

Министерство образования Нижегородской области  
Государственное бюджетное профессиональное  
образовательное учреждение  
«Нижегородский Губернский колледж»

А.Е. Канакова

**Английский язык в сфере информационных технологий.  
Компьютерная грамотность**

Практикум  
для студентов 3 курса специальности  
09.02.07 «Информационные системы и программирование»

Нижегород  
2018 г.

Рекомендовано к публикации редакционно-издательской группой ГБПОУ  
«Нижегородский Губернский колледж»

Рассмотрено на заседании методической комиссии иностранного языка № 1 от  
30.08.2018

Рецензенты:

председатель МК, преподаватель первой квалификационной категории

Никитина Ирина Альбертовна;

преподаватель высшей квалификационной категории

Пивоварова Кира Андреевна

Канакова Анна Евгеньевна, преподаватель высшей квалификационной  
категории ГБПОУ НГК

Английский язык в сфере информационных технологий. Компьютерная  
грамотность. Практикум для студентов 3 курса колледжа. – Н. Новгород:  
ГБПОУ «Нижегородский Губернский колледж», 2018. – 28с.

## Введение

Данный практикум предназначен для студентов 3 курса специальности 09.02.07 «Информационные системы и программирование». На 3 курсе начинается непосредственная работа с профессионально-направленной лексикой, которая позволяет формировать профессиональные компетенции на занятиях по английскому языку. Цель данного практикума – обобщить и структурировать языковой материал, соответствующий Рабочей Программе по специальности 09.02.07 «Информационные системы и программирование». Данный практикум создает студентам условия для работы в аудитории и, при необходимости, вне аудитории.

Методическая разработка представляет собой подборку поурочных материалов, рассчитанных на один учебный семестр. В методическом пособии выделена обязательная лексика, представлены задания и упражнения, направленные на формирование и развитие языковых компетенций. Тексты адаптированы для учебных целей, при этом позволяют расширить профессиональный словарный запас студентов колледжа. В заданиях объясняется и отрабатывается основная терминология, которая является базой для последующего развития профессиональных коммуникативных навыков.

**СОДЕРЖАНИЕ**

Unit 1. Information Society	5
Unit 2. A Typical PC	14
Unit 3. The History of Computers	18
Unit 4. Types of Computer Systems	23
Unit 5. Input Devices	29

## UNIT 1. INFORMATION SOCIETY

### Task 1. Active vocabulary:

information-dependent society	информационное общество
a computer-literate person	грамотный пользователь компьютера
everyday problem-solving devices	устройство для решения ежедневных проблем
to influence the quality of life	влиять на качество жизни
to have an opportunity to learn the basics	иметь возможность изучать азы наук
applications of computers	применение компьютеров
significant technical achievements	значительные технические достижения
economic and social changes	экономические и социальные изменения
computer literacy	компьютерная грамотность
knowledge	знание
ability to use computers	способность использовать компьютер
a range of skills	набор умений
advanced	продвинутый, повышенной сложности
change	изменять

### Task 2. Read and translate the text. Make up 5 questions to the text.

#### COMPUTER LITERACY

We live in an information-dependent society, thus, most of us are computer-literate people, which means that we are able to use computers as everyday

problem-solving devices. Computers influence the quality of life of modern people, so computer literacy is a must.

In the past only privileged people had an opportunity to learn the basics, which were called the three R's: reading, writing, and arithmetic. Now we are quickly becoming information-dependent people. Reading, writing and arithmetic are not enough even for small children. We need computing. There is no doubt that a computer with its numerous applications is one of the most significant technical achievements of the time. Computers have brought economic and social changes. "Computing" is a concept that embraces not only the old three R's, but also a new idea - computer literacy.

Computer literacy is defined as the knowledge and ability to use computers and related technology efficiently, with a range of skills covering levels from elementary use to programming and advanced problem solving.

### Task 3. Active Vocabulary:

advantages and disadvantages	преимущества и недостатки
digital	цифровой
gadget	гаджет
car ignition	зажигание автомобиля
communicate	общаться
an appropriate hardware and software	соответствующее оборудование и программное обеспечение
typewriter	печатная машинка
to type	печатать (набирать текст)
calculations	подсчеты
to manage large collections of data	управлять большим объемом данных
to interact with friends and relatives all around the world	взаимодействовать (общаться) по всему миру
to edit photos and movies	редактировать фото и видео

entertainment	развлечения
---------------	-------------

**Task 4. Write down the key words and retell the text:**

### **DIGITAL LIFESTYLE**

Computers influence the way we do everyday things. Working, shopping, writing letters, reading books and looking for information have changed recently. We design our houses, gardens and flats with the help of PCs. We buy books, pay bills or make hotel reservations on the Internet. We use a lot of fashionable gadgets such as mobile phones, music players, earphones, play stations, remote car ignition with microchips.

Provided with the appropriate hardware and software, a PC can do almost anything you ask. On the one hand, it's a typewriter that allows you to type and print any sort of document. On the other hand, it makes calculations. It is also a library that manages large collections of data. Some people work at home communicating with their colleagues by computer or telephone.

More than that, you interact with friends, relatives and coworkers all around the world. If you like taking photos or shooting films, your computer can be a real laboratory that helps you edit photos and movies. And last but not the least, if you

like entertainment or simply tired of hard day's work, you can relax playing games or watching films.

**Task 5.** Find the word in the text to the definition.

- physical units which make up a computer system;
- a small hardware device;
- to make changes and corrections to text and graphics such as select, copy, cut, paste;
- tiny pieces of silicon containing complex electronic circuits
- to make or draw plans for something;
- the large system of connected computers around the world;
- to produce text and pictures using a printer.
- the set of program instructions that tell the computer what to do.

**Task 6. Make up a story using key words:**

- |                            |  |
|----------------------------|--|
| - influence                | - hardware and software                  |
| - to change                | - to type and print                      |
| - to design our flats      | - to make calculations                   |
| - to buy books             | - to manage large collections of data    |
| - to pay bills             | - to interact with friends and relatives |
| - to use different gadgets | - to edit photos and movies              |
| - to communicate           | - to play games                          |

**Task 7. Read and translate the text.**

### **COMPUTERS IN OUR LIFE**

People use computers at work and in everyday life. The advantages that computers bring to our life are numerous.



If you are looking for entertainment, you can play all kinds of computer games: chess, adventure games, simulation games. However, entertainment software means more than just playing computer games. There is special software for downloading, composing and playing music. PCs can combine sound, text and animated images and allow users to make video clips. You can watch DVDs and TV and listen to the radio. Multimedia applications allow users to produce slide shows, edit photographs. Optical discs make books, music albums, encyclopedias available on computer. Millions of people join social networks every day.

At the factories computers are used to control machinery, robots, production lines, lists of products. By using computer-aided manufacturing software, engineering can simulate and test designs before cars are actually produced.

The disadvantages are also visible. Our society has developed technological dependence. When computers are down, our way of life breaks down: planes stop flying, telephones don't work, banks don't make transactions. Computers produce electronic waste, plastic cases and microchips that are not biodegradable and have to be recycled or just thrown away. They are responsible for health problems, for example, computer addiction, an inappropriate and excessive use of computers. Cybercrime, crime committed with the help of computers, is creating serious problems. Citizens may feel a loss of privacy because of unauthorized use of personal data or receiving unwanted electronic messages.

### **Task 8. Active vocabulary:**

adventure games	приключенческие игры
simulation games	игры-симуляторы
to download, compose and play music	загружать, сочинять и проигрывать музыку
to combine sound, text and animated images	соединять звук, текст и анимационные рисунки
to make video clips	создавать видеоклипы

to allow	разрешать, позволять
to produce slide shows	создавать слайд-шоу
to edit photographs	редактировать фотографии
optical discs	оптические диски
available	в наличии
to join social networks	присоединяться к социальным сетям
to control machinery, robots, production lines	контролировать станки, роботы, производственные линии
computer-aided manufacturing software	компьютерное производственное программное обеспечение
technological dependence	зависимость от технологий
electronic waste	электронные отходы
biodegradable	биоразлагающийся
to be recycled	быть переработанным
to be responsible for health problems	быть ответственным за проблемы со здоровьем
computer addiction	компьютерная зависимость
excessive use of computers	чрезмерное использование компьютера
a loss of privacy	потеря неприкосновенности частной жизни
unauthorized use of personal data	несанкционированное использование личных данных
to receive unwanted electronic messages	получать нежелательные электронные сообщения

### Task 9. Speaking

1. You are going to give a talk about the use of computers. Remember to say
  - if computers have changed our life;

- how people use computers at home;
  - how you use computers for studies.
2. You are going to give a talk about the advantages and disadvantages of computers. Remember to say
- how computers have changed our life;
  - what the main useful functions of the computer are;
  - why computers can be dangerous.
3. You are going to give a talk about the use of computers. Remember to say
- if computers are used for entertainment;
  - how engineers use computers to design new models;
  - how you use computers for financial operations.
4. You are going to give a talk about the pros and cons of computers. Remember to say
- how computers have changed our life;
  - if computers produce electronic waste;
  - when you feel a loss of privacy using a computer.

**Task 10. Read and translate the text. Make up the list of key words.**

**THE ONLY THING THAT WILL KEEP US SMART**

Now we are living in the digital age where computers have filled our lives. They are an essential part of our everyday activities. Modern young people are often called the digital generation.

Computers help students perform mathematical operations though there is an opinion that computers neither develop nor improve Math skills at all. The issue is really worth discussing.

Computers are used to access the Internet, to do basic research and to communicate with other people around the world. Students exchange information through the Internet. They find the answers to the most difficult questions there. On the other hand, search engines lower our intelligence, encouraging us to skim on the surface of knowledge rather than dive to its depths. Twitter is shrinking our attention spans. Yes, the continual arrival of information packets can be distracting or addictive. But distraction is not a new phenomenon. The solution is to develop strategies of self-control. Turn off Twitter when you work and put away your smartphone at dinner time.

Teachers also can't do without computers. They use projectors and interactive whiteboards to give presentations to make lessons more interesting and effective. A college website allows teachers to publish exercises for students to complete online. PCs are also used for administrative purposes. Databases keep records of students and teaches. Word processors are used to write letters and other documents.

Nowadays every student knows how to manage his account in the bank, pay bills for gas, electricity etc. from home. Some people say that there is always some risk to lose money if you manage it online. It's a kind of useless panic. Millions of people organize their life through online services and consider it very convenient.

To sum it up, knowledge is increasing exponentially; human brainpower and waking hours are not. Fortunately, the Internet and information technologies are helping us manage and search our collective intellectual output at different scales, from Twitter to e-books and online encyclopedias. Far from making us stupid, these technologies are the only things that will keep us smart.

**Task 11. Answer the questions:**

1. Do you represent the digital generation and why?
2. Do computers help you to make calculations?
3. Do computers improve your Math skills?

4. How can search engines lower our intelligence?
5. Do you agree that computers distract us from important activities?
6. How are computers used in your college?
7. Do you manage your finances online?

**Task 12. Active Vocabulary:**

<ul style="list-style-type: none"> <li>• цифровой век</li> <li>• неотъемлемая часть</li> <li>• ежедневная деятельность</li> <li>• цифровое поколение</li> <li>• выполнять математические операции</li> <li>• развивать и совершенствовать математические умения</li> <li>• стоит обсудить</li> <li>• выходить в Интернет</li> <li>• проводить исследования</li> <li>• поисковик</li> </ul>	<ul style="list-style-type: none"> <li>• развивать стратегию самоконтроля</li> <li>• интерактивная доска</li> <li>• выполнять задания онлайн</li> <li>• базы данных</li> <li>• хранить информацию о студентах и учителях</li> <li>• текстовый редактор</li> <li>• управлять счетом в банке</li> <li>• оплачивать счета</li> <li>• онлайн услуги</li> <li>• умный</li> <li>• обмениваться информацией</li> </ul>
--	---

## UNIT 2. A TYPICAL PC

### Task 1. Active Vocabulary:

CPU (central processing unit)	центральный процессор (ЦПУ)
hard disk drive	привод жесткого диска
hardware	аппаратное обеспечение
input devices	устройства ввода данных
keyboard	клавиатура
main memory	оперативная (основная) память
mouse	компьютерная мышь
output devices	устройства выхода данных
peripherals	периферийные устройства
RAM (random access memory)	оперативное запоминающее устройство (ОЗУ), память со случайным доступом
ROM (read-only memory)	постоянное запоминающее устройство (ПЗУ)
software	программное обеспечение
storage device	запоминающее устройство
USB (universal serial bus)	интерфейс передачи данных для

**Task 2. Read and translate the text.****COMPUTER ESSENTIALS**

We can define a **computer** as an electronic machine which can accept data in a certain form, process the data, and give the results of processing in a specified format as information.

One more definition explains the basic idea of a computer performance. A computer is a machine with a network of electronic circuits that operate switches or magnetize tiny metal cores. The switches, like the cores, can be in two possible states, on or off; magnetized or demagnetized. The machine can store and manipulate numbers, letters, and characters (symbols).

So, how does the user see the work of a computer? First, data is fed into the computer's memory. Then the computer performs the set of instructions and processes the data. Finally, we can see the results on the screen or in printed form.

A computer system consists of two parts. They are **hardware** and **software**. Software is a set of instructions, called a program. Hardware is everything you can see or touch such as electronic or mechanical parts of the computer.

There are three basic hardware components: the CPU (central processing unit), main memory and peripherals.

**CPU is** the brain of the computer which executes program instructions and coordinates the activities of all the units.

**The main memory** is a collection of RAM chips. It holds the instruction and data.

**Peripherals** are the physical units connected to the computer. They include storage, input and output devices.

**Storage devices** include hard drives, DVD drives and flash drives. They provide a permanent storage of data and programmes.

**Disk drives** read and write data on disks.

**Input devices** feed in data into the computer's memory. They are a mouse, a keyboard, a scanner and others.

**Output devices** extract necessary information from the computer and we see the results on the monitor or in the printed form.

**Ports** are located on the rear panel of the computer. We plug peripherals through the ports to the computer. Modern computers have several USB ports and even memory card readers. The more ports we have, the more peripherals we can use at a time.

**Task 3.** Find the word and its definition:

1. CPU	programs which can be used on a computer system
2. Hard drive or hard disk	the information that is presented to a computer
3. Hardware	sockets into which the external device can be connected
4. Input	results produced by a computer
5. Main memory	input devices attached to the CPU
6. Output	the brain of the computer
7. Peripherals	section that holds programs and data when they are processed
8. Ports	magnetic device which stores the information



9. Software	physical parts that make up a computer system
-------------	---

**Task 4. Read and translate the text.**

**THE MAIN FUNCTIONS OF THE COMPUTER**

The basic job of computers is processing of information. For this reason, computers can be defined as devices which accept information in the form of instructions, called a program, and characters, called data, perform mathematical and / or logical operations on the information, and then supply results of these operations. The program, or part of it, which tells the computers what to do and the data, which provide the information needed to solve the problem, are kept inside the computer in a place called memory.

Most computers have three basic capabilities.

First, computers have circuits for performing arithmetic operations, such as: addition, subtraction, division, multiplication and exponentiation.

Second, computers can communicate with the user. The computer's input device (a disk drive) reads the information into the computer. For outputting information two common devices are used: a printer, printing the new information on paper, and a display, which shows the results on a screen.

Third, computers have circuits which can make decisions. These decisions are based on very simple questions, namely: Is one number less than another? Are two numbers equal? and, Is one number greater than another?

A computer can solve a series of problems and make thousands of logical decisions much more quicker than a human being.

**Task 5. Find the equivalents in the text (Active Vocabulary)**

Обработка информации	Сложение
Устройство	Вычитание
Инструкция	Деление
Данные	Умножение
Решить проблему	Возведение в степень
Технические возможности	Средства общения с пользователем
Цепь	Вводить информацию
Арифметические операции	Получать результат
	Принимать решения

### UNIT 3. THE HISTORY OF COMPUTERS

#### Task 1. Learn the words for the text:

calculating device - вычислительное устройство

multiple - кратный

abacus - счеты

slide rule - логарифмическая линейка

logarithm table - логарифмическая таблица

general-purpose - общего назначения, универсальный

to manipulate - обрабатывать, преобразовывать; управлять

data processing - обработка данных

tabulate the census - занести данные по переписи (населения) в таблицу

means of coding - средства кодирования

to punch the holes - пробивать отверстия

punched card - перфокарта

to perform - выполнять, производить (действие); осуществлять;

keyboard terminals - терминал (вывод) с клавишным управлением

**Task 2. Read and translate the text.**

**THE FIRST CALCULATING DEVICES**

The very first calculating device used was the ten fingers of a man's hands. This is why today we still count in tens. Then the abacus was invented. People went on using some form of abacus well into the 16th century.

The history of calculating really started in the 17th and 18th centuries when many people were trying to find easy ways of calculating. Thus, J. Napier, a Scotsman, invented a mechanical way of multiplying and dividing. Now the modern slide rule works on its basis. Henry Briggs used Napier's ideas to produce logarithm tables which all mathematicians use today.

In 1830 an English mathematician Charles Babbage decided to build a general-purpose problem-solving machine that he called "the analytical engine". 25 years later in 1855 Babbage showed this machine at the Paris Exhibition. He tried to make calculations without the human being, except for providing the machine with the necessary facts about the problem to be solved. He didn't finish this work, but many of his ideas were the basis for today's computers.

Dr. Herman Hollerith, successfully tabulated the 1890 census in the USA. Hollerith invented a means of coding the data by punching holes into cards. He built one machine to punch the holes and other to tabulate the collected data. Later Hollerith established his own tabulating machine company. Through a series of merges, the company became the IBM Corporation. Electromechanical machines designed to manipulate punched card data were used for business data processing until the middle of the twentieth century.

In the 1940s electronic computers were developed to perform calculations for military and scientific purposes. By the end of the 1960s commercial models of these computers were widely used for both scientific computation and business

data processing. These computers still accepted their input data from punched cards. The new era of computers started when keyboard terminals replaced punched cards by the late 1970s.

**Task 3. Answer the questions to the text.**

1. What was the very first calculating device?
2. Who gave the ideas for producing logarithm tables?
3. When did the first calculating machine appear?
4. What was the main idea of Ch. Babbage's machine?
5. When did electromechanical machines appear?
6. What were they used for?
7. What kind of computers appeared later?
8. What new features had the computers of 1970s?

**Task 4. Make up new words.** Example: to calculate — calculating, calculator, calculation.

To use, to manipulate, to assemble, to connect, to consume, to rely, to divide, to multiply, to inform, to instruct, to discover, to operate.

**Task 5. Match the people and their actions**

librarian	to design electrical installations and lighting systems, to make drawings, to keep records of tests
engineer	to write letters and faxes, to communicate with clients by e-mail
secretary	to keep records of the books borrowed by users
teacher	to keep records of goods in a shop
sales manager	to make presentations at the lessons, to check homework

	online
--	--------

**Task 6. Active vocabulary:**

analog computer - аналоговый компьютер

digital computer - цифровой компьютер

to aim guns - наводить орудия на цель

to figure out - вычислять

at a fast rate - с высокой скоростью

memory / storage - запоминающее устройство

to store data and instructions — запоминать информацию и команды

stored program computer — компьютер с занесенной в память программой

binary code - двоичный код

condition - режим, состояние, условие

vacuum tube - электронная (вакуумная) трубка (лампа)

to amplify - усиливать

to perform computations - выполнять вычисления

**Task 7. Find out what you remember from the history of the first computers.**

1. When was the first analog computer built?
2. Where and how was that computer used?
3. When did the first digital computers appear?
4. Who was the inventor of the first digital computer?
5. What could that device do?
6. What is ENIAC? Decode the word.
7. What was J. Neumann's contribution into the development of computers?
8. What were the advantages of EDVAC?
9. What does binary code mean?

**Task 8. Read and translate the text.**

## THE FIRST COMPUTERS

In 1930 the first analog computer appeared. It was built by an American, Vannevar Bush. This device was used in World War II to help aim guns.

Professor Howard Aiken invented Mark I in 1944, that was the name given to the first digital computer. It was the first machine that could figure out long lists of mathematical problems at a very fast rate.

In 1946 two engineers at the University of Pennsylvania, J. Eckert and J. Maushly, built their digital computer with vacuum tubes. They named their new invention ENIAC (the Electronic Numerical Integrator and Calculator).

Another important achievement in developing computers appeared in 1947, when John von Neumann made it possible to keep instructions for the computer inside the computer's memory. The invention of John von Neumann was particularly significant and new. Babbage's analytical engine was designed to store only data. John von Neumann's machine was able to store both data and instructions. The name of the machine was the Electronic Discrete Variable Computer (EDVAC). John von Neumann also introduced the idea of storing data and instructions in a binary code that uses only ones and zeros. This simplified computer design. Thus, computers use two conditions, high voltage, and low voltage, to translate the symbols by which we communicate into unique combinations of electrical pulses. These combinations are called codes.

### **Task 9. Make up new words.**

Example: to calculate — calculating, calculator, calculation.

To compute, to invent, to know, to multiply, to divide, to depend, to solve, to provide, to process, to code, to punch, to collect, to design, to store, to contribute.

## UNIT 4. TYPES OF COMPUTER SYSTEMS

### Task 1. Active vocabulary:

mainframe - высокопроизводительный компьютер со значительным объемом оперативной и внешней памяти, предназначенный для выполнения интенсивных вычислительных работ

desktop pc - настольный компьютер

laptop - портативный компьютер

TFT (thin film transistor тонкопленочный транзистор) screen - экран тонкопленочной технологии

touchpad - сенсорная панель

battery pack - батарея

tablet pc - планшетный компьютер

handheld device - портативное устройство

PDA (personal digital assistant) - персональный цифровой секретарь, карманный компьютер

stylus - стилус, компьютерное перо

touch screen - сенсорный экран

handwriting recognition - распознавание почерка

voice recognition - распознавание голоса

wearable computer - носимый компьютер

## **Task 2. Read and translate the text.**

### **FROM MAINFRAMES TO PORTABLE COMPUTERS**

Computers can be divided into five main types according to their size and power: mainframes, desktop PCs, laptops, tablet PCs, and personal digital assistants or PDAs.

**Mainframes** are the largest and the most powerful machines. The basic configuration of a mainframe includes a central system processing enormous amounts of data at a high speed. This central system provides hundreds of terminals connected in a network with information and computing facilities. Mainframes are used in big companies working with large amounts of information such as government institutions, banks, Internet providers and so on.

**Personal computers** or PCs has its own processing unit, monitor and keyboard. A desktop PC is designed to be place on the desk at home or in the office.

A **laptop** is sometimes called a notebook PC. It's a portable computer with a flat LCD screen and batteries for mobile use. They have a built-in touchpad. Modern laptops are rather fast and though the screen is small it is based on the TFT technology and produces a very sharp image. Still they are ideal for business people who travel a lot.

A **tablet PC** looks like a book with an LCD screen on which you can write with a digital pen. You can also type at a small detached keyboard or use a voice recognition function. It can also recognize your handwriting and convert it not only into a printable form but also an editable text.



A **PDA** is a tiny lightweight computer which you can hold in one hand. The personal digital assistant can be used as a mobile telephone, personal organizer or media player. You input the text with a stylus or you can attach a small keyboard. It provides the access to the Internet and a GPS navigation system.

### **Task 3. Translate from Russian into English.**

1. Ноутбук - это переносной персональный компьютер, который весит несколько килограммов. Ноутбук может работать от аккумулятора от одного до четырех часов. Ноутбук может выполнять те же задачи, что и настольный компьютер, однако производительность ноутбука ниже. Портативные компьютеры имеют жидкокристаллический дисплей. В дополнение ко встроенной клавиатуре они могут содержать сенсорную панель. Ноутбук имеет порты для подключения мыши или клавиатуры.

2. Планшетный ПК удобен для чтения электронных книг и редактирования документов.

3. КПК используются для доступа к офисным приложениям, чтения книг, проигрывания аудио и видео, выхода в Интернет.

4. Мейнфрейм предназначен для организации централизованных хранилищ данных большой емкости и выполнения интенсивных вычислительных работ.

### **Task 4. You've learned a lot about different computer systems. Find the wrong statements.**

1. A mainframe is used by large organizations that process large amounts of data.
2. A mainframe computer is not as powerful as PC.
3. The most suitable computers for home use are PDAs.
4. A laptop is not portable.
5. Laptops are not as powerful as desktop PCs.

6. A PDA does not provide the access to the Internet.

**Task 5. Read and translate the text:**

**COMPUTERS IN THE FUTURE**

The development of computers passed two main stages from analog to digital. Microelectronics opened new powers of computers. Numerous improvements of peripherals have led to the proliferation of computers in our life. The speed of development of computer technologies surprises a common user but makes him more demanding.

New trends in computer technologies sometimes seem unbelievable. But the world is waiting for them. These trends are nanotechnology, artificial intelligence, biometrics, pervasive technologies and smart home.

Nanotechnology is the science of making devices from single atoms and molecules. It is in the beginning of its development but very soon it will have a huge impact on industry, business, science in general and on our lives. Nano devices are measured in nanometers. Do you know how small it is? One nanometer is one billionth of a meter. A nanocomputer will contain tiny microprocessors with nanotransistors, some of them 5 nanometers in size. New trend in medicine is nanomedicine which will use nanobots (robots) that will be injected into our bloodstream and cure different diseases at cellular level. It can make us live longer and be healthier.

Artificial Intelligence, AI in short, is a science of designing and making intelligent machines and programs. The science finds its application in robotics. Engineers are looking forward to build an android with the form and capabilities of a human being. They are also working on so called expert systems, programs containing everything that an expert knows on the subject.

Biometrics uses computer technology to identify people based on physical characteristics such as fingerprints, facial features, voice, iris and so on.

Pervasive computing or ubiquitous computing integrates computers in everyday life in invisible way. Smart devices will be embedded in our everyday life. They will have a microchip and memory to communicate with us. We will interact with them without cables.

Smart Home is a dream of millions of people. It is secure and comfortable. It knows your living patterns. You will never forget to switch off an iron, your Smart Home system will do it for you. If somebody wants to rob your house, the system will switch on all the lights and make photos, send them to your phone and to the police station.

### **Task 6. Translate into English.**

Умный дом автоматически объединяет различные инженерные системы в квартире или доме. В таком доме жить приятно и легко, так как в нем бытовая техника самостоятельно выполняет каждодневные домашние дела, освобождает хозяина от лишних действий и создает условия для нового уровня жизни. С помощью сенсорных панелей, как проводных, так и беспроводных, вы можете управлять всеми системами дома: световыми, системами климат-контроля, видеонаблюдения и др. В современных интеллектуальных домах используются следующие виды охранных датчиков: датчики движения, акустические датчики разбития стекла, контактные датчики и вибрационные датчики. Цель умного дома — создание единой локальной сети с единым пультом компьютерного управления, которая объединит все системы и приборы.

### **Task 7. Read and learn the words:**

nanotechnology - нанотехнологии

nanobot- наноробот

nanocomputer- нанокomпьютер

quantum computer -квантовый компьютер (компьютер, в котором

предлагается использовать квантово-механическую природу частиц для обработки информации, что обеспечивает беспрецедентный параллелизм вычислений)

DNA computer - ДНК-компьютер (компьютер, в котором информация хранится в молекулах ДНК)

DNA biochip - биочип ДНК (организованное размещение молекул ДНК на специальном носителе для обработки огромных массивов информации)

embed - встраивать, внедрять

user interface - пользовательский интерфейс

gesture interface - жестовый интерфейс

### **Task 8. Translate from Russian into English**

1. Нанороботы — это гипотетические устройства размером в десятки нанометров, которые могут самостоятельно манипулировать отдельными атомами.
2. Американские ученые готовы создать управляемую машину со встроенными синтетическими молекулами ДНК.
3. Нанокomпьютер — это квантовый компьютер, обладающий чрезвычайно высокой производительностью. Он способен обрабатывать за одно действие  $4^4$  в 16-й степени бит информации. Обычные компьютеры гораздо медленнее, они могут обрабатывать за один раз не более одного бита.
4. Для реализации нового типа интерфейса — жестового — к рукам человека прикрепляют несколько датчиков. Эти электроды считывают активность с определенных мышц рук и пальцев. Специальное программное обеспечение обрабатывает всю эту информацию и передает команды компьютеру.
5. Биочипы позволяют оперативно выявлять бактерии и вирусы, выяснять индивидуальные генетические особенности пациента.

## UNIT 5. INPUT DEVICES

### Task 1. Active vocabulary:

keyboard - клавиатура

key- клавиша; кнопка; переключатель; ключевой, основной; главный;  
переключать; набирать на клавиатуре

manipulator - манипулятор; блок обработки

trackball - трекбол

touch panel - сенсорная панель

graphic plotting tables - графические планшеты

sound card - звуковая карта (плата)

enable - разрешать; позволять; допускать; делать возможным

operating mode - режим работы

press a button - нажать на кнопку

keep buttons depressed - удерживать кнопки в нажатом состоянии

double-click -двойное нажатие

erase images -удалить, стереть изображение (объект)

roller -ролик; валик

track - следить; прослеживать; проходить; след; траектория; путь; дорожка;  
соединение

by means of -посредством

permitting capacity - разрешающая способность

**Task 2. Read the text, translate it and name the input devices.**

### **TYPES OF INPUT DEVICES**

There are several devices used for inputting information into the computer: a keyboard, some coordinate input devices, such as manipulators like a mouse, touch panels, scanners, digital cameras etc.

When personal computers first became popular, the most common device used to transfer information from the user to the computer was the keyboard. It enables inputting numerical and text data. Each software program can use keyboard buttons differently.

Later when more advanced graphics appeared, a mouse was used to operate with graphical interface. The mouse is an optic-mechanical input device. The mouse has several buttons which control the cursor movement across the screen. The mouse provides the cursor control. It simplifies user's orientation on the display. The mouse's primary functions are to help the user draw, point and select images on his computer display by moving the mouse across the screen.

In portable computers touch panels or touch pads are used instead of a mouse. Moving a finger along the surface of the touch pad is transformed into the cursor movement across the screen.

Graphical plotting tables (plotters) have a special application and you can draw and input manuscript texts. You can draw, add notes and signs to electronic documents by means of a special pen.

Scanner is used for optical inputting of images (photographs, pictures, slides) and texts and converting them into the computer form.

Digital video cameras are very popular. They enable getting video images and photographs directly in digital computer format. Digital cameras give possibility to get high quality photos.

**Task 3. Answer the questions to the text.**

1. What devices are used for inputting information into the computer?
2. What was the most common device in early personal computers?
3. What is the function of a keyboard?
4. What is the function of a mouse?
5. What is used in portable computers instead of manipulators?
6. What is the touch pad's principle of operation?

**Task 4. Active vocabulary.**

**Write down the list of the words and word combinations and translate them into Russian.**

alphanumeric keys, represent, letters and numbers, typewriter, numeric keypad, to edit, cursor, arrow keys, move around the document, dedicated keys, digital, to press, to produce, to select, backspace, symbol, to remove the character, to delete.

**Task 5. Read and translate the text.**

## **THE KEYBOARD**

As we know, the keyboard serves to help the user communicate with the computer. We input texts and numbers using buttons on the keyboard. A standard PC keyboard has various groups of keys.

The first group is alphanumeric keys. They represent letters and numbers, they copy the order of the letters on a typewriter.

The second group is a numeric keypad. It appears to the right on the main keyboard. The numeric keypad contains numeric and editing keys. There is a special Num Lock key which is used to switch from numbers to editing functions.

At the top of the keyboard there are function keys. They can be programmed to specific functions.

Cursor keys include arrow keys, moving insertion point. They also represent the keys which let you move around the document, for example, Home, End, Page Up, Page Down.

Dedicated keys can issue commands and produce alternative characters. Thus, Ctrl changes the functions of other keys. You can cut the selected text pressing Ctrl+X. Caps Lock makes the keyboard produce the CAPITAL letters, but it affects only letters. Enter (Return) selects options from a menu or starts a new paragraph. Backspace deletes the character to the left of your current position.

**Task 6. Answer the questions:**

1. What key produces upper-class letters not affecting numbers and symbols?
2. What key can remove the character to the left of the cursor or any selected text?
3. What key can you press together with letter C and copy the text?
4. What key can make a new paragraph?
5. What key produces a blank space?

**Task 7. Find the definition to the key:**

1. Return/Enter	a) a long key at the bottom of the keyboard
2. Arrow keys	b) the key which moves the cursor to the beginning of a new line
3. Shift	c) this key works in combination with other keys changing their functions
4. Caps Lock	d) it removes the character to the left of the cursor



5. Tab	e) it produces upper case characters
6. Space bar	f) it produces upper case letters but doesn't affect numbers or symbols
7. Backspace	g) it moves the cursor horizontally to the right for a fixed number of spaces
8. Ctrl	h) these keys can be used as an alternative to the mouse to move the cursor

**Task 8. Read and translate the text.**

**THE MOUSE**

Originally the mouse has three or two buttons which control the cursor movement across the screen. The mouse provides the cursor control thus simplifying user's orientation on the display. The mouse's primary functions are to help the user draw, point and select images on his computer display by moving the mouse across the screen. In general software programs require to press one or more buttons, sometimes keeping them depressed or double-click them to issue changes in commands and to draw or to erase images. When you move the mouse across a flat surface, the ball located on the bottom side of the mouse turns two rollers. One is tracking the mouse's vertical movements, the other is tracking horizontal movements. The rotating ball glides easily, giving the user good control over the textual and graphical images.

An optical mouse is much more popular nowadays. It has an optical sensor instead of a ball underneath.

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

We describe the actions of a mouse the following way:

- **to click** means to press and release the left button;
- **to double-click** means to press and release the left button twice;
- **to drag** is to hold down the button, move the pointer to a new place and then release the button;

- **to right-click** is to press and release the right button; this action shows a list of commands.

### **Task 9. Active Vocabulary.**

#### **Find the equivalents in the text:**

Описание работы, контролировать курсор, двигаться по экрану, упрощать, нажать кнопку, стереть рисунок, плоская поверхность, текстовые и графические изображения, оптический сенсор, вместо, беспроводная мышь, инфракрасный сигнал, радиоволны, нажать и отпустить, протянуть (протащить).

### **Task 10. Read and translate the text.**

#### **SCANNERS**

Scanners are input devices that can "read" data recorded on paper, for example, alphabetic and numeric characters printed on paper or pictures and photos.

Optical scanners that we use at home or in the office provide a capability for direct data entry into the computer system, so humans do not have to key the data. Faster and more accurate data entry make scanners very useful.

How does a scanner work? A scanner is like the eyes of the computer. It sees images and converts them into electronic codes. We put the paper with the picture or text face down on a glass surface. There are lighting and measurement devices under the glass. When we activate the scanner, it reads the picture or a document as a series of dots which are converted into a digital form, sent to a computer and stored as a picture or a text file.

The resolution of a scanner is measured in dpi or dots per inch. The more dots per inch the scanner has the better and more detailed image we have.

There are several types of scanners.

A flatbed is for use on the desktop. It works as a photocopier but it is provided with software that converts images into files in different formats. Some flatbeds have a function of a film scanner which can scan film negatives or 35 mm slides on photographic film mounted in a frame. It allows users to store old photo film in a new digital format.

A hand-held scanner is small, has a T-shape. You can capture small pictures or logos with it.

A pen-scanner has a form of a pen. You can use it to scan texts, figures, barcodes and even handwritten numbers.

In big shops you can often see shop assistants with barcode scanners to read barcodes on products to check the price and other production details.

### **Task 11. Active vocabulary**

to provide a capability for direct data entry

to key the data

to record

alphabetic and numeric characters

convert characters into electronic codes

a glass surface

lighting and measurement devices

a series of dots

a digital form

resolution

dpi/ dots per inch

**Task 12. Read and translate the text.****DIGITAL CAMERAS AND VIDEO CAMERAS**

The main feature of a digital camera that it doesn't use film. Photos are stored in a flash memory card in a digital form and can be sent directly to a computer. You can also view your photos on a TV screen with the help of the adaptor.

A digital video camera records moving images in a digital form which can be seen and edited on the computer. Taking photos and shooting films have become a very popular hobby among people. You can save your memories on your computer. But don't forget to make a reserve copy not to lose the information.

We can't do without Web cameras. Webcams allow the user to send and receive live video picture through the Internet. It makes communication more real. Webcams are connected with your PC via the USB port. Most computers have built-in web-cams. The resolution of web-cams is measured in megapixels (million pixels).

**Task 13. Translate into English.**

1. Сканер преобразует текстовую и графическую информацию в цифровую форму.
2. Сканеры классифицируются по скорости сканирования и разрешающей способности.
3. Разрешение сканера измеряется в точках на дюйм.
4. Автоматизированный ввод данных исключает ошибки, возможные при вводе информации человеком с клавиатуры.
5. 3D-сканер анализирует свойства и форму физического объекта, переводит их в цифровой формат и создает его 3D-модель.

**Task 15. Match the words and their definitions:**

1. Stylus	a) a device for direct data entry, which can convert images into the digital form;
2. Scanner	b) a device producing output in a human-readable format;
3. Keyboard	c) a manipulator used mainly in computer games;
4. Touch pad	d) a device enabling to get video images in digital form;
5. Mouse	e) a device converting the finger movements into the cursor movements across the screen;
6. Joystick	f) a special pen that can draw and input texts;
7. Digital camera	g) a device inputting numerical and text data by means of keys;
8. Magnetic disk	h) an optic-mechanical device helping the user select images on computer display due to rotating balls;
9. Printer	i) an entirely electronic high-speed device keeping information.

Список использованных источников:

1. Абрамов В.Е. English for IT students. 1 курс [Электронный ресурс]: учебное пособие по английскому языку / В.Е. Абрамов, И.В. Игнаткина. — Электрон. текстовые данные. — Самара: Поволжский государственный университет телекоммуникаций и информатики, 2015. — 118 с. — 2227-8397. — Режим доступа: <http://www.iprbookshop.ru/71817.html>
2. Игнаткина И.В. English for IT students. 2 курс [Электронный ресурс]: учебное пособие по английскому языку / И.В. Игнаткина. — Электрон. текстовые данные. — Самара: Поволжский государственный

университет телекоммуникаций и информатики, 2016. — 131 с. — 2227-8397. — Режим доступа: <http://www.iprbookshop.ru/71818.html>

3. Радовель, В.А. Основы компьютерной грамотности. / В.А.Радовель. - Ростов-на-Дону: изд. Феникс, 2012. – 224с.
4. Esteras S.R. Infotech. English for Computer users. /Santiago Esteras Remacha, Fabre Elena Marco. – Cambridge University Press, 2008. – 162 p.
5. Glendinning E.H., Information Technology. / Eric H.Glendinning, John McEwan. - Oxford, 2006. – 169 p.