. operate at speeds ranging from a few tens to hundreds of megabits per second	1. стала возможной передача цифровых данных и со временем система превратилась в муниципальную компьютерную сеть
2. it became possible to transmit digital data and, over time, the system turned into a municipal computer network	2. Глобальная сеть похожа на большую проводную локальную компьютерную сеть

3. A wide area network is similar to a large wired local computer network	3. управление локальными сетями и предоставление доступа к соединению передачи данных осуществляется различными организациями
4. provision of access to the interconnection of data transmission is carried out by various organizations	4. работают со скоростью от нескольких десятков до сотен мегабит в секунду

7. Complete the sentences using the information in the right column and translate them.

1 Virtually every computing activity or information sharing we do today …	1 … typically covers a small area in one or more buildings.
2 Computer networks are composed of interconnected computing devices that …	2 … a home network, a collection of computers and other devices in a small office or large enterprise.
3 A Personal Area Network (PAN) allows devices …	3 … are made using copper wires, and some are fiber optic.
4 A Local Area Network (LAN) is a computer network that …	4 … from a few tens to hundreds of megabits per second.
5 A local area network can be …	5 … but there are important differences
6 Wired connections are widely used in THE LAN, most of which …	6 … depends on one form of network or another.
7 Wireless Wi-Fi networks operate at speeds ranging …	7 … can exchange data and share resources with each other.
8. A wide area network is similar to a large wired local computer network, …	8 …to exchange data over short distances.

Text II

1. Practice the pronunciation of the new words and memorize them.

1) Personal Area Network (PAN) – Персональная Сеть
2) Local Area Network (LAN) – Локальная Вычислительная Сеть
3) Metropolitan Area Network (MAN) – Сеть городских районов
4) Wide Area Network (WAN) – Глобальная сеть
5) Wireless LAN (WLAN) – Беспроводная локальная сеть
6) Virtual Private Network (VPN) – Виртуальная Частная Сеть

7) Storage Area Network (SAN) – Сеть хранения данных
8) Enterprise Internal Private Network – Внутренняя Частная сеть Предприятия
9) Campus Area Network – Сеть кампуса
10) System Area Network – Системная локальная сеть
11) Passive Optical Local Area Network (POLAN) – Пассивная Оптическая локальная вычислительная сеть

2. Read and translate the text II.

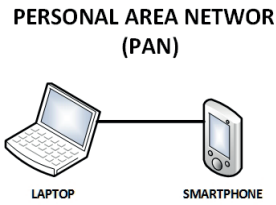
Different Types of Networks

The Internet is a very good example of a computer network that allows users to get information from any part of the world, using an internet-enabled device.

Depending on the type of communication you want to achieve, a networking device such as a router or switch is often used when designing a computer network.

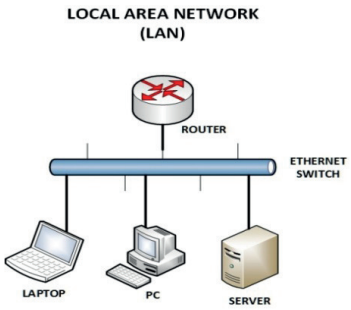
There are several types of computer networks that can be used for the purpose of data communication and information sharing. Let us take a look at the most popular types of networks available today.

1) Personal Area Network (PAN)



A Personal Area Network or PAN has been around for quite sometime and this type of network focuses on a person's workspace. A Personal Area Network handles data transmission within devices such as tablets, personal digital assistants, smartphones, and computers. Note that single users in most cases basically use this type of network. People make use of these types of networks commonly in situations where they need to connect wearable or mobile devices.

2) Local Area Network (LAN)

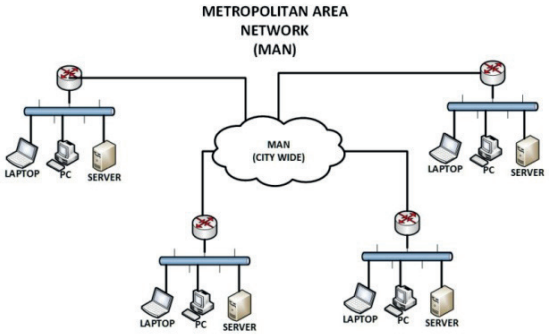


A Local Area Network or LAN as it's commonly known is a network that connects devices usually in the same building or local area. This could be computers or other devices that are within an office building, which are connected together to share resources.

Most people make use of this network type to share files and other business-related documents in an organization. A router is often used when multiple

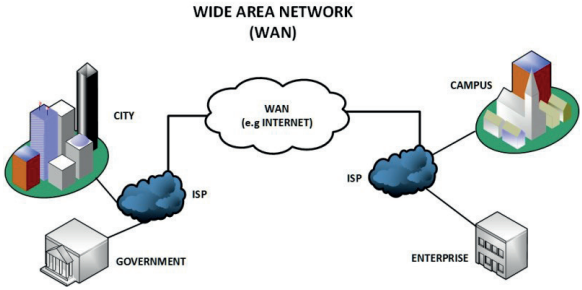
Local Area Networks need to be connected to each other. A LAN is probably the most commonly used computer network nowadays. A major component of a LAN network is a Layer2 Ethernet Switch which provides the actual communication between devices.

3) Metropolitan Area Network (MAN)



When it comes to the MAN network type, know that it is usually a large computer network on a large geographical area that includes several buildings and LANs, or even the entire city or metropolitan area. The geographical area of the MAN is larger than LAN, but smaller than WAN, which makes it fall in between a Local Area Network and a Wide Area Network.

4) Wide Area Network (WAN)



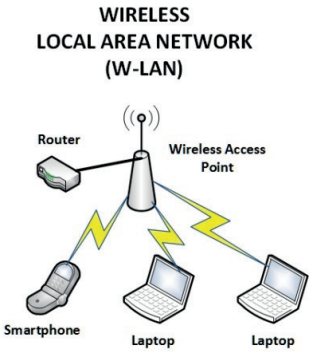
Unlike Local Area Networks and Metropolitan Area Networks, Wide Area Networks or WAN are networks that span over wide geographical locations, which could be multiple buildings or even multiple cities or countries.

This kind of network is suitable for providing Internet access to Local Area Networks or some other kinds of networks. Wide area network communications often require networking devices such as routers and modems for effective data communication.

Moreover, WANs are usually provided by ISPs which are interconnected to offer communication to wider areas. A WAN link is usually referring to a network interface that provides connection of the smaller network towards the bigger WAN network. A WAN link can be fiber optic, Ethernet Layer2 VPN, Layer 3 MPLS vpn etc.

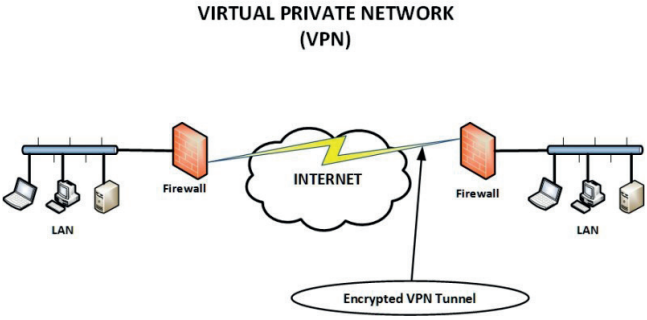
5) Wireless LAN (WLAN)

Unlike Local Area Network, a Wireless LAN network doesn't make use of a cable for end-to-end connectivity. A WLAN makes use of a Wireless Access Point (WAP) device, which serves as the point of connectivity for wireless clients on the network.



Keep in mind that this kind of network can support other devices such as smartphones and tablets. One of the advantages of using a WLAN network is the flexibility it offers users, since there is are cable restrictions.

6) Virtual Private Network (VPN)

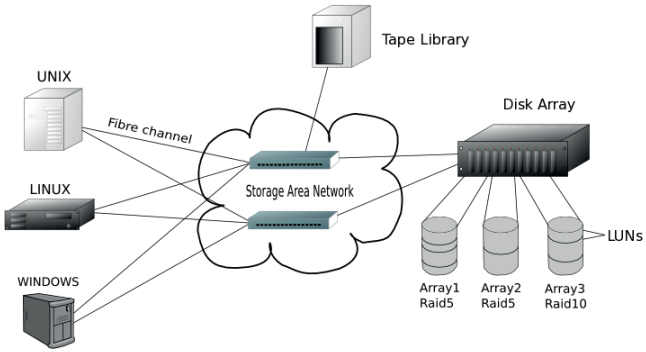


A Virtual Private Network is a type of network that makes use of existing private or public network infrastructure (e.g the Internet) to provide a secured network connection. This is often achieved by creating an encrypted tunnel for secured end-to-end connectivity. A Virtual Private Network uses data encryption techniques to provide security for files that are sent or received over the network. This is often used by organizations that have highly sensitive data to transfer.

Have in mind that a VPN is also used to connect LAN networks that are far away between them. For example, a company has different buildings (with

LAN networks) in different Cities and wants to interconnect the buildings over the Internet. A VPN will provide an ideal and cheap solution for such a case.

7) Storage Area Network (SAN)

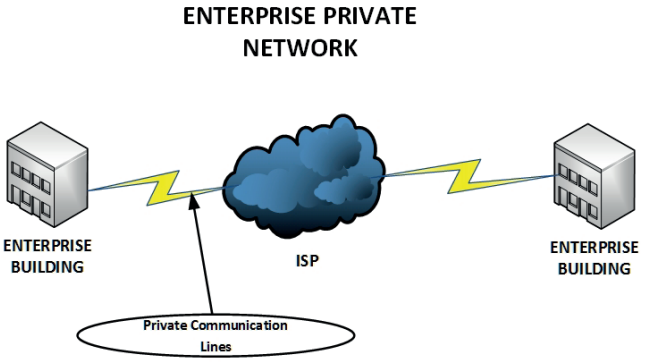


A Storage Area Network or SAN is a network that has been designed for storing and transferring files. This network setup is often made up of servers with large storage capacity and special switches and interface cards.

There are many reasons why any organization would make use of a Storage Area Network, and one of them is to provide a safe place for storing important files and for providing a fast network for backing up files.

Storage Area Networks are often designed to have high availability, because files must be accessible at any given time. Also, a SAN might not use the classical TCP/IP used in other computer networks but some special protocols such as Fiber Channel Protocol, SCSI over FCP etc.

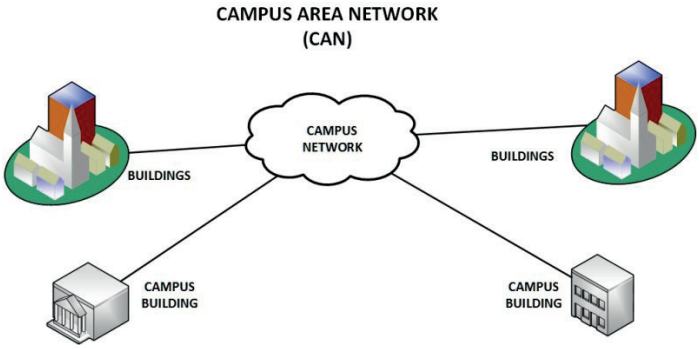
8) Enterprise Internal Private Network



An Enterprise Internal Private Network is a type of network that is designed for private communication within an organization. This type of network is only accessible from within the enterprise since its major goal is to provide security for users within the organization. A firewall is often used when users need to access information on the Internet.

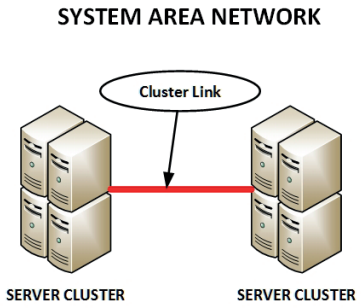
Although it's a private network, it does not mean that its only available within a building. It can span several buildings using private communication lines.

9) Campus Area Network



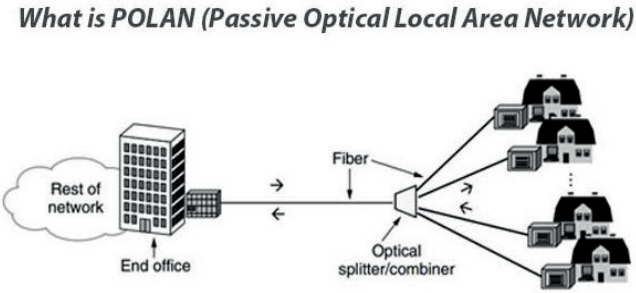
Campus Area Networks are basically made up of several Local Area Networks, which are often within a campus area. Campus Area Networks are used in places such as hospitals, schools, universities or any organization that has multiple LANs and buildings that need to connect to each other to share resources.

10) System Area Network



A System Area Network is a network that is designed to work in parallel computing environments; it connects computers that are in a High Performance Computing setting. These are often used where high processing is needed. Computer clusters make use of System Area Networks to achieve connectivity. The major difference here is the distance in between the computers on the network, which is often a short distance.

11) Passive Optical Local Area Network (POLAN)



POLAN technology can act as an alternative to standard switched Ethernet LOCAL networks. It can seamlessly integrate into structured cables and overcome the challenges of supporting traditional Ethernet protocols and network applications such as PoE (Power over Ethernet). POLAN's multicast LAN architecture uses optical splitters to separate an optical signal from a single strand of single-mode optical fiber into multiple signals to serve users and devices.

Text III

1. Study the following words and word-combinations and memorize them.

1. authentication [ɔːθentɪˈkeɪʃn] идентификация, аутентификация
2. availability [əveɪləˈbɪlɪtɪ] доступность
3. compromised [ˈkɒmprəmaɪzd] скомпрометированный
4. denial [dɪˈnaɪəl] отказ, отрицание, опровержение
5. eavesdroppers [ˈiːvzdrɒpə] подслушивающие устройства
6. encryption [ɪnˈkrɪpʃn] шифрование, кодирование, шифрование данных
7. intruder [ɪnˈtruːdə] злоумышленник, хакер, взломщик
8. invisibility [ɪnvɪzəˈbɪlɪtɪ] невидимость, незаметность, скрытость
9. physical boundary limitations физические ограничения
10. piggybackers [piggybackers] копилки
11. prone [prəʊn] склонный, подверженный, предрасположенный
12. security breaches нарушение безопасности
13. susceptible [səˈseptəbl] восприимчивый
14. vulnerability [vʌlnərəˈbɪlɪtɪ] уязвимость, чувствительность
15. confidential data [kɒnfɪˈdenʃəl ˈdeɪtə] конфиденциальные данные, секретные данные
16. illegitimate access [ɪlɪˈʤɪtɪmɪt ˈækses] незаконный доступ

17. security threats [sɪˈkjʊərɪtɪ θrets] угрозы безопасности
18. unauthorized access [ʌnˈɔːθəraɪzd ˈækses] несанкционированный доступ
19. MAC spoofing – подмена MAC-адресов
20. session hijacking [seʃn ˈhaɪʤækɪŋ] перехват сеанса
21. eavesdropping [ˈiːvzdrɒpɪŋ] прослушивание, прослушка; перехват сообщений
22. exceed [ɪkˈsiːd] превышать, превосходить, составлять, перевыполнять
23. Wired Equivalent Privacy – Проводная Эквивалентная Конфиденциальность
24. decrypt [diːˈkrɪpt] расшифровать, дешифровать, декодировать
25. WPA/WPA2 (WI-FI Protected Access) защищенный доступ по WI-FI
26. Temporal Key Integrity Protocol – Протокол целостности временного ключа
27. temporal encryption key – временный ключ шифрования
28. data integrity [ˈdeɪtə ɪnˈtegrɪtɪ] целостность данных, обеспечение целостности данных
29. robust hashing mechanism – надежный механизм хеширования
30. Wireless Intrusion Prevention Systems – Беспроводные Системы Предотвращения Вторжений
31. Intrusion Detection System [ɪnˈtruːʒən dɪˈtekʃn ˈsɪstɪm] система обнаружения вторжений
32. rogue access points [rəʊg] несанкционированные точки доступа
33. hoc networks – специальные сети
34. advanced implementations – продвинутые реализации

2. Read and translate the text III.

What Does Wireless Local Area Network Security (WLAN Security) Mean?

Wireless local network security (WLAN security) is a security system designed to protect networks from the security breaches to which wireless transmissions are susceptible. This type of security is necessary because WLAN signals have no physical boundary limitations, and are prone to illegitimate access over network resources, resulting in the vulnerability of private and confidential data. Network operations and availability can also be compromised in case of a WLAN security breech. To address these issues, various authentication, encryption, invisibility and other administrative controlling techniques are used in WLANs. Business and corporate WLANs in particular require adequate security measures to detect, prevent and block piggybackers, eavesdroppers and other intruders.

Wireless Local Area Network Security (WLAN Security)

Security has remained a major concern in WLANs around the globe. While wireless networks provide convenience and flexibility, they also increase network vulnerability. Security threats such as unauthorized access, denial of service attacks, IP and MAC spoofing, session hijacking and eavesdropping can all be problems for WLANs. To counter these threats, various standard authentication and encryption techniques are combined with other access control mechanisms. These protocols, devices and techniques collectively secure the WLAN a level that equals and even exceeds wired LAN security. Some of the technologies employed in WLAN security include:

- Wired Equivalent Privacy (WEP): An old encryption standard used to overcome security threats. WEP provides security to WLAN by encrypting the information transmitted over the air so that only the receivers with the correct encryption key can decrypt the information.
- WPA/WPA2 (WI-FI Protected Access): Improved on WEP by introducing Temporal Key Integrity Protocol (TKIP). While still using RC4 encryption, TKIP uses a temporal encryption key that is regularly renewed, making it more difficult to steal. In addition, data integrity was improved through the use of a more robust hashing mechanism.
- Wireless Intrusion Prevention Systems/Intrusion Detection Systems: Intrusion detection and prevention focuses on radio frequency (RF) levels. This involves radio scanning to detect rogue access points or ad hoc networks to regulate network access. Advanced implementations are able to visually represent the network area along with potential threats, and have automatic classification capabilities so that threats can be easily identified.

3. Give the general idea of the text III in English.

DEVICES FOR DISABLED

UNIT XIV

1. Study the following words and word-combinations and memorize them.

1. accessibility feature – функция специальных возможностей
2. accommodate disabled – размещение людей с ограниченными возможностями
3. assistive technology [əˈsɪstɪv tekˈnɒlədʒɪ] вспомогательная технология
4. blind [blaɪnd] слепой, незрячий
5. Braille [breɪl] шрифт Брайля, азбука Брайля
6. Braille embosser – устройство для тиснения шрифтом Брайля
7. Braille lettering on keyboard overlays – надписи шрифтом Брайля на накладках клавиатуры
8. deaf [def] глухой
9. keystroke [ˈkiːstrəʊk] нажатие клавиши; комбинация клавиш
10. magnify [ˈmægnɪfaɪ] увеличивать, усиливать
11. motor-disabled
12. navigate [ˈnævɪgeɪt] направлять, управлять
13. oblige [əˈblaɪdʒ] обязывать, заставлять
14. Optical Character Recognition – оптическое распознавание символов
15. refreshable braille display – обновляемый дисплей Брайля
16. screen magnifiers [skriːn ˈmægnɪfaɪə] экранная лупа, экранные увеличители
17. speech synthesis [spiːʧ ˈsɪnθəsɪs] синтез речи, речевой синтез
18. tactile [ˈtæktaɪl] тактильный, осязательный, сенсорный
19. text-to-speech function – функция преобразования текста в речь
20. verbalize [ˈvɜːbəlaɪz] выражать словами; озвучить
21. visually impaired – слабовидящий; со слабым зрением

Text I

2. Read the text and be ready to answer questions:

1. What do most blind users need?
2. What do you know about Braille?
3. How can a blind or visually impaired person use a computer or phone?
4. What do you know about screen readers?

Devices for disabled

Computers have taken a dominant role in our society, meaning most jobs now require access to computers and the Internet. But what happens

if a person is blind, deaf or motor-disabled? They needn't worry. The latest assistive technology is designed to help them use computers and do their jobs in the office, learn at school, or interact with their families at home. In addition, new laws oblige companies to adapt the workplace to accommodate disabled people.

To work effectively, most blind users need to have their computers adapted with technologies such as Braille, screen magnifiers, speech synthesis and Optical Character Recognition (OCR).

Braille keyboards have Braille lettering on keyboard overlays, allowing the blind user to easily identify each key. For output, there are printers, called Braille embossers, that produce tactile Braille symbols on both sides of a page at high speed.

Someone who is blind or visually impaired can use a computer or phone with something called a screen reader. A screen reader's main function is to read text that is displayed on the screen. It verbalizes what the user is doing as he or she navigates using keystrokes (different key commbinations– there is no efficient way to use the mouse with a screen reader quite yet). There are different types of screen readers. One of the major ones, called JAWS for windows, is used only with text-to-speech. Programs like Magic and Zoomtext will magnify things on the screen but can also read things on the screen if necessary. Mac computers have something called VoiceOver, (which is also in all other Apple devices) which also performs text-to-speech functions. Most smartphones come with a screen reading program pre-built into the operating system. Android and Apple are the leading companies with accessibility features. Android uses something called TalkBack, while Apple's devices-including IPads, IPods and now the Apple watch-have Voice Over. They work the same way the screen readers above do. There is also the possibility of using a Braille display. It basically outputs any text on the screen to Braille. The machine has a refreshable Braille display so it can change to show whatever text the device other is focused on.

Text II

1. Study the following words and word-combinations and memorize them.

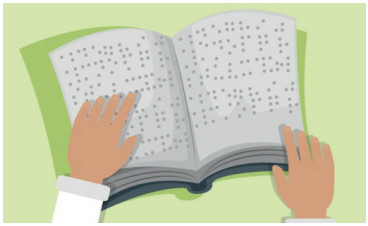
accessibility issues – проблемы доступности
accessibility issues for visual disabilities – проблемы доступности для людей с нарушениями зрения
alerting devices – устройства оповещения
Alt text – альтернативный текст
ARIA mistakes – ошибки АРИИ
cluttered pages and carousels – загроможденные страницы и карусели
document heading and labeling – заголовок и маркировка документа
enhanced listening – улучшенное прослушивание

inaccurate captions – неточные подписи
no keyboard navigation – нет навигации с клавиатуры
no transcripts – никаких расшифровок
phone-only customer support – поддержка клиентов только по телефону
pop-ups – всплывающие окна
telecommunications – телекоммуникации
visual communication – визуальная коммуникация

2. Read and translate the text II.

Devices for disabled

Although blind people have the possibility of using speech-to-text software, they rarely actually do. The use cases for speech recognition are increasing, but definitely don't beat banging something out on a keyboard yet in a large number of cases, including rooms with a lot of background noise and places of employ where people would likely get annoyed with you quite quickly if you chatter at your pc all day, not to mention the security implications of hollering passwords at your computer. Speech to text convertions are a bit more common on smartphones because it goes a lot faster than typing on a touch screen, but this answer is hammered out on a regular laptop's qwerty keyboard.



Understanding digital accessibility challenges is easy if you know people with disabilities. But what if you've never seen a person who is blind use their computer or smartphone? We're here to help you understand a little bit about what it's like to use the internet if you have a disability.

What do we mean by "deaf-blind?"

A person is considered deaf-blind if they have some combination of hearing loss and vision loss. While there are some people who are totally deaf and totally blind, the majority of deaf-blind people have some amount of residual hearing and/or vision. Some will have more vision than hearing; others will have more hearing than vision.

It is important to note that if you see someone using a white cane or a guide dog, that does not mean they are totally blind. It means they have sufficient vision loss that having a dog or cane makes it easier and safer for them to navigate independently.

Assistive technology used by deaf-blind people

Assistive technology (AT) is a broad term that refers to hardware and software that enable people with disabilities to access technology. Those who

are deaf-blind use a combination of AT for blind users and AT for deaf users, depending on their individual needs.

AT for visual disabilities

Screen readers: A program that analyzes the layout and content of a website and provides a text to speech translation. The playback speed can be set by the user and commands allow them to skip from heading to heading, click links, and do other important tasks.

Braille displays: A device that translates digital text into Braille dots that can be read with the fingers. (More on Braille below, as it is very important to many deaf-blind people.)

Dictation: Speech recognition software allows a user to navigate, type, and interact with websites using their voice.

AT for hearing disabilities

Alerting devices: A device that converts an audio alert (e.g., doorbell, alarm clock) into a visual or physical alert that the person can perceive.

Telecommunications: Many different options are available for those who are D/deaf or HoH, including amplified telephones, TTY / TDD, Text-to-911, and video chat.

Enhanced listening: Systems can be used to connect an audio feed directly to someone's hearing aid or cochlear implant.

Visual communication: Captions and transcripts (with the ability to enlarge or zoom in!) provide audio information in a visual format.

Accessibility barriers for deaf-blind users

Here are some accessibility issues that restrict access to people who are deaf-blind. Since each deaf-blind person is a different amount of deaf and blind, accessibility issues can come from both sides!

Accessibility issues for visual disabilities

No keyboard navigation: Can you use your website or program without a mouse? Use the tab key, arrows, and enter to navigate.

Pop-ups: If sites fail to set reading focus appropriately, a pop-up dialog can prevent a blind user from moving forward… or even knowing how to get back to where they were.

Cluttered pages and carousels: Cluttered pages with carousels and moving text aren't user friendly for blind users. **ARIA mistakes**: If sites misuse ARIA markup, it changes a screen reader's behavior in a way that interferes with navigation and operability.

Document heading and labeling: Without proper heading tags, a screen reader user cannot quickly locate what they want to read.

Alt text: Images that convey meaning need to be tagged with alt text so the person who is reading your website can hear a description of the image.

Accessibility issues for hearing disabilities

Inaccurate captions: It can be great to have captions, but AI is far from perfect and sometimes automated captions are worse than no captions at all.

No transcripts: For a deaf-blind person who uses Braille, transcripts are a must-have in order to access information presented in video or audio format.

Phone-only customer support: Nothing is more frustrating than trying to contact a business and finding out the only option to do so is a phone number.

Low-quality audio: Poor quality audio becomes even worse at high volume. It can also be difficult to transcribe accurately.

3. Read the text again and single out the main features of using different necessary devises by deaf or blind persons.

4. Give English equivalents of the following:

программное обеспечение для преобразования речи в текст; с большим количеством фонового шума; имеют некоторый остаточный слух и/или зрение; кто-то пользуется белой тростью или собакой-поводырем; достаточная потеря зрения; слепоглухонемые используют комбинацию AT; команды позволяют им переходить от заголовка к заголовку, переходить по ссылкам; устройства оповещения; усиленные телефоны, TTY / TDD; улучшенное прослушивание; визуальная коммуникация; барьеры доступности для слепоглухих пользователей; всплывающее диалоговое окно; может помешать слепому пользователю двигаться вперед или даже узнать, как вернуться туда, где он был; загроможденные страницы и карусели; сайты неправильно используют разметку ARIA; заголовок и маркировка документа; соответствующие теги заголовка; изображения, передающие смысл; неточные подписи; искусственный интеллект далек от совершенства; никаких расшифровок; поддержка клиентов только по телефону

5. Give Russian equivalents of the following:

I would like to point out; but definitely don't beat banging something out on a keyboard; people would likely get annoyed with you; the security implications; this answer is hammered out on a regular laptop's qwerty keyboard; what it's like to use the internet if you have a disability; some combination of hearing loss and vision loss; have some amount of residual hearing and/or vision someone using a white cane or a guide dog; they have sufficient vision loss; to navigate independently; the layout and content of a website; alerting devices; enhanced listening; with the ability to enlarge or zoom; the tab key, arrows, and enter to navigate; sites fail to set reading focus appropriately; in a way that interferes with navigation and operability; document heading and labeling; without proper heading tags; need to be tagged with alt text

Text III

1. Read and translate the text.

The importance of Braille for deaf-blind users

To work effectively, most blind users need to have their computers adapted with technologies such as Braille, screen magnifiers, speech synthesis and Optical Character Recognition (OCR). For some deaf-blind people, Braille is the only way they can read. For others, Braille is the fastest way to read.

Braille keyboards have Braille lettering on keyboard overlays, allowing the blind user to easily identify each key. For output, there are printers, called Braille embossers that produce tactile Braille symbols on both sides of a page at high speed.

For someone with limited but usable vision, a screen magnifier may be appropriate. This type of software can enlarge text and images appearing on the screen by up to 16 times.

A speech synthesis system is used to read aloud the work on the computer. It has a speech synthesizer, which produces the audio output, and a screen reader – the program which reads aloud text and menus from word processors, databases and the Web.

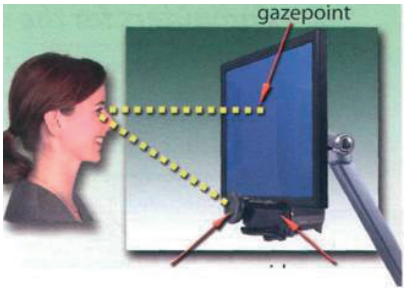
OCR uses a flatbed scanner and specialized OCR software to read printed material and send the text to the computer. The PC can then produce va copy of the text in Braille, a magnified copy, or a version thatbcan be read aloud by speech synthesis system.

Deaf computer users can overcome many communication difficulties with the aid of visual alerts, electronic notetakers and textphones. Visual a;erts are indicators that alert the deaf user when they receive new mail or when there is a system error. So instead of hearing a sound, the user is alerted by a blinking menu bar or by a message on the screen. Electronic notetakers use software that types a summary of what is said in meetings onto the computer screen.

Textphones alow the vdeaf to type and read phone conversations. They arevalso called TDDs (Telephone Devices for the Deaf) or TTYs (TeleTypewriters). They can be used in combination with relay services, where an operator says what the text user types, and types what a voice phone user says. Deaf people can also communicate via SMS and instant messaging.

Motor-impaired workers unable to type on a standard keyboard can employ expanded or ergonomic keyboards, on-screen keyboards, adaptive switches and voice recognition systems.

On-screen keyboards are software images of a keyboard that appear on the screen and may be activated with a trackball, touch screen, screen-pointing device, or eye movements. In a Eyegaze system, the keys on the virtual keyboard are activated by the user's eyes when they pause on a key for two or three seconds.



Video camera Eyegaze technology consists of a video camera and image processing software, which determines the eye's gazepoint on the screen

Finally, there's voice recognition, which allows to interpret human speech, transforming the words into digitized text or instructions.

2. Give answer to the following question on the basis of the text.

What types of software can help the majority of blind and deaf users?

3. Read and translate some tips to understand the importance of different devices.

The iPhone is the most popular smartphone for blind users.
The VoiceOver screen reader will read the text.
Siri will take commands and dictation.
Apps using the camera can tell the user what color clothes are that a user might wear.
Tactile stick can be placed on the touch screen to guide places to touch.
Another tool for blind users is the Braille Note by Human Ware which has a tactile Braille "display" and a chording keyboard. When using Windows or Mac, there are a number of native built in accessibility tools, or the popular Jaws software can be used as a screen reader.

ARTIFICIAL INTELLIGENCE (AI)

UNIT XV

1. Study the following words and word-combinations and memorize them.

1. abstract essence – абстрактная сущность
2. AI mind theory – теория искусственного интеллекта
3. autonomously [ɔːˈtɒnəməslɪ] автономно
4. Complementary metal–oxide–semiconductor (CMOS) – Комплементарный металл–оксид–полупроводник (КМОП)
5. current levels [ˈkʌrənt levlz] текущие уровни
6. eliminate [ɪˈlɪmɪneɪt] устранить, удалить, исключить
7. endowed [ɪnˈdaʊd] одаренный, обеспеченный, наделяемый
8. Evolving stages Эволюционирующие стадии
9. exist [ɪgˈzɪst] существовать, быть, иметься, находиться
10. Expert system [ˈekspɜːt ˈsɪstɪm] экспертная система
11. exponentially [ɛkspə(ʊ)ˈnɛnʃəli] экспоненциально, в геометрической прогрессии
12. focus [ˈfəʊkəs] сосредоточить, сконцентрировать, направить
13. impact [ˈɪmpækt] влияние, воздействие, эффект
14. initiative [ɪˈnɪʃətɪv] инициатива, предприимчивость
15. inspired [ɪnˈspaɪəd] вдохновленный, воодушевленный
16. intention [ɪnˈtenʃn] намерение, стремление, умысел, цель
17. Limited AI – ограниченный искуственный интелект
18. managing technologies – управление технологиями
19. Manipulation [mənɪpjʊˈleɪʃn] манипуляция, обращение, обработка, управление
20. Culmination [kʌlmɪˈneɪʃn] вершина, наивысшая точка
21. natural language processing – обработка естественного языка
22. natural language understanding – понимание естественного языка
23. overall [ˈəʊvərɔːl] в целом, повсеместно; общий, полный, всеобщий
24. patterns [pætnz] шаблон, образец
25. predicted [prɪˈdɪktɪd] прогнозируемый, предполагаемый
26. Reactive AI – реактивный искуственный интелект
27. rely [rɪˈlaɪ] полагаться, основываться, опираться, рассчитывать, зависеть
28. Rumors [ˈruːməz] слухи, домыслы
29. setting goals [ˈsetɪŋ gəʊlz] постановка целей
30. surpass [səːˈpæs] превосходить, превышать, перевыполнить
31. synapses process [ˈsaɪnæps] процесс синапсов
32. warehouse management system [ˈweəhaʊs ˈmænɪʤmənt ˈsɪstɪm] система управления складом

2. Read and translate the text.

Text I

Artificial Intelligence (AI)

The history of artificial intelligence (AI) began in ancient times with myths, stories and rumors about artificial beings endowed with intelligence or consciousness by skilled craftsmen. The seeds of modern artificial intelligence were sown by classical philosophers who tried to describe the process of human thinking as a mechanical manipulation of symbols. The culmination of this work was the invention of a programmable digital computer in the 1940s, a machine based on the abstract essence of mathematical reasoning. This device and the ideas behind it inspired a handful of scientists to start seriously discussing the possibility of creating an electronic brain.

The field of research in artificial intelligence was founded on a seminar held on the campus of Dartmouth College, USA, in the summer of 1956. Those who took part will become leaders of research in the field of artificial intelligence for decades. Many of them predicted that a machine as intelligent as a human would exist in no more than a generation, and they were given millions of dollars to bring this vision to life.

Investments and interest in AI increased dramatically in the first decades of the 21st century, when machine learning was successfully applied to solve many problems in academia and industry thanks to new methods, the use of powerful computer equipment and the collection of huge amounts of data.

2. Read the text and answer a question. What are the 4 types of artificial intelligence and how do they differ?

Text II

1. Read and translate the text.

What Does Artificial Intelligence (AI) Mean?

Artificial intelligence (AI), also known as machine intelligence, is a branch of computer science that focuses on creating and managing technologies that can learn to autonomously make decisions and perform actions on behalf of a person.

Artificial intelligence is not a single technology. It is an umbrella term that includes any type of software or hardware component that supports machine learning, computer vision, natural language understanding (NLU), and natural language processing (NLP).

Modern artificial intelligence uses conventional CMOS hardware and the same basic algorithmic functions that control traditional software. It is expected that future generations of artificial intelligence will inspire the

creation of new types of circuits and architectures based on the brain, which will be able to make decisions based on data faster and more accurately than a human can do.

Artificial intelligence initiatives are often talked about in terms of their belonging to one of the four categories:

1. Reactive AI relies on real-time data to make decisions.
2. Limited AI memory relies on stored data to make decisions.
3. AI mind theory can take into account subjective elements, such as user intentions, when making decisions.
4. Self-aware AI has a human consciousness capable of independently setting goals and using data to determine the best way to achieve the goal.

AI uses the same basic algorithmic functions as traditional software, but applies them in a different way. Perhaps the most revolutionary aspect of artificial intelligence is that it allows software to rewrite itself as it adapts to its environment.

Artificial intelligence can be allowed to replace an entire system, making all decisions from start to finish, or it can be used to improve a particular process. A standard warehouse management system, for example, can display the current levels of various products, while an intelligent system can identify a shortage, analyze the cause and its impact on the overall supply chain, and even take steps to eliminate it.

Evolving stages of artificial intelligence development

The demand for faster and more energy-efficient information processing is growing exponentially as artificial intelligence becomes more common in business applications. Conventional digital data processing equipment cannot meet this demand. That's why researchers are taking inspiration from the brain and considering alternative architectures in which networks of artificial neurons and **synapses** process information with high speed and adaptive learning capabilities in an energy-efficient, scalable way.

* Narrow (Weak) Artificial intelligence is capable of performing only a limited set of predefined functions.
* General (strong) It is said that AI is equal to the ability of the human mind to function autonomously in accordance with a wide range of stimuli;
* It is expected that one day super AI will surpass human intelligence (and possibly take over the world).

Currently, narrow artificial intelligence is just beginning to enter the main computing applications.

Artificial Intelligence on a Practical Level

Currently, artificial intelligence is used to perform a number of functions both in laboratory conditions and in commercial/consumer conditions, including the following technologies:

* Speech recognition allows an intelligent system to convert human speech into text or code.

* Natural language processing provides conversational interaction between humans and computers.
* Computer vision allows the machine to scan the image and use comparative analysis to identify objects in the image.
* Machine learning focuses on building algorithmic models that can identify patterns and relationships in data.
* Expert systems gain knowledge on a specific subject and can solve problems as accurately as a human expert on this subject.

3. Give English equivalents of the following:

механическую манипуляцию символами; кульминацией этой работы стало; основанной на абстрактной сущности; те, кто принял участие; столь же разумная, как человек; воплотить это видение в жизнь; выполнять действия от имени человека; любой тип программного или аппаратного компонента; понимание естественного языка; ожидается, что; вдохновят на создание новых типов схем; с точки зрения их принадлежности; ограниченная память; такие как намерения пользователя; для определения наилучшего способа; по своей сути; по мере адаптации к окружающей среде; принимая все решения от начала до конца; предпринять шаги для ее устранения; спрос на более быструю и энергоэффективную обработку информации; по мере того, как; исследователи черпают вдохновение; возможности адаптивного обучения; ограниченный набор предопределенных функций; функционировать автономно в соответствии с; ИИ превзойдет человеческий интеллект; обработка естественного языка; разговорное взаимодействие между людьми и компьютерами; идентифицировать закономерности и взаимосвязи в данных.

4. Give Russian equivalents of the following:

about artificial beings endowed with intelligence; to describe the process of human thinking; the culmination of this work; based on the abstract essence of mathematical reasoning; inspired a handful of scientists; machine learning; the collection of huge amounts of data; that focuses on creating and managing technologies; that can learn to autonomously make decision; perform actions on behalf of a person; it is an umbrella term; uses conventional CMOS hardware; the creation of new types of circuits; relies on stored data; such as user intentions; self-aware AI; capable of independently setting goals; but applies them in a different way; to rewrite itself as it adapts to its environment; a standard warehouse management system; its impact on the overall supply chain; growing exponentially; considering alternative architectures; in accordance with a wide range of stimuli; will surpass human intelligence; narrow artificial intelligence; use comparative analysis; identify patterns; gain knowledge.

5. Fit the meaning and the words:

1) used to describe the way in which a computer system receives data and then communicates it or makes it available immediately	application
2) to get something that is useful, that gives you an advantage, or that is in some way positive, especially over a period of time	artificial intelligence
3) to give a large amount of money to pay for creating a college, hospital, etc. or to provide an income for it	autonomous
4) at the present time	identify
5) decided, set, or arranged before something is done	initiative
6) to recognize something or something and say or prove who or what that person or thing is	predefined
7) an autonomous machine or system is able to operate without being controlled directly by humans	gain
8) the study of how to produce machines that have some of the qualities that the human mind has, such as the ability to understand language, recognize pictures, solve problems, and learn	real-time
9) a computer program that is designed for a particular purpose	currently
10) a new plan or process to achieve something or solve a problem	endow

6. Match the words with the opposite meaning:

a) consciousness, accurately, income, provide, achieve, solve, ability, quality, recognize, prove, directly, positive, understand, particular, narrow, autonomously

b) fail, unsettle, incapacity, irregularity, disrespect, deny, indirectly, pessimistic, misinterpret, ambiguous, unlimited, dependently, insensibility, inexactly, expense, withdraw

7. Match the words with a similar meaning:

a) achieve, mind, ability, available, in accordance with, surpass, equal, entire, alternative, immediately, particular, purpose, demand, design, interaction, limited, self-aware, recognize

b) in obedience to, exceed, identical, total, different, instantly, appropriate, intent, claim, allot, teamwork, restricted, introspective, admit, attain, brain, competence, accessible,

8. Match the equivalents to the word combinations given in the left column.

a)	
1. a machine based on the abstract essence of mathematical reasoning	1. это поддерживает машинное обучение, компьютерное зрение, понимание естественного языка и обработку естественного языка
2. that focuses on creating and managing technologies	2. использует обычное оборудование CMOS и те же основные алгоритмические функции
3. that supports machine learning, computer vision, natural language understanding, and natural language processing.	3. машина, основанная на абстрактной сущности математических рассуждений
4. uses conventional CMOS hardware and the same basic algorithmic functions	4. которая фокусируется на создании технологий и управлении ими
b)	
1. faster and more accurately than a human can do	1. обладает человеческим сознанием, способным самостоятельно ставить цели
2. are often talked about in terms of their belonging	2. что это позволяет программному обеспечению переписывать себя по мере адаптации к своей среде
3. has a human consciousness capable of independently setting goals	3. о них часто говорят с точки зрения их принадлежности
4. that it allows software to rewrite itself as it adapts to its environment	4. быстрее и точнее, чем это может сделать человек
c)	
1. can identify a shortage, analyze the cause and its impact on the overall supply chain	1. может решать проблемы так же точно, как человек специалист
2. capable of performing only a limited set of predefined functions	2. может выявлять закономерности и взаимосвязи в данных.
3. can identify patterns and relationships in data.	3. может выявить нехватку, проанализировать причину и ее влияние на общую цепочку поставок.
4. can solve problems as accurately as a human expert	4. способен выполнять только ограниченный набор предопределенных функций

9. Complete the sentences using the information in the right column and translate them.

a)			
1.	The history of artificial intelligence (AI) began in ancient times with myths, stories and rumors about …	1.	to start seriously discussing the possibility of creating an electronic brain.
2.	The culmination was the invention of a programmable digital computer in the 1940s, a machine based on …	2.	that can learn to autonomously make decisions and perform actions on behalf of a person.
3.	This device and the ideas behind it inspired a handful of scientists …	3.	perform actions on behalf of a person.
4.	Machine learning was successfully applied to solve many problems in academia and industry thanks to …	4.	artificial beings endowed with intelligence or consciousness by skilled craftsmen.
5.	Artificial intelligence (AI), also known as machine intelligence, is a branch of computer science that focuses on creating and managing technologies …	5.	the same basic algorithmic functions that control traditional software.
6.	Creating and managing technologies can learn to autonomously make decisions and …	6.	machine learning, computer vision, natural language understanding (NLU), and natural language processing (NLP).
7.	It is an umbrella term that includes any type of software or hardware component that supports …	7.	new methods, the use of powerful computer equipment and the collection of huge amounts of data.
8.	Modern artificial intelligence uses conventional CMOS hardware and …	8.	the abstract essence of mathematical reasoning.
b)			
1.	Artificial intelligence initiatives are often talked about in terms of their belonging to one of the four categories: …	1.	to rewrite itself as it adapts to its environment.

2.	AI uses the same basic algorithmic functions as traditional software, but …	2.	its impact on the overall supply chain, and even take steps to eliminate it.
3.	Perhaps the most revolutionary aspect of artificial intelligence is that it allows software …	3.	growing exponentially as artificial intelligence becomes more common in business applications.
4.	Artificial intelligence can be allowed to replace an entire system, …	4.	Reactive AI, Limited AI, AI mind theory, Self-aware AI
5.	A standard warehouse management system, for example, can …	5.	high speed and adaptive learning capabilities in an energy-efficient, scalable way.
6.	An intelligent system can identify a shortage, analyze the cause and …	6.	display the current levels of various products
7.	The demand for faster and more energy-efficient information processing is …	7.	making all decisions from start to finish
8.	Networks of artificial neurons and synapses process information with …	8.	applies them in a different way.
c)			
1.	Narrow (Weak) Artificial intelligence is capable of performing only …	1.	to convert human speech into text or code
2.	Narrow (Weak) Artificial intelligence is capable of performing only …	2.	conversational interaction between humans and computers
3.	General (strong) It is said that AI is equal to the ability of the human mind …	3.	use comparative analysis to identify objects in the image
4.	It is expected that one day super AI …	4.	solve problems as accurately as a human expert on this subject.
5.	Artificial intelligence is used to perform a number of functions both …	5.	identify patterns and relationships in data.
6.	Speech recognition allows an intelligent system …	6.	to function autonomously in accordance with a wide range of stimuli

7.	Natural language processing provides …	7.	a limited set of predefined functions
8.	Computer vision allows the machine to scan the image and …	8.	in laboratory conditions and in commercial/consumer conditions
9.	Machine learning focuses on building algorithmic models that can …	9.	will surpass human intelligence (and possibly take over the world).
10.	Expert systems gain knowledge on a specific subject and can …	10.	a limited set of predefined functions.

10. Fill in the blanks to complete the sentences. Use the words given under the line. Translate these sentences into Russian.

1. The seeds of modern artificial intelligence were sown by classical philosophers who tried to describe … of symbols. 2. The culmination of this work was the invention of a programmable digital computer in the 1940s, a machine based on … . 3. Artificial intelligence (AI), also known as machine intelligence, is a branch of computer science … that can learn to autonomously make decisions and perform actions on behalf of a person. 4. It is expected that future generations of artificial intelligence will … and architectures based on the brain, which will be able … faster and more accurately than a human can do. 5. A standard warehouse management system, for example, can… , while an intelligent system can identify a shortage, analyze the cause and its… , and even take steps to eliminate it. 6. The demand for faster and more energy-efficient information processing is growing exponentially as artificial intelligence becomes… . 7. It is said that AI is equal to the ability of the human mind … a wide range of stimuli. 8. Currently, artificial intelligence is used to … both in laboratory conditions and in commercial/consumer conditions. 9. Computer vision allows the machine … to identify objects in the image.

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to scan the image and use comparative analysis; display the current levels of various products; impact on the overall supply chain; more common in business applications; to function autonomously in accordance with; perform a number of functions; the process of human thinking as a mechanical manipulation; the abstract essence of mathematical reasoning; that focuses on creating and managing technologies; inspire the creation of new types of circuits; to make decisions based on data

11. Open the brackets translating from Russian into English.

1. (Исследования в области искусственного интеллекта) was founded on a seminar held on the campus of Dartmouth College, USA, in the summer

of 1956. 2. Narrow (Weak) Artificial intelligence is capable of performing (лишь ограниченный набор предопределенных функций). 3. Modern artificial intelligence (использует обычное оборудование CMOS) and the same basic algorithmic functions that control traditional software. 4. Artificial intelligence can be allowed to replace an entire system, (принимая все решения от начала до конца), or it can be used (для улучшения конкретного процесса). 5. Conventional digital data processing equipment (не может удовлетворить этот спрос). 6. Speech recognition allows an intelligent system (преобразовывать человеческую речь в текст)into text or code. 7. Computer vision allows the machine to scan the image and (использовать сравнительный анализ для идентификации объектов) in the image. 8. (Самосознающий ИИ) has a human consciousness capable of independently setting goals and using data to determine the best way to achieve the goal. 9. A standard warehouse management system can display the current levels of various products, while an intelligent system can (определить нехватку, проанализировать причину и ее влияние на общую цепочку поставок), and even take steps to eliminate it. 10. It is expected that one day super (ИИ превзойдет человеческий интеллект).

References

1. *Kuravsky, L.S.* Monitoring the dangerous activity of computer network users / L.S. Kuravsky, G.A. Yuryev, A.A. Konstantinovsky [et al.] // 15th International Conference on Condition Monitoring and Machinery Failure Prevention Technologies, CM 2018/MFPT 2018 : 15, Nottingham, 10–12 сентября 2018 года. – Nottingham, 2018. – P. 44–57. – EDN UEVCBF.
2. *Stošić, L.* (2015). THE IMPORTANCE OF EDUCATIONAL TECHNOLOGY IN TEACHING. International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE), 3(1), 111–114. https://doi.org/10.23947/2334-8496-2015-3-1-111-114
3. *Гузова А.В., Апурина О.Д.* Английский язык. Учебное пособие по внеаудиторному чтению для старших курсов // Учебное пособие, – Ставрополь: ООО «Бюро новостей», – 2009.
4. *Зотова И.А.* Особенности перевода бизнес-идиом в англоязычном экономическом дискурсе / И.А. Зотова, А.В. Гузова // Успехи в химии и химической технологии. – 2018. – Т. 32. – № 4(200). – С. 150–152. – EDN YOHLDV.
5. *Чернова О.Е.* Основы информационных технологий : В 2 частях / О.Е. Чернова, А.В. Литвинов. – Москва : Российский университет дружбы народов (РУДН), 2020. – 228 с. – ISBN 978-5-209-10097-3. – EDN AQJJQS.
6. Artificial_Intelligence_in_Education_Promise_and_Implications_for_Teaching_and_Learning [Электронный ресурс]. Режим доступа: https://www.researchgate.net/publication/332180327/ (Дата обращения: 03.12.21).
7. Assistive technology [Электронный ресурс]. Режим доступа: https://www.levelaccess.com/ (Дата обращения: 20.03.22).
8. DATA STRUCTURE [Электронный ресурс]. Режим доступа: https://www.flickr.com/photos/articnomad/16153058/sizes/o/in/photostream/ (Дата обращения: 20.04.22).
9. Devices for disabled [Электронный ресурс]. Режим доступа: https://www.abilitynet.org.uk/ (Дата обращения: 15.03.22).
10. DEVICES FOR DISABLED [Электронный ресурс]. Режим доступа: https://www.levelaccess.com/level-access-news/level-access-announces-agreement-to-merge-with-essential-accessibility/ (Дата обращения: 12.04.22).
11. Information Technology in Education https://www.researchgate.net/publication/220308687. (Дата обращения: 08.10.20).
12. Peripheral devices [Электронный ресурс]. Режим доступа: https://bcastudyguide.wordpress.com/unit-4-input-output-organization/ (Дата обращения: 10.03.22)

13. Personal_Area_Network_PAN [Электронный ресурс]. Режим доступа: https://www.networkstraining.com/different-types-of-networks/ (Дата обращения: 10.02.22).
14. Popular cording languages [Электронный ресурс]. Режим доступа: https://potomac.edu/ (Дата обращения: 03.03.22).
15. Secuirity [Электронный ресурс]. Режим доступа: https://www.techtarget.com/ (Дата обращения: 25.04.22).
16. Windows [Электронный ресурс]. Режим доступа: https://studfile.net/preview/4421814/page:28/ (Дата обращения: 11.05.22).

Гузова А.В.

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