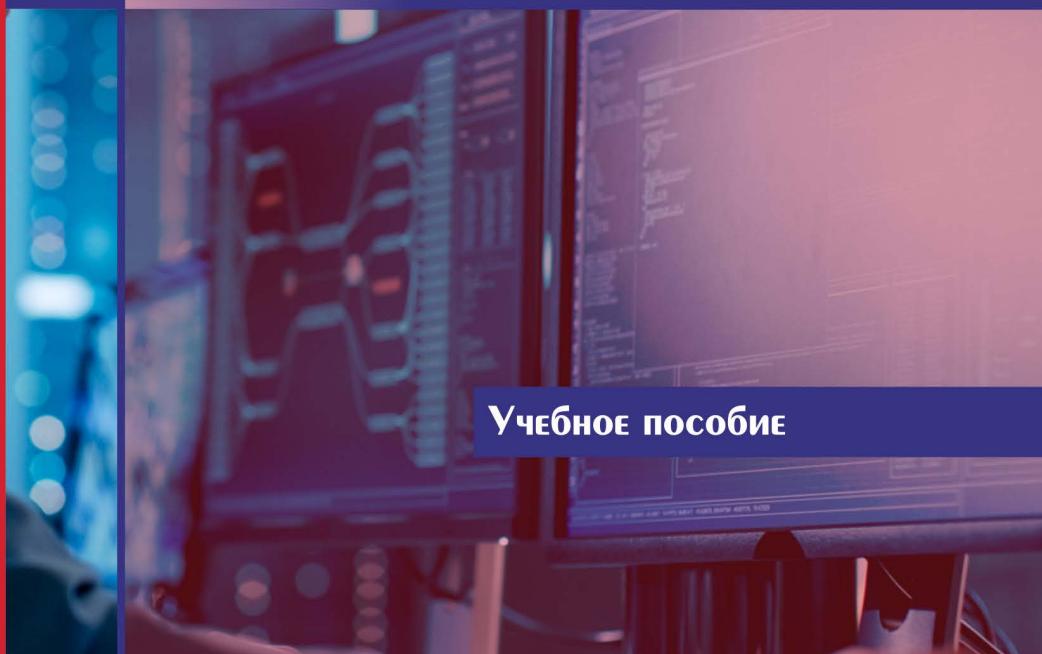




Е. И. Кочик

АНГЛИЙСКИЙ ЯЗЫК ДЛЯ ПРОФЕССИОНАЛЬНОГО ОБЩЕНИЯ. ВЫЧИСЛИТЕЛЬНАЯ ТЕХНИКА

**ENGLISH FOR PROFESSIONAL
COMMUNICATION.
COMPUTER ENGINEERING**



Учебное пособие

Е. И. Кочик

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*Допущено Министерством образования Республики Беларусь
в качестве учебного пособия для учащихся учреждений
образования, реализующих образовательные программы
профессионально-технического и среднего специального
образования по специальностям направления образования
«Вычислительная техника»*

2-е издание, исправленное



Минск
РИПО
2020

УДК 802.0:681.3(075)
ББК 81.2Англ:32.97я7

K55

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Кочик, Е. И.

K55 Английский язык для профессионального общения. Вычислительная
техника = English for Professional Communication. Computer Engineering : учеб.
пособие / Е. И. Кочик. – 2-е изд., испр. – Минск : РИПО, 2020. – 228 с. : ил.
ISBN 978-985-7234-47-9.

Учебное пособие предназначено для расширенного изучения компьютерной про-
фессиональной лексики на английском языке. Материал имеет коммуникативно-
речевую направленность, изложен в виде системы предтекстовых и послетекстовых
заданий, содержит тренировочные упражнения для закрепления знаний, тесты для
самоконтроля. Направлено на формирование навыков чтения и перевода профессио-
нально значимых текстов, в том числе на работу в режиме «диалога» с компьютером,
составления аннотаций и рефератов, развитие умений применять лексико-грам-
матический и терминологический материал в устной и письменной иноязычной речи
профессионального содержания.

Предназначено для учащихся учреждений среднего специального и профес-
сионально-технического образования по направлению образования «Вычислительная
техника», может быть полезно для слушателей курсов повышения квалификации и
переподготовки, а также для студентов вузов.

УДК 802.0:681.3(075)
ББК 81.2Англ:32.97я7

ISBN 978-985-7234-47-9

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ПРЕДИСЛОВИЕ

В настоящем издании представлен материал для изучения профессиональной компьютерной лексики английского языка, который систематизирован в соответствии с типовой учебной программой по специальности «Эксплуатация электронно-вычислительных машин». Учебное пособие может быть востребовано желающими самостоятельно изучать современный английский язык и повышать свой уровень знаний в области компьютерной лексики, современных информационных технологий, операционных систем, персональной ЭВМ.

Материал учебного пособия поможет сформировать коммуникативные навыки учащихся, развить умения читать и переводить тексты, содержащие профессионально значимую информацию, а также научить работать в режиме «диалога» с компьютером, обеспечивая при этом индивидуализацию процесса обучения.

Учебное пособие структурировано в виде двух основных частей: **вводно-коррективной и основной**. **Вводно-коррективная** часть включает разделы «Фонетика» и «Грамматика». Рядел «Фонетика» представлен в виде тренировочных упражнений, направленных на отработку основных звуковых и интонационных явлений фонетического строя современного английского языка, закрепление лексико-фонетического материала, а также на развитие произносительных навыков при чтении профессионально значимых терминов. Рядел «Грамматика» состоит из тестов для установления исходного уровня знаний учащихся и тренировочных упражнений для повторения и отработки грамматических правил по основным темам английской грамматики на основе профессионально значимых текстов. Особое внимание уделяется анализу грамматических структур для лучшего усвоения и дальней-

Предисловие

шего использования изучаемых конструкций и оборотов в устной и письменной речи профессионального содержания.

Учебное пособие состоит из тематических разделов. Каждый раздел – это готовые разработки уроков на основе современных методов обучения иностранному языку, что позволяет легко и просто использовать материал при подготовке к занятиям и для самостоятельного изучения языка. Разделы содержат лексико-фразеологический, терминологический и грамматический материал, включают систему речевых упражнений при работе с текстами, упражнения по отработке различных видов чтения, разнообразные задания для усвоения лексического материала, а также тесты для самостоятельной работы и самоконтроля – все, что необходимо для успешной устной и письменной коммуникации в рамках профессионально значимой тематики.

Структура каждого урока, методы и приемы обучения зависят от содержания изучаемого материала и поставленных целей. В соответствии со спецификой современного урока иностранного языка занятия имеют основные структурные элементы, такие как введение в атмосферу иноязычного общения, подготовка к основному этапу, основной этап, рефлексия. План основного этапа зависит от цели урока. Упражнения на изучение новой лексики обозначены значком **V**, упражнения на чтение – , письменные задания – . Представленный материал обеспечивает ситуативность обучения, новизну, речевую направленность, а также реализует личностно-ориентированный подход к обучению.

Изучение языка с помощью системы, представленной в данном пособии, обеспечивает связь с дисциплинами профессионального компонента, а также способствует совершенствованию навыков владения английским языком в профессиональной сфере.

I. INTRODUCTION

PHONETICS

Ex. 1. Work out the rules of reading. Pay attention to the correct articulation.

English vowels

При произнесении звука [i:] основная масса языка находится в передней части рта. Кончик языка касается нижних зубов. Губы несколько растянуты.

[i:] – [ti:z], [ti:n], [ni:t], [ni:z], [si:n], [ni:s], [fi:d], [fi:t], [si:d], [si:t], [li:st], [kli:n], [mi:l], [ki:], [mi:n], [di:l], [fi:ld].

При произнесении звука [ɪ] основная масса языка находится в передней части рта. Кончик языка – у основания нижних зубов. Средняя часть языка поднята, но не так высоко, как при [i:] и слегка отодвинута назад.

[ɪ] – [tim], [dim], [sim], [fil], [fist], [film], [risk], [siti], [disk], [il], [finif], [mis], [lip], [kis], [it], [bil].

При произнесении гласного [e] основная масса языка находится в передней части рта. Кончик языка находится у нижних зубов. Губы слегка растянуты.

[e] – [nekst], [get], [end], [fensiz], [feld], [ret], [sed], [wel], [ben], [ten], [send], [bek], [set], [tent], [beg], [net], [smel].

При произнесении звука [æ] губы несколько растянуты, нижняя челюсть опущена, кончик языка касается нижних зубов, а средняя спинка языка немного выгибаются вперед и вверху.

[æ] – [æm], [maes], [hæz], [sæt], [mæn], [fæn], [æd], [mæt], [sæd], [kæb], [tæn], [læmp], [ækt], [mæp], [fæmili], [sænd].

При произнесении английского монофтонга [ɑ:] / [a:] рот открыт почти как для русского звука [a], но язык отодвигается дальше

I. Introduction

назад и лежит плоско. Кончик языка оттянут от нижних зубов. Губы нейтральны, т. е. не растянуты и не выдвинуты вперед.

[a:] / [ɑ:] – [a:m], [ba:], [ka:m], [ma:sk], [la:k], [fa:m], [pa:m], [pa:k], [ka:t], [a:nt], [ba:n], [ra:ft], [kla:s], [spa:k], [a:sk].

При произнесении звука [ʌ] язык несколько отодвинут назад, задняя спинка языка приподнята к передней части мягкого неба, губы слегка растянуты, расстояние между челюстями довольно большое.

[ʌ] – [dʌz], [mʌd], [sʌm], [kʌt], [bʌz], [plʌg], [plʌk], [bʌt], [nʌt], [lʌk], [kʌntri], [ʌglɪ], [kʌm].

При произнесении звука [ʊ:] губы сильно округлены, но гораздо меньше выдвинуты вперед, чем при произношении русского звука [у]. Английский звук более долгий и напряженный, чем русский звук [у].

[ʊ:] – [tu:], [ru:d], [ru:l], [du:], [fu:d], [bru:m], [su:n], [bru:z], [mu:n], [lu:z], [ru:f], [fru:t].

При произнесении звука [ʊ] губы почти не выдвигаются вперед, но округлены. Язык оттянут назад, задняя часть спинки языка приподнята к передней части мягкого неба.

[ʊ] – [god], [fol], [kod], [tol], [pol], [bok], [tok], [lok], [rom], [put], [ku:k], [nuk].

При произнесении звука [ɒ] рот должен быть открыт на величину указательного и среднего пальцев, а челюсть – довольно низко опущена.

[ɒ] – [fɒks], [nɒt], [spɒt], [pɒt], [kɒt], [ʃɒt], [kɒd], [ɒpli], [kɒl], [ɒɒp], [ɒɒmp], [ɒmbə], [ɒpi].

При произнесении долгого звука [ɔ:] язык оттянут от зубов, и находится в задней части полости рта. Губы слегка округлены, но не выпячиваются вперед.

[ɔ:] – [spɔ:t], [pɔ:t], [kɔ:t], [ʃɔ:t], [kɔ:d], [wɔ:l], [stɔ:l], [tɔ:l], [tɔ:k], [hɔ:n], [lɔ:d], [kɔ:n], [fɔ:s], [sɔ:lt], [ɔ:də].

При произнесении звука [ɔ:] язык приподнят, губы напряжены и слегка растянуты, расстояние между челюстями небольшое.

[ɔ:] – [wɔ:s], [gɔ:l], [fɔ:m], [fɔ:st], [hɔ:l], [lɔ:k], [kɔ:l], [bɔ:d], [wɔ:ld], [wɔ:d], [sɔ:], [wɔ:], [hɔ:d], [lɔ:n], [wɔ:k].

English consonants

Смычно-взрывной согласный [p] напоминает русский звук [п], но произносится с сильными приыханием (аспирацией), губы сжимаются более плотно.

[p] – [spi:k], [pa:t], [pɔ:t], [ki:p], [peə], [pot], [pru:f], [pa:st], [plb], [pɪk], [pi:s], [rəʊp], ['pɔ:təb(ə)l], [pik'tɔ:riəl], ['præktɪs].

Смычно-взрывной согласный звук [b] напоминает русский звук [б], губы сжаты плотнее, звук произносится более напряженно.

[b] – [bɔ:d], [bæk], [bəʊst], [bɔ:n], [bar], [bit], ['betə], [baɪk], [bləv], [əbavt], [rəʊb], [hbɪ], [blɒk], ['brɪlɪənt], ['bainəri].

Смычно-взрывной согласный звук [t] произносится как русский звук [т], при этом кончик языка находится у альвеол (бугорков за передними верхними зубами).

[t] – [tɔ:k], [temprəʊ], [feɪt], ['təʊtəl], [treid], [tuə], [ta:sk], [ti:m], ['tempə], [tækt], [teɪk], [tæks], [tru:].

Смычно-взрывной согласный звук [d] произносится как русский звук [д], при этом кончик языка находится у альвеол.

[d] – [di:'bʌg], [dr'beɪs], [dr'bɔ:], [di'saɪd], [di:p], [dr'fɔ:lt], [dr'kri:s], [dɪ'ma:nd], [dɪ'lɪmɪt], [dai], [dr'veɪz].

Смычно-взрывной согласный звук [k] напоминает русский звук [к], но произносится с приыханием.

[k] – [ki:n], ['kiləbait], [kaɪnd], [ki'netɪk], ['kinzmən], [kə'pæsətɪ], [kæmp], ['klətrəni], [kɔ:z], [ka:st], ['keɪtə], ['ko:ʃn].

Смычно-взрывной согласный звук [g] произносится как русский звук [г].

[g] – [gəuld], [flæg], [beg], [gud], [bi'gin], [get], ['greivli], [grəʊ], [grim], [gaɪd], ['gatsi], [gʌf], ['gu:gl], [gəʊd].

При произнесении смычно-щелевого согласного звука [tʃ] кончик языка касается альвеол.

[tʃ] – [ptʃ], [kætʃ], [fetʃ], [ri:tʃ], [tʃest], [tʃeɪn], [piktʃə], [tʃæt], [tʃi:p], [tʃek], ['tʃu:zi], [tʃɪs].

Смычно-щелевой звук [dʒ] артикулируется так же как [tʃ], но произносится звонко. Оба элемента звука следует произносить слитно, не отрывая кончик языка от альвеол.

[dʒ] – [peɪdʒ], ['breɪkɪdʒ], ['dʒenrəl], [grɪdʒ], [dʒɔɪn], [dʒet], [dʒɒb], [dʒem], [keɪdʒ], [dʒʌst], [dʒʌmp], [dʒʌdʒ].

I. Introduction

При произнесении межзубного согласного звука [θ] кончик языка находится между зубами и произносится русская буква [с].

[θ] – [θɪŋk], [θɪŋ], [θglɪv], [θrləst], [θrɒb], [θləm], ['θɪlə], [θɪk], [mɪθ], [θaŋk], [ju:θ], ['θɪətə], ['θɪətɪ].

При произнесении межзубного согласного звука [ð] кончик языка находится между зубами и произносится русская буква [з].

[ð] – [ðeɪ], [wɪð], [ðem], [beɪð], [ðɪs], [ðæt], ['lðə], [ə'nlðə], [ðəuz], [ði:z], [ðəʊ], ['bɒðə], [tə'geðə].

При произнесении губно-губного звука [w] губы сильно округляются и выдвигаются вперед, образуя круглую щель.

[w] – [ə'wɔ:d], [kwεɪk], [kwʌlt], [bɪ'twɪ:n], [wɔ:d], [wɔ:ld], [waɪz], [wɪn], [waɪə], ['windɪ], [wɪʃ], ['fɔ:wəd].

При произнесении губно-зубной согласный [f] напоминает русский [ф], но более энергичный и отчетливый. При артикуляции верхние зубы касаются нижней губы.

[f] – [fɔ:], [fɔ:m], [fækt], ['filtə], [faɪl], ['fɒləʊ], ['fəʊkəs], ['frɪkʃn], [fɒnd], [sta:f], ['fɔ:rəm], [spfɪt].

При произнесении губно-зубной согласный [v] напоминает русский звук [в], но более напряженный. При артикуляции верхние зубы касаются нижней губы.

[v] – [ɪn'veɪt], ['veɪkənt], ['velvɪt], ['vektə], ['vɒlju:m], ['viktərɪ], [vəʊlt], [ɛ'vɔɪd], ['vɪvɪd], ['vi:zə], ['vaitl].

При произнесении губно-губной звук [m] схож с русским [м], при этом губы сжимаются более плотно.

[m] – [meɪk], [mi:t], [mi:n], ['ma:stə], ['mætə], [mɔ:], [mʌg], [medl], ['ma:kɪt], [maɪt], [mə'ri:n].

При произнесении носового звука [n] кончик языка находится под прямым углом к альвеолам, воздух проходит через нос, звук более сонорный. В отличии от русского звука [н] в английском языке звук [n] – твердый.

[n] – [ɒn], [nɒd], [naɪs], [nʌn], [naʊn], ['nʌmbə], ['netwɜ:k], ['nevə], [kæn], [plæn], [zəʊn], [nɪ'glekt].

При произнесении носового звука [ŋ] язык упирается в основание нижних зубов, мягкое небо опущено и воздух проходит через полость носа. Аналогов этого звука в русском языке не существует.

[ŋ] – [prəŋk], [bləŋk], [brɪŋ], [sɪŋ], [strəŋ], [rɪŋ], [sprɪŋ], [bæŋk], [jʌŋ],
 [tʌŋ], [ˈmɔ:nɪŋ], [lɒŋ], [ɪŋglənd], [tæŋk], [kɪŋdm].

English diphthongs

A diphthong is a complicated sound which consists of two vowels pronounced together as one.

[aɪ] – [maɪs], [baɪz], [laɪk], [saɪz], [taɪm], [naɪt], [faɪv], [faɪt], [paɪ], [laɪf],
 [sart], [fam].

[eɪ] – [meɪl], [meɪn], [keɪk], [peɪ], [beɪs], [eɪm], [meɪk], [seɪf], [keɪs],
 [cleɪm], [geɪm], [peɪn], [treɪd].

[ɔɪ] – [vɔɪs], [tɔɪs], [bɔɪ], [bɔɪl], [fɔɪl], [sɔɪl], [spɔɪl], [nɔɪz], [kɔɪt], [kɔɪz],
 [hɔɪz].

[ɪə] – [dɪə], [ɪə], [fɪə], [tɪə], [hɪə], [nɪə], [klɪə], [nɪəlɪ], [sɪrɪəs], [gɪə],
 [bɪə].

[eə] – [keə], [feə], [skeə], [peə], [skweə], [deə], [gleəd], [weə], [heə],
 [keə], [sweə], [steə], [zeən].

[ʊə] – [puə], [ʃuə], [buə], [muə], [krʊəl], [plʊərəl], [tuə], [tuərist].

[aʊ] – [naʊ], [skauτ], [maʊnd], [kaʊnt], [faʊnd], [hau], [naʊn], [haus],
 [taʊn], [daʊn], [ʃaʊt].

[əʊ] – [gəʊ], [nəʊt], [təʊn], [stəʊn], [gəʊl], [səʊl], [səʊp], [nəʊbl], [əʊld],
 [kəʊmb], [kəʊt], [ʃəʊldə].

Ex. 2. Read the words according to the rules of articulation. Correlate the words with the given sounds.

[əʊ] [u:] [ɪ] [i:] [ɔ:] [ɒ] [eɪ] [e] [ʌ] [æ] [aɪ] [ju:]

Boot, script, code, open, modify, attached, increase, infect, list, normal, replicate, residence, web, page, security, setting, event, download, worm, spread, malicious, exploit, check, attack, addition, space, free, module, common, algorithm, unique, combine, decoder, register, format, data, object, management, orient, hackers, procedure, analog, multiplication, ordinary, digit, key, numerical, column, figure, adding, machine, addition, subtraction, select, compare, perform, fundamental, computation, solution, supply, button, calculation, output, perform, display, screen, erase, floppy, reduce, conclude, run, exchange, come, replicate, install, global, broadband, browse, design, overload, provide, site, destructive.

Ex. 3. Read the following words.

Business, information, express, relation, perform, sequence, hardware, ordinary, study, analogue, essence, fundamental, variation, significant, effective, monitor, store, organize, personal, conference, participate, original, invent, principle, address, power, location, contain, knowledges.

Ex. 4. Read the words below. Analyze the number of letters and sounds.

general ['dʒenrəl]

machine[mə'ʃi:n]

simulation [simjʊ'lɪsən]

except [ɪk'sept]

text [tekst]

thought [θɔ:t]

implement['implɪment]

keyboard ['ki:bɔ:d]

terminate['tɜ:mɪneɪt]

language ['læŋgwɪdʒ]

hardware['ha:dweə]

electronic [ɪlek'trɒnɪk]

editor['edɪtə]

icon ['aɪkɒn]

application [aplɪ'keɪʃ(ə)n]

Ex. 5. Devide the following words into syllables.

Switch, accept, resource, peripherals, everything, machine, digital, computing, register, information, instruction, rules, modern, quick, profession, unit, closely, connect, reasonable, bases, viruses, infectors, executions, documents, contents, sequences, networks, commands, accesses.

Ex. 6. Read the following words in transcription and write them down in letters.

[kləʊz], [drɪ'li:t], ['deɪtəbeɪs], ['fɔ:mæt], [kʌt], ['aɪkɒn], [klik], [ɪntə'ræktyv], [help], [græfɪk], ['menju:], [maʊs], ['netwɜ:k], [peɪst], ['prɪntə], [rɪ'pleɪs], [seɪv], [sɪ'lekt], [kə'ma:nd], [du:], ['ləʊkəl], ['pɜ:rsənl], ['æktɪv], ['fekt], ['blu:tu:θ], [dət], [instə'leɪʃn], ['ɪntəfeɪs], ['i:buk], [dɪ'rekterɪ].

Ex. 7. Read the following international words. Look up corresponding Russian equivalents in the dictionary.

System, politics, secretary, progress, computer, telegram, block, group, test, basis, cooperate, organization, discussion, office, official, process, program, positive, republic, constitution, revolution, democratic, party, territory, mathematics, engineer, technology, metal, parallel.

Ex. 8. Read the following pairs of words. Analyze the changing of stress in words of the same root.

Noun	Adjective
culture ['kʌltʃə]	cultural ['kʌltʃərəl]
economy ['ekɒnəmɪ]	economical [i:kə'nɒmɪk(ə)l]
history ['hist(ə)rɪ]	historical [hɪ'stɔ:rɪk(ə)l]
policy ['pɒlɪsɪ]	political [pə'lɪtɪk(ə)l]
industry ['ɪndəstri]	industrial [ɪn'dʌstrɪəl]
theory ['θeəri]	theoretical [θɪə'retɪk(ə)l]
revolution [,revə'lu:ʃn]	revolutionary [,revə'lu:ʃn(ə)ri]
nation ['neɪʃ(ə)n]	national ['næʃnəl]

Verb	Noun
export [ek'spɔ:t]	export ['ekspɔ:t]
import [im'pɔ:t]	import ['impɔ:t]
organize ['ɔ:g(ə)nائز]	organization [ɔ:gənai'zeɪʃ(ə)n]
demonstrate ['demənstreɪt]	demonstration [,demə'nstreɪʃn]
coordinate [kəʊ'ɔ:dɪneɪt]	coordination [kəʊ',ɔ:di'neɪʃn]
illustrate ['ɪləstreɪt]	illustration [ɪlə'streɪʃn]
integrate ['ɪntɪgreɪt]	integration [ɪntɪ'greɪʃn]

Ex. 9. Learn the information about *falling kinetic tone* in English.

Кинетический тон – это изменение высоты голоса на ударном слоге наиболее важного по смыслу слова. **Нисходящий кинетический тон** представляет собой падение высоты голоса на ударном слоге наиболее важного по смыслу слова либо последнего лексически полнозначного слова в предложении. Нисходящий тон выражает завершенность, определенность, категоричность и поэтому используется: в повествовательных фразах для констатации факта, инструкции или приказания, а также в специальных и альтернативных вопросах, в восклицательных предложениях, в повелительных предложениях, выражающих команду, распоряжение.

Ex. 10. Read the sentences with the falling tone. Analyze the use of kinetic tone in the statements given below.

- a) This is an ↘ ipad. It is the latest ↘ ipad.
- b) There are many ↘ people in the office.

- c) Where do you ↘ work?
- d) Come ↘ in. Come ↘ here. Let me ↘ help you. Don't ↘ worry.
- e) He developed disk operating ↘ system.
- f) He is a ↘ programmer. Can he speak ↗ English or ↘ Spanish?
- g) Software is the set of ↘ programs.
- h) Binary number system has only ↘ two digits.
- i) You can start learn computer ↘ technologies.
- j) Here it is a ↘ security program.
- k) How wonderful! How interesting! What a nice idea!

Ex. 11. Learn the information about *rising kinetic tone* in English.

Восходящий тон представляет собой подъем высоты голоса от более низкого к более высокому уровню. Основное его значение – вопросительность. Высокий восходящий тон придает вопросам нейтрально-деловой характер. Это нейтральный запрос об информации. Восходящий тон употребляется в общих вопросах, при перечислении каждого компонента списка (кроме последнего слова в списке), в разделительных и альтернативных вопросах.

Ex. 12. Read the sentences with the rising tone. Analyze the use of kinetic tone in the statements given below.

- a) Do you like playing computer ↗ games?
- b) He especially loves ↗ hiking, ↗ camping and ↘ searching the web.
- c) You are a genius, ↗ aren't you?
- d) Have you ever seen a ↗ mainframe?
- e) Can a computer change the ↗ world?
- f) Are you obsessed with ↗ computers?
- g) Would you like to have a ↗ huge or a ↘ wallet-size PC?
- h) Some control system are able to regulate ↗ lighting, ↗ temperature and ↘ security system.
- i) Is he a ↘ programmer or an ↗ engineer?
- j) Did he restart the computer ↗ program?

Ex. 13. Read the text below. Pay attention to the pronunciation and intonation. Be ready for Phonetic Reading Test of the text.

Bill Gates

William Henry Gates, also known as *Bill*, has established himself as the richest man in the world.

He is the youngest self made billionaire, and perhaps the best businessman in the world. Bill Gates is important because he did not only change the computer technology in America, but also created the biggest, strongest, richest and the most powerful company in the world.

Bill was born on October 28, 1955. His parents' name were Mary and Bill. His sister's name was Kristi.

Gates began his career in PC software, programming computers at the age of 13. Gates also worked at a programming company called TRW.

He created the programming language BASIC. Gates attended Harvard University. But after a few years Gates and his business collaborator, Paul Allen, dropped out of Harvard. In 1975 they founded the Microsoft Corporation, the largest computer based company in the world.

Gates is the Chief Executive officer and Paul Allen is VP. They both are very wealthy due to their business.

Gates believes that if you are intelligent and know how to apply your intelligence you can accomplish anything.

GRAMMAR

Diagnostic Tests

Test 1

Choose the right variant.

1. The first microprocessor delivered by Intel ... a 4 bit microprocessor.
 - a) is; b) were; c) was
2. Soon computers ... everywhere in our lives.
 - a) are; b) will be; c) have been
3. Computers are ... machines in the world.
 - a) cleverer; b) more clever ; c) the cleverest
4. How many types of printers ... there?
 - a) is; b) have been; c) are
5. Unfortunately, my scanner at the moment.
 - a) isn't working; b) doesn't work; c) hasn't worked
6. They have been working ... on this project for 2 months.
 - a) hard; b) hardly; c) heavily

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7. You can move ... from place to place using removable hard disks.
a) data; b) datas; c) datum
8. The batteries in his digital camera are nearly dead. They ... changing.
a) could be; b) are to be; c) must be
9. People ... sit in front of a computer screen for eight hours a day.
a) haven't to; b) mustn't; c) can't
10. Mobile phones and PDAs ... communicate with computers.
a) should; b) need; c) can

Test 2

Choose the right variant.

1. Computer virus ... a type of software program.
a) are; b) is; c) will be
2. He ... that working in office is boring.
a) thinks; b) is thinking; c) thought
3. Software is a set of ... or encoded information.
a) instruction; b) instructors; c) instructions
4. In future computers ... almost every technics.
a) have been replaced; b) are replacing; c) will replace
5. This process was expected to be
a) more effective; b) effectiver; c) effectively
6. People's ... is assumed to be well-organized and to facilitate the understanding of new information.
a) knowledges; b) knowledgeable; c) knowledge
7. Laser printers give ... quality of output.
a) the best; b) better; c) good
8. Second-generation computers were ... and ... than first-generation computers.
a) small, fast; b) smaller, fast; c) smaller, faster
9. We ... more computer-literate.
a) may be; b) should be; c) are to be
10. The Internet is a ... system of interconnected computer networks.
a) globally; b) globalized; c) global

THE NOUN

Ex. 1. Read the nouns and mark their suffixes. Define the words from which they are derived.

direction	computerization
construction	information
concentration	globalization
collection	technician
socialism	modernization
heroism	technologist
popularity	understanding

Ex. 2. Make nouns from the following words using the given suffixes.

- er:** to organize, to explore, to work, to design
- tion:** to dictate, to decorate, to educate, to connect
- ment:** to improve, to agree, to govern, to develop
- ship:** a member, a leader, a dictator
- ist:** art, science, biology, to type, material.

Ex. 3. Read the nouns and give their plural forms.

A network, a tube, a circuit, a photo, a process, an invention, a transistor, a glass, a day, a department, a conductor, a signal, a problem, a device.

Ex. 4. Use the possessive case if possible.

The invention of Alexander Bell, the design of Mr Ford, the population of the world, the decision of the company, the components of a computer, the essentials of hardware, the progress of Christopher.

Ex. 5. a) Read the following text and say why Peter Norton became world-famous.

Some Kbytes from Peter Norton's Life

Nobody knew an ordinary programmer called Norton in 1981. After being involved in programming since 1969, he bought one of PCs just appeared on the market. Just for fun. In 1982 at the age of thirty-nine he left his job in the aerospace industry and founded his own firm "PETER NORTON COMPUTING", which began to supply utilities for IBM-compatible PC.

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The stock of the company was \$30 000 and the personnel consisted of the one and the only man – P.N. himself. The main product at that time was THE NORTON UTILITIES BATCH which allowed the users to recreate lost data. Very soon Norton's name became known to millions and his products became a “brand-name”. Peter Norton is a bachelor of mathematics from the famous Berkeley University. At that time he became and still is the presiding genius in the PC industry. For more than 20 years Norton has been saving people from catastrophes with computers. He enables them to manipulate data easily, protects from viruses and provides data security. His BMW number – “Mr. IBM PC” – proves that.

b) Find the examples of nouns, adjectives, adverbs and verbs in the text and complete the table.

Noun	Verb	Adjective	Adverb

c) Give plural forms of the nouns from the box above.

THE ADJECTIVE. THE ADVERB

Ex. 1. Define derivational prefixes and suffixes in the following adjectives.

Possible, hopeless, indirect, useful, important, dangerous, available, distant, digital, wireless, different, electronic, essential, accurate, impossible, independent, disappointing, portable, destructive, uninterruptible, personal, non-persistent, indirect, ordinary, useless, informational, operating, significant, processing.

Ex. 2. Translate the following adjectives. Keep in mind the prefixes *-in-*, *un-* *non-*, *ir-* give negative meaning to the words.

in-: invisible, inaccurate, inactive, incapable, informal, ineffective, incorrect;

un-: uncontrollable, unable, unchanged, uncommunicative, undisciplined, unexpected;

non-: non-effective, non-computable, nonconstant, noncontrollable; nondigital, nonprogrammable;

ir-: irregular; irresponsive, irrational, irreplaceable.

Ex. 3. Change the following adjectives using comparative and superlative degrees.

Fast, speedy, large, early, long, hard, progressive, low, powerful, active, near, necessary, intelligent, difficult, far, high.

Ex. 4. Complete the sentences using degrees of comparison of adjectives. Translate the sentences into Russian.

1. Supercomputers are (*large*) ... and (*fast*) ... computers in the world.
2. Today computers become (*essential*) ... tools in almost every field of research.
3. Few years ago appeared central processing units of seventh and eighth generations, which are (*powerful*) ... and can perform millions of operations per second.
4. The use of transistors in computers marked the advent of (*small*) ..., (*fast*) ... elements than it was possible earlier.
5. Transistors use (*little*) ... power and have (*long*) ... life.
6. The components of a computer became (*small*) ... and the system became (*little*) ... expensive to build.
7. Nowadays computer games become one of (*popular*) ... activity over the world, especially among teenagers. They are (*comfortable*) ... and inexpensive sort of relaxation, rest and entertainment.

Ex. 5. Complete the sentences below using degrees of comparison of adverbs.

1. It's becoming (*hard*) ... and (*hard*) ... to find a job.
2. Your work isn't very good. I'm sure you can do (*well*) ... than this.
3. They arrived (*early*) ... than I expected.
4. The (*much*) you read, the (*soon*) ... you enlarge your knowledge.
5. David plays computer games (*often*) ... than last year.
6. Would you please to speak a bit (*distinctly*) ...?
7. If he had driven (*carefully*) ..., he wouldn't have got into an accident.
8. If you want to pass your exams, you should do your homework (*regularly*)....
9. They put out the fire much (*quickly*) ... than we expected.
10. These days he takes all the things (*seriously*)....

Ex. 6. Read the text below. Analyze the use of degrees of comparison of adjectives.

A computer like any other machine is used because it does certain jobs better and more efficient than humans. It can receive more information and process it faster than any human. The speed at which a computer works means it can replace weeks or even months of pencil-and-paper work. Therefore, computers are commonly used to save the time and cost. It is the most reasonable point why a computer is the most popular machine in business, industry and research.

Ex. 7. Translate the sentences below.

1. Компьютеры являются самой быстро меняющейся сферой современной технологии. 2. Цифровой компьютер является самым распространенным типом компьютеров на сегодняшний день. 3. В настоящее время люди могут работать и делать покупки, сидя за своим компьютером дома, поэтому он считается неотъемлемой частью жизни. 4. Самые ранние компьютеры были полностью механическими системами. 5. Чем меньше мы говорим на английском языке, тем хуже для нас. 6. Чем мощнее процессор компьютера, тем быстрее он выполняет различные команды и операции. 7. Эта антивирусная программа лучше, чем та. 8. Клавиатура является самым простым устройством ввода информации в компьютер.

TYPES OF QUESTIONS

Ex. 1. Analyze the questions below. Define their types.

1. Do computers have many remarkable powers? 2. Are computers the cleverest machines? 3. Is software a set of instructions or encoded information? 4. Why is primary storage of a computer the most expensive? 5. The Internet is a global system of interconnected computer networks, isn't it? 6. Computer virus isn't a type of software program, is it? 7. When was the first microprocessor delivered by Intel? 8. What was the very first calculating device? 9. How much people had an opportunity to use computers in 1970? 10. Who invented the modern electronic digital computer predecessor? 11. Second-generation computers were smaller, faster and more dependable than first-generation computers, weren't they? 12. Did computers have a long or a short way of their creation?

Ex. 2. Put the words in the correct order to make a question. Define the types of questions.

1. Soon / will / in / our / computers / be / lives / everywhere?
2. Future / we / be / why / should / more / in / computer-literate?
3. Technics / what / in / will / almost / replace / future / every?
4. Our / improve / due to / lives / will / computers / soon?
5. You / would / a / PC / buy / or / IPhone / new / a?
6. System / any / does / it / computer / without / work / doesn't / hardware?
7. You / who / sent / a / message / new?
8. Why / he / use / does / so / earphones / often?

Ex. 3. Put questions to the sentences below using the question-words in brackets.

1. Charles Babbage, a professor of Mathematics at Cambridge University, invented the first calculating machine in 1812. (*Who? When?*)
2. Computers are also very useful for teenagers because they can find all sort of information for study in the Internet. (*What?*)
3. In the modern world, more and more people use computers every day, for the simple reason that they are much more efficient than human beings. (*How many? What?*)
4. Many people whose jobs are connected with computers complain on health problems such as headaches, backache, and poor eyesight. (*Which?*)

Ex. 4. Read the sentence and put five types of question to it.

In today's digital age teachers use projectors and interactive whiteboards to give presentations and teach sciences, history or language courses.

Ex. 5. Read the text below. Put different types of question to it. Analyze the grammatical construction of your questions. Discuss them with your partner.**What are Telecommunications?**

Telecommunications refer to the transmission of signals over a distance for the purpose of communication. Information is transmitted by devices such as the telephone, radio, television, satellite, or computer network. These are examples: two people speaking on their mobile phones,

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a sales department sending a fax to a client, or even someone reading the teletext pages on TV. But in the modern world, telecommunications mainly mean transferring information across the Internet, via modem, phone lines or wireless network.

Because of telecommunications, people can now work at home and communicate with their office by computer and telephone. This is called **teleworking**. It has been predicted that about one third of all work could eventually be performed outside the workplace. In call centres, assistance or support is given to customers using the telephone, email or online chats. They are also used for telemarketing, the process of selling goods and services over the phone.

MODAL VERBS

Ex. 1. Read and analyze the use of modal verbs in the sentences below.

1. Nick can run long distances.
2. He can speak many languages.
3. You can join our group.
4. I must excuse myself.
5. You mustn't park the car here.
6. This man must visit a doctor.
7. You may keep my book for a week.
8. Drivers may drive at 60 kilometers per hour here.
9. You may stay at your friends' over the weekend.
10. It may be cold. Take your coat.
11. Jack shouldn't have laughed at John.
12. John ought to be more careful in future.
13. You needn't buy bread. We have some at home.
14. You needn't have done this. It was useless.
15. I have to take a taxi in order not to be late.
16. We had to wait as the manager was out.
17. Robert is to take his exams next month.
18. We are to meet at 5 o'clock.

Ex. 2. Complete the sentences with *must*, *have to*, *to be to*, *need* in positive or negative form.

1. You ... explain anything.
2. I know everything. Tom ... get up early yesterday.
3. You ... send for the doctor.
4. I ... finish the work yesterday, but I didn't have enough time.
5. My friend is ill and I ... visit him today.
6. I ... make a report so I ... go to the library this week.
7. The car ... be parked on the pavement.
8. The students... do the whole exercise. Ten sentences are enough.
9. I ... go shopping today. There is enough food in the house.
10. You ... interrupt me when I am speaking.

Ex. 3. Fill the gaps with the appropriate modal verb in the right form.

1. You ... drink cold water if you don't want to fall ill. 2. ... I help you? – I am afraid not. 3. ... you remember the address? – I ... not even remember the street. 4. The policemen told the driver that he ... drive more carefully. 5. The woman is looking ill. She ... see a doctor. 6. Tom was often late and his father told him that he ... wake up earlier. 7. I have forgotten my own language and ... speak nothing but yours. 8. No good looking back; things happen as they 9. Somebody is knocking at the door. It... be John. – It ... not be John. It's too early for him to be back. 10. It.. not have happened at Ainswick. 11. I think you ... be glad of some coffee before you start back to your hotel. It's such a cold night. 12. There was no one to help him so he ... move the furniture himself. 13. I want you to obey her. You ... do exactly as she says and make no noise. 14. He lost all his money at the races and I ... lend him five pounds. 15. You are not to stay so late. You ... leave after dinner. 16. He ... sea air because he has pulmonary disease. 17. You ... take any more pills because you are not ill any more. 18. You ... (to water) the flowers, as it is going to rain. 19. You ... do something, you know; it'll be fatal for you to have nothing to do. 20. Mother always tells me that I ... to be more careful. 21. You ... not tell him my telephone number, he knows it. 22. Don't forget that you ... get up at seven! 23. You ... not answer – all my questions if you don't want to. 24. You ... not wake up before seven o'clock. We'll start at half past eight. 25. Go upstairs at once. You ... change your wet clothes. 26. You ... not work so hard after your illness.

Ex. 4. Transform the sentences into Past and Future Tenses changing the form of modal verbs.

1. Computers *can* replace the human being in dull routine work. 2. The program is a set of instructions that *may* also include data to be processed. 3. Computer-controlled robots *must* increase the productivity of industry. 4. They *can* help in making different decisions. 5. The pupils *may* work with computers at the lessons. 6. Electric pulses *can* move at the speed of light. 7. Storage devices *must* have capacities for the input, output data and programs and for intermediate results. 8. Business mini-computers *can* perform to 100 million operations per second. 9. In order

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to solve scientific problems researchers *must* deal with the language of science – mathematics. 10. Programmers *must* write application programs in a way that computers *can* understand.

Ex. 5. Read the following texts. Answer the questions below them. Fill the gaps with appropriate modal verbs and explain your choice.

There are a number of health and safety problems that ... result from continuous use of computers:

- Typing constantly at high speed ... provoke repetitive strain injury (RSI).
- Bad work postures and sitting in uncomfortable chairs ... cause backache and stress.
- Looking at the screen for a long time and lights reflecting off the screen ... cause headaches and eye strain, pain and fatigue of the eyes.
- Cathode Ray Tube monitors ... emit electromagnetic radiation which ... be dangerous to health.

What are the problems of continuous use of computers?

There is a risk of using mobiles and in-car computers in the world. Frequent use of mobile phones has been the cause of concern and there is ongoing research into whether radiation emitted causes health problems. A serious risk is the use of mobiles and navigation systems in cars, this ... distract the driver and cause accidents. People ... follow several rules in order not to have problems. For example, we ... use your mobiles while driving.

Another health problem is Internet addiction, including obsessive game playing, gambling, etc. If you are addicted to Internet, you ... ask for help from specialists.

What can cause frequent use of mobile phones?

The study of how people interact safely with machines and their work conditions is called **ergonomics**. In computing ergonomics is about designing computer facilities so they ... be safe and comfortable. Here are a few recommendations:

-
- You ... get an adjustable chair so you ... change its height and angle.
 - You ... make sure your feet rest firmly on the ground or on a foot rest.
 - You ... put the monitor at eye level or just below.
 - You ... sit at arm's length from the monitor (40–80 cm). You ... sit near the sides or back of CRT monitors or use LCD screens, which are free from radiation.
 - You ... take regular breaks from the computer and look away from the screen at regular intervals.

What is ergonomics?

Irresponsible disposal of electronic waste from old computers and mobile phones to hi-fi and video systems ... cause severe environmental and public health problems. For example, children or workers who come into contact with the toxic components of electronic products ... suffer from skin and breathing problems. We ... recycle or treat ICT equipment (e.g. plastics from mobiles could be used to make pens and rulers). Manufacturers ... pay to finance recycling programs.

What can cause severe environmental and public health problems?

TENSE FORMS OF VERBS

Ex. 1. Complete the sentences choosing one of the Simple forms of the verbs.

1. Apple **developed / develops / will develop** the personal computer market. But later Apple's leadership quickly **disappear / disappeared / will disappear** when IBM **will come / came / come** on the scene. 2. We now **will live / live / lives** in a so called digital age. 3. Students **uses / used / use** computer to perform different mathematical operations and (will improve, improved, improve) their skills. 4. In 1952 a major computing company **took / take / will take** a decision to get out of the business of making mainframe computers. 5. In 2030 people **couldn't / won't be able to / hadn't** imagine their lives and households without using computerized machines. 6. A processor **will consist / consisted / consists** of many different electronic circuits and devices. 7. This ordinary adding

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machine **has / have / had** ten keys for each column of digits. 8. Charles Babbage, a professor of mathematics at Cambridge University, **invent, will invent / invented** the first calculating machine in 1812. 9. In five years he **will work / worked / works** as a computer programmer. 10. This type of machine **did / do / does** complicated calculation faster than any mathematician.

Ex. 2. Complete the sentences choosing one of the Continuous forms of the verbs.

1. The secretary **is typing / was typing / will be typing** the manager's report at 10 o'clock yesterday. 2. Who **was talking / is talking / will be talking** on the phone at that time yesterday? 3. They **are writing / were writing / will be writing** a test at 12 o'clock tomorrow. 4. They **will be discussing / are discussing / were discussing** this matter at this time tomorrow. 5. People **were widely using / are widely using / is widely using** electronic devices. 6. Now electronic devices **was controlling / will be controlling / are controlling** the work of this power station. 7. At this moment the engineer **was designing / will be designing / is designing** a new electronic device. 8. Scientists **are looking / is looking / were looking** for new ways for the improvement of integrated circuits technology. 9. The situation of development of electronic devices is good and it **will be getting / was getting / is getting** better. 8. American scientists **invent / will invent / are inventing** a new high tech transistor now.

Ex. 3. Complete the sentences choosing one of the Perfect forms of the verbs.

1. Computers **will have changed / have changed / had changed** the way we do every things, such as working, shopping and looking for information. 2. Our society **will have developed / has developed / had developed** technological dependence. 3. The top manager already **had cancelled / has cancelled / will have cancelled** the meeting when we came to the office. 4. He just **had finished / will have finished / has finished** his work with this antivirus program. 5. By that time they **had prepared / will have prepared / have prepared** everything for going on a trip. 6. People **had published / have published / will have published** their virus source codes in the Internet for the interested users by tomorrow. 7. By next year programmers **will have finished / have finished / had**

finished with the further classification of malware. 8. By the time you come I had downloaded / have downloaded / will have downloaded necessary links. 9. They already have don / had done / will have done several operations on the computer. 10. I never have heard / had heard / will have heard about these new antivirus programs?

Ex. 4. Put the verbs in brackets in the right form.

1. They already (*write*) ... the program for the computer. 2. The letter (*arrive*) ... by the end of the week. 3. They (*leave*) ... before the trouble started. 4. I think she (*finish*) ... the essay by Monday. 5. By the time you get back Mike (*leave*).... 6. He (*travel*) ... on his business trip in 4 days. 7. I (*see*) ... Jim at the train station yesterday. 8. He (*wait*) ... for his business partner to arrive from Italy now. 9. Next summer her colleagues (*fly*) ... to Paris. 10. Every day we (*learn*) ... more and more information about the world. 11. Yesterday from 6 till 8 p.m. she (*work*) ... in the office. 12. Now they (*download*) ... a new computer program. 13. First, he (*read*) ... the message and then he (*call*) ... his boss to inform him about the accident. 14. When he (*come*) ... in, they (*discuss*) ... something interesting. 15. The computer (*process*) ... the information while he (*read*) a paper. 16. They (*visit*) ... an outstanding computer technology exhibition last year. 17. By the end of this week they (*complete*) ... to repair my computer. 18. People (*develop*) ... many new branches of industry in our country since World War II. 19. At this moment software engineers (*work*) ... on the processing power of processors. 20. By the end of this week they already (*discuss*)... the functional units, bus speeds, and available memory of these programs. 21. This new computing machine (*perform*) ... such arithmetical and logical operations as adding, subtracting, comparing and selecting. 22. Tomorrow the students (*prepare*) ... the information about types of computers in the library. 23. When the professor (*come*) ... in the class the students (*get ready*) ... for the test on the topic “Computer viruses”. 24. We (*discuss*) ... various problems at the seminar yesterday at this moment. 25. When you came he (*calculate*) ... his problem. 26. What our new computer engineer (*do*) ... now? 27. He just (*to design*)... individual microprocessors for our company. 28. Now I’m observing how software engineers (*work on*) ... the design and development of software for operating systems and network distribution. 29. They (*take*) ... the final exams in June. 30. A few years ago they

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even (*not dream*) ... about such a great opportunity to communicate with friends via the Internet.

Ex. 5. Read and translate the following sentences in the Passive Voice.

1. Information or data can be stored in the computer's memory. 2. All operations at the low speed could be carried out by the first automatic computers. 3. Your paper may be published at our Institute. 4. Our students are allowed to visit the computing centre to see the operation of the computer ES1045. 5. Reasonable operations are performed by a digital computer. 6. Some operations for this computer have to be changed and new instructions have to be added. 7. The instructions are recorded in the order in which they are to be carried out. 8. The students were permitted to attend the conference on cybernetics. 9. This kind of problem can't be solved by a personal computer. 10. Many new branches of industry have been developed in our country since World War II.

Ex. 6. Use the verbs in brackets in the Passive Voice. Translate the sentences into Russian.

1. These digits (*multiply*) ... easily. 2. I (*ask*) many questions about my experiment. 3. They (*explain*) ... how to solve this problem on a computer. 4. The sequence of reasonable operations (*perform*) ... by the computer. 5. The new department of mathematics just (*open*).... 6. Many books on computers' organization and architecture (*translate*) ... from Russian into English by the end of last year. 7. The experiments on the new microcomputer (*carry out*) ... during the whole month. 8. All the digits (*record*) ... on the paper tape when addition is performed. 9. The new key adding machine (*transfer*) ... into the next room yesterday. 10. The conference (*address*) ... by a well-known scientist.

II. MAIN COURSE

UNIT 1. COMPUTER DEVELOPMENT

COMPUTER LITERACY

Ex. 1. Discuss the following questions in pairs.

1. What is *computer literacy*?
2. How do you understand the expression “to be computer literate”?
3. Is it important in the modern society to be computer literate?

V Ex. 2. Learn the words.

computer literacy [kəm'pjju:tə 'lit(ə)rəsi] – компьютерная грамотность

problem-solving device – устройство, обеспечивающее решение задачи

be aware of [bi ə'weə(r) ov] – понимать, сознавать

opportunity [əp'retju:nəti] – возможность

basics ['beisiks] – основы

application [æpli'keiʃn] – применение, использование

to restate [rɪ'steɪt] – пересмотреть, переосмыслить

significant [sig'nifikənt] – значительный

achievements [ə'tʃɪv'mənts] – достижения

computing [kəm'pjju:tɪŋ] – вычисления, расчет, работа на компьютере

to embrace [imb'reɪs] – охватывать

dimension [dɪ'menʃn] – измерение

instruction [ɪn'strʌkʃn(ə)n] – команда, инструкция, указание

to direct the operation – направлять работу

to process [prəʊ'ses] – обрабатывать

subscription magazine [səb'skrɪpʃn(ə)n] – подписной журнал

data processing system ['deɪtə prəʊsesɪŋ 'sistema] – система обработки данных

store manager ['stɔ: 'mænɪdʒə] – директор магазина

to have much in common – иметь много общего

Ex. 3. Read the following sentence, translate it and say whether you agree or disagree with the statement.

Informed citizens of our information-dependent society should be computer literate, which means that they should be able to use computers as everyday problem-solving devices.

 **Ex. 4. Read the following text and be ready to answer the question *What does “a computer-literate person” mean?***

Computer Literacy

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

There was a time when only privileged people had an opportunity to learn **the basics**, called **the three R's**: reading, writing, and arithmetics. Now, as we are quickly becoming an information-becoming society, it is time to restate this right as the right to learn reading, writing and *computing*. There is little doubt that computers and their many applications are among the most significant technical achievements of the century. They bring with them both economic and social changes. **Computing** is a concept that embraces not only the old third R, arithmetics, but also a new idea – **computer literacy**.

In an information society, a person who is computer-literate need not be an expert on the design of computers. He needn't even know much about how to prepare *programs* which are the instructions that direct the operations of computers. All of us are already on the way to becoming computer-literate. Just think of your everyday life. If you receive a subscription magazine in the post-office, it is probably addressed to you by a computer. If you buy something with a bank credit card or pay a bill by check, computers help you process the information. When you check out at the counter of your store, a computer assists the checkout clerk and the store manager. When you visit your doctor, your schedules and bills and

special services, such as laboratory tests, are prepared by computer. Many actions that you have taken or observed have much in common. Each relates to some aspect of a data processing system.

Ex. 5. Look through the text of ex. 4 again and answer the questions.

1. Are you aware of the potential of computers to influence your life?
2. What do the people mean by **the basics**?
3. What is the role of computers in our society?
4. What is **computing**?
5. What is **a program**?
6. Prove that we all are on the way to becoming **computer literate**.
7. Give examples of using computers in everyday life.

Ex. 6. Read, translate and learn new expressions.

An information-dependent society, a computer-literate citizen, an everyday problem-solving device, to be aware, to influence the quality of life, to have an opportunity, to learn the basics, to learn computing, the most significant technical achievements, to embrace computer literacy, to prepare programs, to direct the operations of a computer, to be on the way of becoming computer literate, to process information, to have much in common, a data processing system.

 **Ex. 7. Transform the sentences into the Past Simple Tense. Write them down in your exercise-books.**

1. Many people have an opportunity to use computers.
2. There is no doubt that computers solve problems very quickly.
3. Computers bring with them both economic and social changes.
4. Computing embraces not only arithmetics, but also computer literacy.
5. It is well known that computers prepare laboratory tests.
6. Those persons are computer literate and think of buying a new computer.
7. They receive a subscription magazine once a month.
8. Experts know much about how to prepare programs.

A LONG WAY TO COMPUTERS

Ex. 1. Match the questions with their answers and translate them.

- | | |
|---|----------------------------------|
| When did the first real calculating machine appear? | Yes, they still use it nowadays. |
|---|----------------------------------|

Do people still use the abacus nowadays?

What did Charles Babbage invent?

What is the abacus?

What was the first calculating device?

It is a bead frame in which the beads move from left to right.

In 1820.

The first calculating device was the ten fingers of a man's hand. He invented the Analytical Engine.

Ex. 2. Match the words with their translations.

- | | |
|--------------------------|------------------------------|
| 1) the abacus | a) хранить |
| 2) to store | b) счеты |
| 3) input | c) счетная машина |
| 4) adding machine | d) аналитическая машина |
| 5) the analytical engine | e) устройство для вычисления |
| 6) calculating device | f) ввод |

 **Ex. 3. Read Text 1. Be ready to answer the question *What was the first calculating machine?***

Text 1. A long Way to Computers

The very first calculating device was the ten fingers of a man's hands. This, in fact, is why today we still count in tens and multiples of tens.

Then the abacus was invented, a bead frame in which the beads are moved from left to right. People went on using some form of abacus well into the 16th century, and it is still being used in some parts of the world because it can be understood without knowing how to read. During the 17th and 18th century people tried to find easy way of calculating.

The first real calculating machine appeared in 1820 as the result of several people's experiments. This type of machine, which saves a great deal of time and reduces the possibility of making mistakes, depends on a series of ten-toothed gear wheels.

In 1830 Charles Babbage, an Englishman, designed a machine that was called "The Analytical Engine".

This machine, which Babbage showed at the Paris Exhibition in 1855, was an attempt to cut out the human being altogether, except for providing the machine with the necessary facts about the problem to be solved.

He never finished this work, but many of his ideas were the basis for building today's computers. In 1930, the first analog computer was built by an American named Vannevar Bush. This device was used in World War II to help aim guns.

"Mark I", the name given to the first digital computer, was completed in 1944.

The men responsible for this invention were Professor Howard Alken and some people from IBM*. This was the first machine that could figure out long lists of mathematical problems all at a very fast rate.

Ex. 4. Look through Text 1 once again and say what happened in 1820, 1830, 1855, 1930 and 1944.

 **Ex. 5. Read Text 2 and answer the question *How do fourth-generation computers differ from the first ones?***

Text 2. Four Generations of Computers

In 1946 two engineers at the University of Pennsylvania, J. Eckert and J. Maushly, built the first digital computer using parts called **vacuum tubes**. They named their new invention ENIAC.

Another important advancement in computers came in 1947, when John von Neumann developed the idea of keeping instructions for the computer inside the computer's memory. The first generation of computers, which used vacuum tubes, came out in 1950.

UNIVAC I is an example of these computers, which could perform thousands of calculations per second. In 1960, the second generation of computers was developed and these could perform work ten times faster than their predecessors. The reason for this extra speed was the use of transistors instead of vacuum tubes.

Second-generation computers were smaller, faster and more dependable than first-generation computers.

Third-generation computers appeared on the market in 1965. These computers could do a million calculations per second, which is 1000 times as many as first-generation computers.

Unlike second-generation computers, these are controlled by tiny integrated circuits and are consequently smaller and more dependable.

* International Business Machines, a leading US computer manufacturer.

Fourth-generation computers have now arrived, and the integrated circuits that are being developed have been greatly reduced in size.

This is due to **microminiaturization**, which means that the circuits are much smaller than before; as many as 1000 tiny circuits now fit onto a single chip.

A **chip** is a square or rectangular piece of silicon, usually from 1/10 to 1/4 inch, upon which several layers of an integrated circuits are etched or imprinted, after which the circuit is encapsulated in plastic or metal.

Fourth-generation computers are 50 times faster than third-generation computers and can complete approximately 1,000,000 instructions per second.

Ex. 6. Answer the questions on Text 2.

1. What is this text about? 2. Who built the first digital computer using vacuum tubes? 3. What is UNIVAC? 4. When was each generation of the computer developed? 5. How did they differ from each other? 6. What is microminiaturization? 7. What is a chip?

Ex. 7. Make plans of Text 1 and Text 2. Be ready to speak about a long way of computers. Work in groups.

Ex. 8 Work in pairs. Imagine that one of you is an interviewer and the other is a specialist in the field of computer history. Make a list of questions and role-play the dialogue.

 **Ex. 9 Transform the sentences into the Present Simple Tense and write them down in your exercise books.**

1. People invented the abacus. 2. It was used in some parts of the world. 3. This type of machine saved a great deal of time and reduced the possibility of mistakes. 4. It contained all of the basic elements. 5. Many of his ideas were the basis for building today's computers. 6. The first generation of computers, which used vacuum tubes, came out in 1950. 7. The second generation of computers was developed. 8. John von Neumann developed the idea of keeping instructions for the computer inside the computer's memory. 9. These computers could do a million calculations a second.

Ex. 10. Read the following sentences, translate them and write 5 types of questions to them.

1. The first real calculating machine appeared in 1820 as the result of several people's experiments.
2. People went on using some form of abacus well into the 16th century, and it is still being used in some parts of the world because it can be understood without knowing how to read.
3. In 1946 two engineers at the University of Pennsylvania, J. Eckert and J. Mauchly, built the first digital computer using parts called *vacuum tubes*.
4. In 1960, the second generation of computers was developed and these could perform work ten times faster than their predecessors.

THE COMPUTER TYPES

Ex. 1. a) Match these names of different types of computers with the pictures.

- a) mainframe
b) laptop

- c) notebook
d) handheld

- e) PC
f) minicomputer



1. _____



2. _____



3. _____



4. _____



5. _____



6. _____

b) Who uses these types of computers? Make a list. Where do they use them?

 **Ex. 2. a) Study these details of different types of computers.**

Types of computers	Specifications
Mainframes	Large, powerful, expensive. Multi-user system is used by many people at the same time. Used for processing very large amounts of data. The most powerful mainframes are called supercomputers.
Minicomputers	Used like mainframes. Not as big, powerful, or expensive as mainframes. Less common now because microcomputers have improved.
Microcomputers or Personal Computers (PCs)	The most common type of a computer. Smaller, cheaper, and less powerful than mainframes and minicomputers.
Types of portable computers	Specifications
Laptop	About the size of a small typewriter. Less common now because smaller and lighter portable are available.
Notebook	About the size of a piece of writing paper. The most common type of portable.
Subnotebook	Not as big as notebooks. Can fit into a jacket pocket.
Handheld or Palmtop	Small enough to fit into the palm of one hand. Not easy to type with because of their size. Often used as personal organizers.

b) Answers the questions.***Which type of the computer is...***

- ... the most common?
- ... small enough for a pocket?
- ... the most common portable?
- ... used by many people at the same time?
- ... also called a handheld computer?
- ... the most powerful?
- ... used as personal organizer?

**Ex. 3. Choose the right adjective and put it in the correct form.
Then fill in the gaps.**

1. Laptops are (*light / heavy*) ... than desktop computers, but ... than notebooks.
2. The mainframe is the (*large / small*) ... type of computer.
- A minicomputer is ... than a microcomputer.
3. Personal computers are (*common / good*) ... than mainframes but mainframes are ... than personal computers at processing very large amounts of data.
4. Minicomputers are (*powerful / expensive*) ... than mainframes but they are also....
5. New computers are (*fast / cheap*) ... and sometimes ... than older machines.
6. Laptops are often (*powerful / expensive*) ... than PCs but they are not as....

Ex. 4. Read the dialogues and match them with the problem described below.

Problem 1. Conversation between a new employee and an IT professional.

Student A: You are a new employee, ask Student B questions about the computers they have, where the computers are and how to access the computer.

Student B: You are an IT Professional, answer Student A's questions about the computers.

Problem 2. Conversation between a customer and a shop-assistant.

Student A: You are a customer who wants to buy a computer for some purposes (writing, games, the Internet).

Student B: Imagine that you are a shop-assistant helping a customer to choose a computer and you consult a customer.

Problem 3. Conversation between a shop-assistant and a customer.

Student A: You are a customer who wants to buy a small computer.

Student B: You are a shop-assistant and you offer a portable computer to the customer and explain what kind of output devices (a printer, a modem) he / she needs.

Dialogue A

A: I'm thinking of buying a computer, and I need some advice.

B: OK. What do you want to use it for?

A: For writing, maybe for games. I want it for the Internet.

B: For the Internet and games.... I recommend you a multimedia computer.

A: What do you mean a multimedia computer?

B: Well, it's more powerful than a basic computer. It's got sound and CD-ROM or DVD drive. You can use it for high-quality graphics, animation and video.

Dialogue B

A: What if I wanted.... I travel a lot, if I wanted something smaller, what's available?

B: There are portable computers. A multimedia notebook is probably best.

A: Is a notebook the smallest kind you can get?

B: No, you can get subnotebooks and even smaller handheld devices. They're mostly used as organizers, as a diary, a "to do" list, and that kind of thing. But for writing and general use a notebook is better.

A: OK. I think I'll go for a notebook. What other things do I need?

B: A printer... and for the Internet, make sure you have a modem.

A: A modem?

B: Yes, it's a device for connecting your computer to a telephone line. You need it to connect to the Internet.

Dialogue C

A: Here's your new office. That's your desk and Sue sits over there.

B: So, everyone has their own desktop computers. Do we have laptops?

A: Yes, that's your computer there and laptops are in the IT department.

B: OK, but I also need a workstation.

A: Right. You need something faster for those powerful programs. Those are in the next building.

B: How do I get access to one? Do I have to sign up?

A: No, just log on to the server. All computers connect to it. Then, click "reserve workstation".

B: Thanks.

Ex. 5. What type of a computer would you like to have? Tell the class about your choice and reasons.

Ex. 6. Decide what sort of computers is best for each of the users mentioned below. Use *I think...*, *I consider...*, *I reckon...*, *To my mind...*

1. John Smith is a salesperson and he spends a lot of time visiting customers. He wants a computer to carry with him so he can access data about his customers and record his sales.

2. Pal Marley is a personal officer. She needs a computer to keep staff records and to keep diary appointments. She also needs a computer for writing letters.

3. The university needs a computer to look after its accounts, its network, the records of all students and staff, and to help with scientific research.

4. James's family want a computer for entertainment, writing letters, the Internet, and for calculating taxes.

Ex. 7. Imagine you are buying a computer. Role-play your dialogues. Work in pairs.

 **Ex. 8. Put the words in brackets into the correct form to make an accurate description of sizes of computers. Write in your exercise-books.**

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

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

APPLICATION OF COMPUTERS

Ex. 1. a) We use computers in many different places. *How are computers used in these situations? Discuss in groups.*



A



B



C

b) Make a list of other places people can use computers. Work in pairs.

V Ex. 2. Learn the words.

to have an effect – влиять, иметь эффект

barcode technology – технология штрих-кода

to scan each product – сканировать каждый товар

barcoding items – проштрихованные товары

bedside terminals – прикроватные терминалы

to connect – соединять

to look after- следить за (чем-либо), присматривать

Ex. 3. Read the following text and say where people use computers these days.

Computers are part of our everyday lives. They have an effect on almost everything you do. When you buy products at a supermarket, a computer is used with laser and barcode technology to scan each product and present a total. Barcoding items(clothes, food, and books) requires a computer to generate the barcode labels and maintain the inventory. Most television advertisements and many films use graphics produced by a computer. In hospitals, bedside terminals allow doctors to type in

orders for blood tests and to schedule operations. Banks use computers to look after their customers' money. In libraries and bookshops, computers can help you to find the book you want.

Ex. 4. What do computers do in different places? Match the two columns.

- | | |
|--------------|---|
| 1) banks | a) calculate bills |
| 2) factories | b) provide entertainment and information |
| 3) homes | c) look after patient records and medicines |
| 4) hospitals | d) control our money |
| 5) shops | e) control machines |

Ex. 5. Fill in the gaps in this paragraph to summarize the use of computers.

Computers are now a part of our everyday life. In shops, they _____. In factories, they _____. In _____, they look after patient records and medicines. When we have a bank account, a computer _____. In our homes, computers _____.

Ex. 6. Choose one of the computer application areas and discuss what people can do with the help of computers in that area. Look through useful phrases for help.

Formula 1

Education



Entertainment

Industry

Formula 1 cars: design and build the car, test virtual models, control electronic components, monitor engine speed, store information, display data, analyse and communicate data.

Entertainment: download music, burn CDs, play games, take photos, edit photos, make video clips, watch films, watch on the computer, listen to music.

Education: access the Internet, enrol online, search the Web, prepare for the exams, write documents, complete exercises online, do researches, prepare presentations.

Industry: design products, do calculations, control industrial robots, control assembly lines, keep record of stocks (materials and equipment).

 **Ex. 7. Read the texts and put the ideas below in the right order according to the texts.**

A. Computers are applied in medicine.
B. Computers are used in learning.
C. Computer-controlled robots can increase the productivity in industry.

D. Computers are widely used in the military systems.
E. The work of banks depends on the work of terminals.
F. Computers are used in different areas.

1. At present a great deal of the work force of most countries is engaged in creating, processing, storing, communicating and just working with information. Computers have become perfectly common things in the home, offices, stores, schools, research institutes, plants. Computers find application in astronomy and upper atmosphere research. Weather forecasting, library information services can benefit from computers too. Many other uses of computers that we cannot imagine at present will become commonplace in the transition from an industrial to post industrial, or information society.

2. The use of computers in business, industry and communication services is widespread today. Computer-controlled robots are able to improve the quality of manufactured products and to increase the productivity in industry. Computers can control the work of power stations, plants and docks. They help in making different decisions and in management of economy.

3. The work of banks depends upon computer terminals for millions of daily operations. Without these terminals, records of deposits and withdrawals would be difficult to maintain, and it would be impossible to make inquiries about the current status of customers' accounts.

4. Computers form a part of many military systems including communication and fire control. They are applied for automatic piloting and automatic navigation. Space exploration depends on computers for guidance, on-board environment and research. At last air traffic control is

impossible without computer application. It fully depends upon computer-generated information.

5. It is interesting to note that computers are widely used in medicine. They became valuable medical diagnostic tools. Computers are used for optical scanning and image processing, ranging from pattern recognition to image processing. Technicians can operate computer tomography scanners which combine x-rays with computer technology to give sectional views of the body of patients. The views then can be combined into a single image shown on the screen.

6. It should be noticed that learning on a computer can be fun. Students spend more time with computer-aided instruction performing the assigned task, as compared with conventional classroom.

Ex. 8. Say whether the statements are *true or false* according to the texts of ex. 7.

1. Today computers have become very popular in the home, offices, stores, schools, research institutes, plants.

2. Without computers, it is impossible to maintain records of deposits and withdrawals.

3. Computers don't help in making different decisions and in management of economy.

4. They are used for automatic piloting and automatic navigation.

5. Students don't like to use computers performing the assigned task, as compared with conventional classroom.

Ex. 9. Find English equivalents in the texts of ex. 7.

В настоящее время, использование компьютеров, увеличивать продуктивность промышленности, часть многих военных систем, ценные медицинские диагностические инструменты, информационные услуги библиотеки, для оптического просмотра и обработки изображения, управление воздушным движением.

Ex. 10. Answer the questions according to the texts of ex. 7.

1. Why is the use of computers in industry widespread today? 2. How does the work of banks depend upon computer terminals? 3. How are computers used in medicine? 4. Why are computers widely spread in learning?

**Ex. 11. Prove that computer application is important at present.
Work in groups of 4.**



TEST YOURSELF

Test 1

1. Choose the right words from the box and fill in the gaps.

learn, processing system, computers, social, computer-literate, computing, computer literate, life, aware

1. Informed citizens of our information-dependent society should be ... (1), which means that they should be able to use ... (2) as everyday problem-solving device. They should be ... (3) of the potential of computers to influence the quality of ... (4).

2. It is time to restate this right as the right to ... (5) reading, writing and ... (6). Computers bring them both economic and ... (7) changes.

3. All of us are already on the way to becoming ... (8).

4. Every actions relate to some aspects of a data ... (9).

2. Match the words with the translations.

- | | |
|---------------------------|--|
| 1) computing | a) команда, инструкция |
| 2) computer literacy | b) устройство, обеспечивающее
решение задач |
| 3) instruction | c) вычисление, счет, работа на
компьютере |
| 4) data processing system | d) основы |
| 5) problem-solving device | e) компьютерная грамотность |
| 6) basics | f) система обработки данных |

3. Transform the sentences into the Past Simple Tense and translate them.

1. It is well known that computers prepare laboratory tests. 2. They know how to prepare computer programs. 3. Instructions direct the operation of a computer. 4. These students are computer-literate and they know much about computers. 5. Many actions that you have taken or observed have much in common.

Test 2

Reading Comprehension Test

1. Read the text carefully and do the tasks below.

Personal computers have a lot of applications, however, there are some major categories of applications: home and hobby, word processing, professional, educational, small business and engineering and scientific.

Home and hobby. Personal computers enjoy great popularity among experimenters and hobbyists. They are an exciting hobby. All hobbyists need not be engineers or programmers. There are many games that use the full capabilities of a computer to provide many hours of exciting leisure-time adventure.

The list of other home and hobby applications of PCs is almost endless, including: checking account management, budgeting, personal finance, planning, investment analyses, telephone answering and dialing, home security, home environment and climate control, appliance control, calendar management, maintenance of address and mailing lists and what not.

Word processing. At home or at work, applications software, called a word processing program, enables you to correct or modify any document in any manner you wish before printing it. Using the CRT monitor as a display screen, you are able to view what you have typed to correct mistakes in spelling or grammar, add or delete sentences, move paragraphs around, and replace words. The letter or document can be stored on a diskette for future use.

Professional. The category of professional includes persons making extensive use of word processing, whose occupations are particularly suited to the desk-top use of PCs. Examples of other occupations are accountants, financial advisors, stock brokers, tax consultants, lawyers, architects, engineers, educators and all levels of managers. Applications programs that are popular with persons in these occupations include accounting, income tax preparation, statistical analysis, graphics, stock market forecasting and computer modeling. The electronic worksheet is, by far, the computer modeling program most widely used by professionals. It can be used for scheduling, planning, and the examination of “what if situations”.

Educational. Personal computers are having and will continue to have a profound influence upon the classroom, affecting both the learner and the teacher. Microcomputers are making their way into classrooms to an ever-increasing extent, giving impetus to the design of programmed learning materials that can meet the demands of student and teacher.

2. Find the best title for this text.

1. Application Software.
2. Personal Computers.
3. Application of Personal Computers.

3. Find English equivalents in the text.

Много областей применения; обработка текстов; способности компьютера; анализ инвестиций; прикладные программы; исправлять ошибки в написании; переставлять абзацы; компьютерное моделирование; электронные таблицы; оказывать огромное влияние; пользоваться популярностью; любители; набор номера телефона; ведение календаря; хранение адресов и почты; стирать предложения; бухгалтер; составление расписания; учебная деятельность; компьютерная грамотность.

4. Say where the statements are true or false.

1. Personal computers have many applications.
2. Personal computers are not an exciting hobby for everybody.
3. Word processing program enables you to correct or modify any document.
4. The professionals mostly use the electronic worksheet.
5. Personal computer can not be applied for educational purposes.
6. Personal computers can not be used for small business and engineering.
7. The list of other home and hobby applications of PCs is almost endless.
8. Application programs comprise accounting, income tax preparation, statistical analysis, graphics, stock market forecasting and computer modeling.
9. Such applications as budgeting, personal finance, planning, investment analyses are word processing application.

10. Personal computers are having but soon will stop continuing to have a profound influence upon the classroom.

5. Answer the questions.

1. What are the main spheres of PC application? 2. Is it necessary for a person to be an analyst or a programmer to play computer games? 3. What other home and hobby applications, except computer games, can you name? 4. What is “a word processing program”? 5. How can computers be used in education? 6. What is this text about? 7. What does the list of other home and hobby applications of PCs include? 8. What does applications software enable you to do at home or at work? 9. What can a word processing program enable you to do with a document before printing it? 10. What is happening with the microcomputers now?

6. Explain how personal computers are used for home and hobby.

7. Explain how personal computers are used for word processing.

UNIT 2. ARCHITECTURE OF A COMPUTER

WHAT IS A COMPUTER?

Ex. 1. Answer the questions.

1. Do you have a computer at home? 2. Do you use it while studying?
3. What do you use it for? 4. Do you consider yourself a computer literate person? 5. Do you find most computers user-friendly? 6. Does computer help learn English? 7. Can you imagine your life without a computer?

Ex. 2. Look at the words in the box and try to give the definition to the word *a computer*.

A computer is a ...

of / circuits / with / an intricate / machine / network / electronic /
that / switches / metal cores / or / tiny / operate / magnetize

Ex. 3. Before reading the text try to guess the meanings of the following words.

accept data –

- a) выводить данные, b) обрабатывать данные, c) принимать данные
general purpose –

a) основная задача, b) общая цель, c) основной факт

huge –

- a) большой, b) огромный, c) среднего размера

carry out –

- a) выполнять, b) обрабатывать, c) считывать

mainframe –

- a) главный компьютер, b) устройство вычисления, c) универсальная вычислительная машина

Ex. 4. Read the text and fill in the gaps in the sentence below.

A computer is a _____ purpose _____ able to: _____ inputs,
_____ computations, output _____.

General Purpose Machine

There is a simple definition of a computer. It is a general purpose machine able to accept data inputs, perform some computations and output new data or information. It's a kind of obvious, right? Computers do computation. However, what interesting is knowing what counts as computa-

tion. Let's give a general definition. **Computation is the manipulation of processing of data by either humans or machines.** Not only computers perform computation. Humans can do computations too. In fact in the past the work of computers used to refer to people. Here is the better definition of computation: it is a process following well-defined model understood and expressed as for example a program (or more specifically an algorithm, or a protocol). A program is a sequence of instructions which are following the computer to complete the task.

A computer is a general purpose machine able to accept data inputs, do computation (manipulates data executing a sequence of logical and arithmetic operations) and finally produce some output. As for its general purpose, a computer is a general-purpose device that can be programmed to carry out a finite set of arithmetic or logical operations. This makes a computer a very interesting type of machines. So a computer is a general purpose machine because by using different programs it can execute different tasks. By using different programs with the help of computers we can watch movies, listen to music, browse the web, create or add videos, documents etc. Everything a computer can do is because of programs. Since a sequence of operations can be readily changed the computer can solve more than one kind of problem.

Computers have evolved. The computer from 50 years ago were huge, expensive and rare. They were used for doing some research in universities. Nowadays computers are more common. Today they are as common as a toaster. Historically, computers have been classified in several categories: microcomputers – computers like laptops or desktops which are intended for personal use. Then we have minicomputers – computers that can handle more than one users simultaneously and have higher computer power than microcomputers. Then we have mainframes – mainframes are used for enterprise systems. These powerful computers can handle a big amount of data and several users simultaneously. Finally we have supercomputers – these computers can process vast amount of data very fast.

A microcomputer is a computer that can perform all of its input, process, output and storage activities by itself. A minicomputer is often used in situations where a microcomputer is not powerful enough but a mainframe is too expensive. **A mainframe is a large, expensive,**

but powerful computer that can handle hundreds or thousands of connected users at the same time. A supercomputer is the fastest, most powerful and most expensive computer used for applications that require complex and sophisticated mathematical calculations.

There are some other terms used to classify computer systems: personal computers, stand-alone computers, server, clients computers, network computers, workstation, terminal, embedded system.

In general a computer has several parts. The two main components are hardware and software. Hardware means all physical devices such as processor, memory, keyboard, monitor, mouse etc. Software refers to all the executable programs: word processor, spread sheet, internet browser, etc.

Ex. 5. Complete the sentences according to the text.

1. Computer is the manipulation of ... by either humans or
2. General purpose: A computer is a general purpose ... that can be programmed to ... out a finite set of arithmetic and logical
3. Computer can solve more than ... kind of
4. 50 years ago, computers were huge, ... and rare items.
5. Computer categories: 1 ... 2 ... 3 ... 4
6. Main computer components: 1 ... 2

V Ex. 6. Learn the vocabulary.

intricate – сложный

circuit – цепь

data – данные

device – устройство

to turn off – выключать

methods – способы, методы

core – ядро

to store – хранить

basic – основной

to input – вводить

to accept – принимать

it is considered – считается

user – пользователь

to carry out – выполнять

instantaneously – мгновенно

 **Ex. 7. Read the text and answer the following questions:**

- *What is a computer?*
- *What are its main functions?*

What is a Computer?

A computer is a machine with an intricate network of electronic circuits that operate switches or magnetize tiny metal cores. The switches, like the cores, are capable of being in one or two possible states, that is, on or off; magnetized or demagnetized. The machine is capable of storing and manipulating numbers, letters, and characters (symbols).

The basic idea of a computer is that we can make the machine do what we want by inputting signals that turn certain switches on and turn others off, or magnetize or do not magnetize the cores.

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.

It is considered that computers have many remarkable powers. However most computers, whether large or small, have three basic capabilities.

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

Second, computers have a means of communicating with the user. After all, if we couldn't feed information in and get results back, these machines wouldn't be of much use. Some of the most common methods of inputting information are to use terminals, diskettes, disks and magnetic tapes. The computer's input device (a disk drive or tape drive) reads the information into the computer. For outputting information, two common devices used are: a printer, printing the new information on paper, and a cathode-ray-tube display, which shows the results on a TV-like screen.

Third, computers have circuits, which can make decisions. The kinds of decisions, which computer circuits can make, are not of the type: "Who would win the war between two countries?" or "Who is the richest person in the world?" Unfortunately, the computer can only decide three things, 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 without becoming tired. It can find the solution to a problem in a fraction of the time it takes a human being to do the job.

A computer can replace people in dull, routine tasks, but it works according to the instructions given to it. There are times when a computer seems to operate like a mechanical 'brain', but its achievements are limited by the minds of human beings. A computer cannot do anything unless a person tells it what to do and gives it the necessary information; but because electric pulses can move at the speed of light, a computer can carry out great numbers of arithmetic-logical operations almost instantaneously. A person can do the same, but in many cases that person would be dead long before the job was finished.

Ex. 8. Answer the questions upon the text of ex. 7.

1. What is a computer?
2. What are the two possible states of the switches?
3. What are the main functions of a computer?
4. In what way can we make the computer do what we want?
5. What is the basic task of a computer?
6. In what form does a computer accept information?
7. What is a program?
8. What are data?
9. What is memory?
10. What three basic capabilities have computers?
11. What are the ways of inputting information into the computer?
12. What is the function of an input device?
13. What devices are used for outputting information?
14. What decisions can the computer make?
15. What are the computer's achievements limited by?

Ex. 9. In the text from ex. 7, find English equivalents of the following words and expressions.

Сложная сеть электронных цепей, управлять (приводить в действие) переключателями, возможные состояния, хранить (запоминать) числа, обрабатывать символы, посредством ввода сигналов, включать, выключать, размагничивать сердечники, обработка ин-

формации, информация в виде команд, символы, называемые данными, выполнять математические операции, выдавать результаты, обеспечивать необходимую информацию, иметь замечательные возможности, основные свойства, сложение, вычитание, деление, умножение, возведение в степень, средства для общения с пользователем, устройство ввода, дисковод, считывать информацию, вывод информации, катодолучевая трубка, принимать решения, выполнять тысячи логических операций, без устали, находить решение задачи, значительно меньший промежуток времени, человек, нудная рутинная работа, в соответствии с введенной программой, вырабатывать свои суждения, возможности ограничены программой, заложенной в него человеком, дать требуемую информацию, электрические импульсы, со скоростью света, мгновенно производить огромное количество математических операций, человеку может не хватить всей жизни, чтобы закончить работу.

Ex. 10. Make several sentences in English using the word expressions of ex. 9.

Ex. 11. Complete the table with the words of the text in ex. 7.

Verb	Noun	Adjective	Adverb	Pronoun

 **Ex. 12. Work in groups. Divide the text *What is a computer?* into 3 parts and translate it in written form.**

COMPUTER ESSENTIALS

Ex. 1. Discuss the questions in pairs.

1. Have you got a computer at home?
2. How often do you use it? What do you use it for?
3. What are the main components of a computer?

Ex. 2. Name all the components that you can see in the picture. Use the words from the box below.

a mouse, a monitor, a keyboard, a scanner, a printer, a digital camera, a system block, a stereo speaker
--



Ex. 3. Match the definitions with the components from ex. 2.

- 1) ... – the main block of a computer system.
- 2) ... – a device for visual reproduction of symbolical and graphic information.
- 3) ... – a keyboard device for managing the work of a computer and inputting information in it.
- 4) ... – a device of graphic management.
- 5) ... – a device that serves for outputting information on the paper carrier.
- 6) ... – a device that serves for the automatic inputting of texts and graphics in the computer.
- 7) ... – a device that transfers video and audio signals on computer networks.
- 8) ... – a device that reproduces sounds on a computer.

V Ex. 4. Learn the new words.

to accept data [ək'sept 'deɪtə] – принимать данные

to process ['prəʊsəs] – обрабатывать

to feed into – закладывать (данные в компьютер)

to perform [pə'fɔ:m] – исполнять, выполнять; делать

a set of instructions [ɪn'strʌkʃənz] – набор инструкций

to touch ['tʌtʃ] – касаться, прикасаться, трогать

basic ['beɪsɪk] – основной, главный, существенный
 influential [ɪnflو'ens(ə)l] – влиятельный, имеющий значение
 to execute ['eksɪkju:t] – выполнять, исполнять, осуществлять
 to coordinate [kəʊ'ɔ:dɪneɪt] – координировать, приводить в соответствие

to hold ['həuld] – держать, удерживать; задерживать; владеть, иметь; сохранять контроль; вмещать, содержать в себе

to include [ɪn'klu:d] – содержать, включать, охватывать, иметь в своем составе

a device [dɪ'veɪs] – устройство, приспособление; механизм, аппарат, прибор

permanent ['prɜ:m(ə)nənt] – постоянный, неизменный; долговременный

to enable [ɪ'neɪb(ə)l] – давать (*кому-л.*) возможность или право (*что-л. сделать*)

to print ['print] – печатать

to plug ['plʌg] – затыкать, закупоривать; вставлять (пробку, защычку, заглушку)

to allow [ə'lau] – позволять, разрешать; давать разрешение

front ['frʌnt] – передний

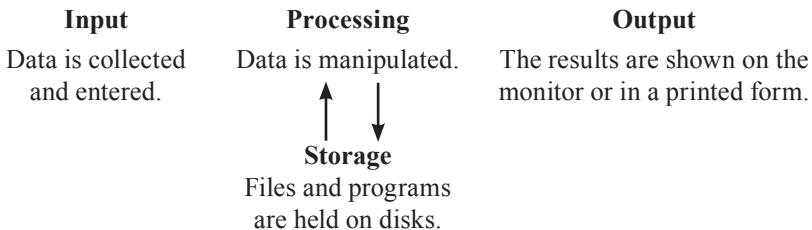
rear ['rɪə] – задний, расположенный сзади;

Ex. 5. Look through the text and give it a title.

A computer is an electronic machine which can accept data in a certain form, process the data, and give the result of the processing in a specified format as information.

First, data is fed into the computer's memory. Then, when the program is run, the computer performs a set of instructions and processes the data. Finally, we can see the results (the output) on the screen or in printed form (see pict. below).

A computer system consists of two parts: hardware and software. **Hardware** is any electronic or mechanical part you can see or touch. **Software** is a set of instructions, called a program, which tells the computer what to do. There are three basic hardware sections: the **central processing unit (CPU)**, **main memory** and **peripherals**.



Perhaps the most influential component is the central processing unit. Its function is to execute program instructions and coordinate the activities of all the other units. In a way, it is the “brain” of the computer. The main memory (a collection of RAM chips) holds the instructions and data, which are being processed by the CPU. Peripherals are the physical units attached to the computer. They include storage devices and input / output devices.

Storage devices (hard drives, DVD drives or flash drives) provide a permanent storage of both data and programs. **Disk drives** are used to read and write data on disks. **Input devices** enable data to go into the computer’s memory. The most common input devices are the **mouse** and the **keyboard**. **Output devices** enable us to extract the finished product from the system. For example, the computer shows the output on the **monitor** or prints the results onto paper by means of a **printer**.

On the rear panel of the computer there are several **ports** into which we can plug a wide range of peripherals – a modem, a digital camera, a scanner, etc. They allow communication between the computer and the devices. Modern desktop PCs have USB ports and memory card readers on the front panel.

Ex. 6. Translate the highlighted words in ex. 5.

Ex. 7. In the text of ex. 5 find English equivalents to the following word combinations.

Электронная машина, в определенной форме, результат обработки, память компьютера, обрабатывает данные, на экране или в печатном виде, механическая часть, самый существенный компонент, координировать действия, «мозг» компьютера, наиболее распространенные устройства ввода, посредством, несколько портов, широкий диапазон периферии.

Ex. 8. Match the words from the text in ex. 5 with their meanings.

- | | |
|----------------------------------|--|
| 1) software | a) the brain of the computer |
| 2) peripherals | b) physical parts that make up a computer system |
| 3) main memory | c) programs which can be used on a certain computer system |
| 4) hard drive (or hard disk) | d) the information which is presented to the computer |
| 5) hardware | e) results produced by a computer |
| 6) input | f) input devices attached to the CPU |
| 7) ports | g) section that holds programs and data while they are processed |
| 8) output | h) magnetic device used to store information |
| 9) central processing unit (CPU) | i) sockets into which an external device may be connected |

Ex. 9. Explain the following scheme with your own words.**FUNCTIONAL ORGANIZATION OF A COMPUTER****V Ex. 1. Learn the new words.**

- operation [ə:pə'reɪʃn] – операция, работа, действие, срабатывание
 to relate [rɪ'leɪt] – связывать, устанавливать отношения
 a broad view [brɔ:dvju:] – широкий взгляд, обзор
 unit [ju:nɪt] – устройство, модуль, блок, узел, элемент, ячейка
 input – ввод, устройство ввода, вводить, подавать на вход
 to insert [ɪn'sɜ:t] – вставлять, вносить, включать
 storage memory – память, запоминающее устройство
 available [ə'veiləbl(ə)l] – доступный, имеющийся в наличии
 at the appropriate time – в нужное время
 arithmetic-logical unit [ə'rɪθmətik 'lɒdʒɪk(ə)l 'ju:nɪt] – арифметико-логическое устройство

output – вывод, устройство вывода, выводить, подавать на выход
to remove [rɪ'mu:v] – удалять, устранять, вынимать, исключать
control unit – блок управления

cause [kɔ:z] – заставлять, вынуждать, быть причиной, причина,
основание

to feed (fed, fed) – подавать, питать, вводить (данные)

to interpret [ɪn'tɜ:pri:t] – интерпретировать, истолковывать

to issue commands [ˈɪʃu:kə'ma:ndz] – выдавать команды

pulse – no-pulse – импульс – холостой импульс

Ex. 2. Make several expressions using the new words from ex. 1.

 **Ex. 3. Read the text and find major functional units of a digital computer.**

Functional Units of Digital Computers

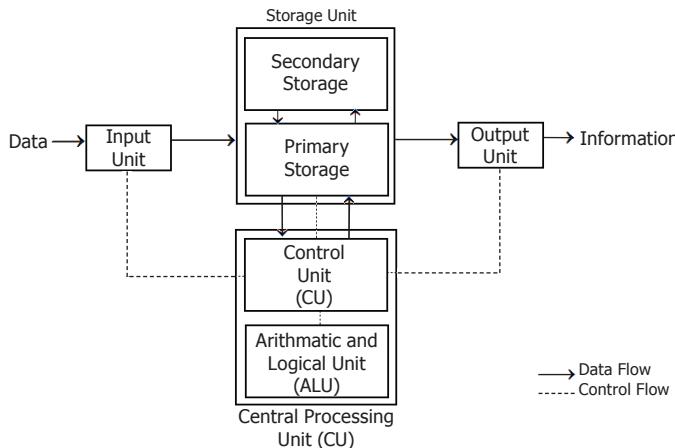
As we know, all computer operations can be grouped into five functional categories. The method in which these five functional categories are related to one another represents the functional organization of a digital computer. By studying the functional organization, a broad view of the computer is received.

The five major functional units of a digital computer are:

1) **input** – to insert outside information into the machine;
2) **storage or memory** – to store information and make it available at the appropriate time;

3) **arithmetic-logical unit** – to perform the calculations;
4) **output** – to remove data from the machine to the outside world;
5) **control unit** – to cause all parts of a computer to act as a team.

The picture shows how the five functional units of the computer act together. A complete set of instructions and data are usually fed through the input equipment to the memory where they are stored. Each instruction is then fed to the control unit. The control unit interprets the instructions and issues commands to the other functional units to cause operations to be performed on the data. Arithmetic operations are performed in the arithmetic-logical unit, and the results are then fed back to the memory.



Information may be fed from either the arithmetic unit or the memory through the output equipment to the outside world. The five units of the computer must communicate with each other. They can do this by means of a machine language which uses a code composed of combinations of electric pulses. These pulse combinations are usually represented by *zeros* and *ones*, where the *one* may be a pulse and the *zero* – a no-pulse. Numbers are communicated between one unit and another by means of these one-zero or pulse – no-pulse combinations. The input has the additional job of converting the information fed in by the operator into machine language. In other words, it translates from our language into the pulse – no-pulse combinations understandable to the computer. The output's additional job is converting the pulse – no-pulse combinations into a form understandable to us, such as a printed report.

Ex. 4. Look through the text of ex. 3 again and answer the questions.

1. What represents the functional organization of a computer? 2. What can we get by studying the functional organization? 3. What is the function of the input device? 4. What does memory serve for? 5. What is the task of the arithmetic-logical unit? 6. What is the function of the output? 7. What is the main purpose of the control unit? 8. How do all units of the computer communicate with each other? 9. What is the additional job of the input? 10. What is the additional function of the output?

Ex. 5. Find in the text from ex. 3 English equivalents of the following word combinations.

Функциональная организация, действия компьютера, связывать друг с другом, вводить информацию извне, делать информацию доступной, выполнять вычисления, выводить информацию, блок управления, выдавать команды, заставлять выполнять команды, выходное устройство, внешний мир, связываться друг с другом, комбинация электрических импульсов, холостой импульс, импульсы, распознаваемые компьютером.



Ex. 6. Work in groups. Devide the text of ex. 3 into 3 parts and translate it in written form.

SHORT HISTORY OF MICROPROCESSOR

Ex. 1. a) What do you know about microprocessors? Read the definition of the microprocessor and translate it into Russian.

The microprocessor forms the brain of the Central Processing Unit (CPU). **Microprocessor is an engine which can compute various operations fabricated on a single chip.** The internal architecture of microprocessor determines what operations can be performed on a microprocessor and how it can be performed.

b) What can you add to this definition?

Ex. 2. Read the sentences and translate the words in brackets.

1. In 1960's advances in microelectronic (*компонентов*) ... led to the (*развитию, созданию*) ... of the minicomputer. 2. In 1971 Intel Corporation delivered the (*первый микропроцессор*).... 3. It can perform 8 bit (*операции*).... 4. Intel (*выпустил, представил*) ... 8085 processors which is nothing but an update of 8080 processors. 5. It is used to (*хранить*) ... various (*информацию*)....

Ex. 3. Read the words and find the odd one out.

- 1) minicomputer, microelectronic, microcomputer, microprocessor;
- 2) to compute, to perform, to use, to carry out;
- 3) relatively, definitely, certain, comparatively;
- 4) to deliver, to process, to introduce, to design.

 **Ex.4. Read the following text and answer the question *What was the first microprocessor and when was it delivered?***

In 1960s advances in microelectronic components led to the development of the minicomputer, followed more recently by an even smaller microcomputer. Both have filled a need for small but relatively flexible processing systems able to execute comparatively simple computing functions at lower costs.

In 1971 Intel Corporation delivered the first microprocessor, the 4004. It was a 4 bit microprocessor and it was not a powerful microprocessor. It could perform addition and subtraction operation on 4 bits at a time. However, it was Intel's 8080 was the first microprocessor to make it to Home computers. It was introduced during the year 1974 and it can perform 8 bit operations. Then during the year 1976, Intel introduced 8085 processors which is nothing but an update of 8080 processors. 8080 processors are updated by adding two Enable / Disable Instructions, Three added interrupt pins and serial I/O pins.

Intel introduced 8086 pins during the year 1976. The major difference between 8085 and 8086 processor is that 8085 is an 8 bit processor, but 8086 processor is a 16 bit processor. As the years progressed lots of processors 8088, 80286, 80386, 80486, Pentium II, Pentium III, Pentium IV have been designed and now Core2Duo, Dual Core and Quad core processors are the latest in the market.

Intel later introduced 8087 processor which was the first math co-processor and later the 8088 processor which was incorporated into IBM personal computers.

A basic microprocessor requires certain elements to perform some operation. They are:

Registers – Input data, Output data and various other binary data are stored in this unit for further processing.

Arithmetic and Logic Unit (ALU) – It performs arithmetic and logical operations on various data.

Control Unit – It controls the flow of data and signals in the microprocessor.

Instruction register – It is used to store various information that microprocessor requires in order to carry out an operation.

Program counter (PC) – It stores the address of the next instruction to be executed.

Advantages of Microprocessor:

- It is cheap and the cost of manufacture is low.
- It is very small in size.
- Its Reliability is High.
- Its Versatility is High.
- Power consumption is very low.

Ex. 5. In the text of ex. 4, find English equivalents of the following words.

Приводить к (чему-либо), гибкие системы обработки, способна выполнять, простые вычислительные функции, мощный микропроцессор, выполнять сложение и вычитание, представить, новая версия(обновление), разница между, на рынке, внедрять, различные данные, поток, сигналы.

Ex. 6. Make sure you understand the following concepts. Match the definitions and translations to them.

Name	Definition	Translation
Registers	is the part of a CPU's control unit that stores the instruction currently being executed or decoded.	Арифметико-логическое устройство
Control Unit	is the part of the central processing unit which performs operations such as addition, subtraction and multiplication	Регистр команд
Instruction register	is a location in a store of data, used for a specific purpose and with quick access time.	Регистры
Arithmetic and Logic Unit	is a register in the control unit of a computer which contains the address of the next instruction to be executed	Счетчик команд
Program counter	is the part of CPU that interprets the instructions in programs and directs the operation of the entire system	Устройство управления

Ex. 7. Complete the table using information from the text of ex. 4.

Type of microprocessor	Characteristics
The 4004	4 bit microprocessor addition and subtraction operation on 4 bits at a time

✍ Ex. 8. Transform the verbs in the Active Voice into the Passive Voice.

1. In 1971 Intel Corporation delivered the first microprocessor.
2. Intel introduced 8085 processors.
3. Intel introduced 8086 pins during 1976.
4. A basic microprocessor requires certain elements to perform some operation.
5. It controls the flow of data and signals.

✍ Ex. 9. Work in groups. Devide the text of ex. 4 and translate it into Russian.**CENTRAL PROCESSING UNIT****Ex. 1. How would you translate into Russian *Central Processing Unit*? Read the definition in Russian and translate it into English.**

Центральный процессор – это главный вычислительный электронный блок компьютера. Он отвечает за (is responsible for) обработку всех данных в системе и глобально управляет(operates) работой аппаратного обеспечения (hardware) компьютера.

**Ex. 2. Look through the information about processors and agree or disagree with the statement *CPU is one of the most complicated technical units made by human being*.**

Externally a processor is the small quadrangular plate on the one hand equipped with ranks of *pins* – electric contacts which are inserted into the processor socket on the motherboard.

The internal device represents millions of the microscopic transistors united in a uniform complex – the most difficult electric chain.

The CPU consistently performs arithmetic operations with data loaded from memory according to a certain algorithm. The algorithm corresponds to logic of the performed program.

There are many types of processors. They are designed for various purposes and by different producers. Therefore, it is necessary to know their main characteristics and indicators in order to understand how they differ. The most important characteristics of the processor are: the number of cores, clock rate, volume cache memory, production technology or technical process of CPU, socket or processor socket, frequency of the system tire and multiplier, support of 64-bit calculations.

V Ex. 3. Learn the new words.

central processing unit (CPU) – центральный процессор (ЦП)

interchangeably [intə'tʃein(d)zəbl] – взаимозаменяемым образом

precisely [pri'saislɪ] – точно

internal memory – внутренняя память, внутреннее ЗУ

activity [æk'trvɪtɪ] – деятельность, работа, действия операции

to issue ['ɪsu:] – посылать (сигнал), выводить, выдавать (сообщение)

response [ri'spɒns] – ответ, отклик, реакция, отвечать, реагировать

to interpret [ɪn'tɜ:pɪt] – интерпретировать, истолковывать;

according to [ə'kɔ:dɪŋ] – согласно, в соответствии с

level – уровень, степень, мера, выравнивать

input-output port – порт ввода-вывода

control unit (CU) [kən'trəʊl 'ju:nɪt] – устройство управления

arithmetic-logical unit (ALU) – арифметико-логическое устройство

switch [switʃ] – переключатель, коммутатор, переключать, переходить

direct [də'rekt] – направлять, адресовать, указывать, прямой, не-посредственный

step-by-step operations – пошаговые операции

to select [si'lekt] – выбирать, выделять (на экране)

on the other hand – с другой стороны

exponentiation [ekspə'nɛnʃi'eɪʃ(ə)n] – возведение в степень

call for – требовать, предусматривать
to load [ləʊd] – загружать, выполнять загрузку

 **Ex. 4** Read the text *Central Processing Unit* and answer the questions *What is the heart of the computer system? What is its function?*

Central Processing Unit

It is well known in computer science that the words *computer* and *processor* are used interchangeably. Speaking more precisely, *computer* refers to the central processing unit (CPU) together with an internal memory. The internal memory, control and processing components make up the heart of the computer system. Manufacturers design the CPU to control and carry out basic instructions for their particular computer.

The CPU coordinates all the activities of the various components of the computer. It determines which operations should be carried out and in what order. The CPU controls the operation of the entire system by issuing commands to other parts of the system and by acting on responses. When required it reads information from the memory, interprets instructions, performs operations on the data according to the instructions, writes the results back into the memory and moves information between memory levels or through the input-output ports.

In digital computers, the CPU can be divided into two functional units called the control unit (CU) and the arithmetic-logical unit (ALU). These two units are made up of electronic circuits with millions of switches that can be in one of two states, either on or off.

The function of the CU within the central processor is to transmit coordinating control signals and commands. The control unit is that part of the computer that directs the sequence of step-by-step operations of the system, selects instructions and data from memory, interprets the program instructions, and controls the flow between main storage and the arithmetic-logical unit.

The ALU, on the other hand, is that part of the computer in which the actual arithmetic operations, namely, addition, subtraction, multiplication, division and exponentiation, called for in the instructions are performed.

Programs and the data, on which the CU and the ALU operate, must be in internal memory in order to be processed. Thus, if located in

secondary memory devices, such as disks or tapes, programs and data are first loaded into internal memory.

Ex. 5. Answer the questions using the text *Central Processing Unit*.

1. What words in computer science are used interchangeably and why?
2. What components make up the heart of the computer system? 3. What is the function of the CPU? 4. In what way does the CPU control the operation of the whole system? 5. Name the sequence of operations the CPU performs (use five verbs). 6. What are the CPU functional units made of? 7. What is the function of the CU? 8. What operations are performed in the ALU? 9. Where are data processed? 10. Where are data to be processed loaded into?

Ex. 6. In the text *Central Processing Unit* find English equivalents of the following word combinations.

Хорошо известно, к компьютеру относятся, внутренняя память, составлять суть, выполнять, координировать деятельность, определяя в каком порядке, управлять работой всей системы, при необходимости, в соответствии с командами, уровни памяти, порт ввода-вывода, переключатели, режим включения или выключения, передавать сигналы, указывать последовательность пошаговых операций, основная память, управлять ходом выполнения программы, с другой стороны, выполнять вычитание, сложение, возведение в степень, деление, умножение, для того чтобы.

Ex. 7. Choose the right options according to the text *Central Processing Unit*.

1. The internal memory, control and processing components make up the (*heart, key, centre*) ... of the computer system. 2. The (*CPU, CU, ALU*) ... controls the operation of the entire system by issuing commands to other parts of the system and by acting on responses. 3. The CPU can be divided into two functional (*parts, units, functions*) 4. The control unit is that part of the computer that (*carries out, performs, directs*) ... the sequence of step-by-step operations of the system. 5. Programs and the data, on which the CU and the ALU operate, must be in (*external memory, internal memory, counter*) ... in order to be processed.

Ex. 8. Remember the meanings of the words and translate the word combinations into the Russian.

Direction: backward, clockwise, counterclockwise, data, forward, inverse / reverse, negative, positive, printing, transmission.

Level: access, application, data, device, difficulty, error, function, hardware, high, input, output, performance, presentation, program, protection, resource, security, software, structural, system, transmission.

Processor: arithmetic, central, command, control, data, error, message, general-purpose, special-purpose, image, language, mail, numeric, parallel, peripheral, text.

To switch: between programs, between windows, disks, to switch on / off / over.

Switch: binary command.

Step: conversion, final, procedure, program, programming, step by step, one step at a time; to step down / out / up, to take steps.

Ex. 9. Speak about the CPU, its functional organization. Tell the class about the organization of CPU.

THE CPU MAIN COMPONENTS

V Ex. 1. Read the words.

to manage ['mænidʒ] – управлять, организовывать, справляться

to obtain [ə'b'tein] – получать, достигать, добиваться

to cause – заставлять, вынуждать, вызывать, быть причиной, причина, основание

flow ['fləʊ] – поток, ход (выполнения программы), последовательность

counter ['kaʊntə] – счетчик

register ['redʒɪstə] – регистр, устройство регистрации, счетчик, датчик

instruction register – регистр команд

storage register ['stɔ:rɪdʒ 'redʒɪstə] – регистр памяти, запоминающий регистр

address register – адресный регистр

temporarily [.tempə'rerəlɪ] – временно

decoder [di:kəudə] – дешифратор

operand address ['ɔprərand ə'dres] – адрес (хранения) операнда

mark ['ma:k] – отметка, маркер, знак, помечать, обозначать, выделять

timing mark – отметка времени

accumulate [ə'kjū:mju:leɪt] – накапливать(ся), суммировать, собирать(ся)

accumulator [ə'kjū:mju:leɪtə] – сумматор, накапливающий регистр, устройство суммирования

compare [kəm'peɪ] – сравнивать, соотноситься

comparer – компаратор, устройство сравнения

content [kən'tent] – содержимое, смысл, объем, количество

involve [ɪn'velv] – включать, содержать, заключать (в себе)

core ['kɔ:] – суть, основная часть, ядро, оперативная память

add [æd] – складывать, суммировать, прибавлять, присоединять

added – добавочный, дополнительный

adder – сумматор, блок суммирования

at least – по крайней мере

Ex. 2. Find the roots and suffixes in the following words. Translate them into Russian.

Manager, counter, instruction, decoder, accumulator, comparer, added, timing, temporarily.

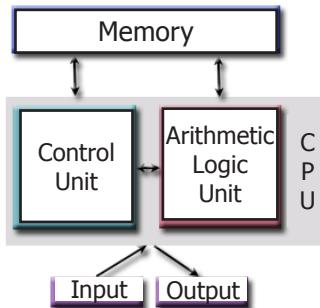
Ex. 3. Make word combinations and match them with their translations.

involve	counter	главная суть
added	core	отметка времени
basic	mark	достигать цели
main	register	адрес операнда
fundamental	objective	содержать информацию
accumulate	information	основной счетчик
to obtain	address	регистр команд
instruction	component	фундаментальный смысл
timing	data	дополнительный компонент
operand	content	накапливать данные

Ex. 4. Put the words in the right order to make sentences and translate them into Russian.

1. Two / are / there / components / the CPU / main / of.
2. Coordinates / it / computer / entire / system.
3. Main / perform / components / these / their / functions.
4. ALU / the / brought / operations / main / processing / from / memory / executes.

Ex. 5. Look at the picture and answer the questions *What components does the CPU consist of?*



Ex. 6. Read the text *The CPU Main Components* and answer the questions *What are the functions of CU and ALU?*

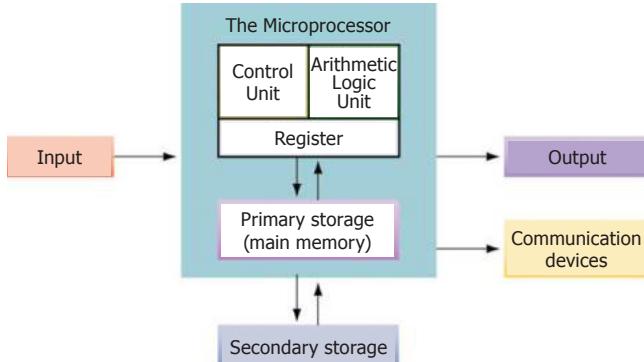
The CPU Main Components

As it is known the two functional units of the CPU are the control unit (CU) and the arithmetic-logical unit (ALU). The control unit manages and coordinates the entire computer system. It obtains instructions from the program stored in main memory, interprets the instructions, and issues signals that cause other units of the system to execute them.

The control unit (CU) operates by reading one instruction at a time from memory and taking the action called for by each instruction. In this way it controls the flow between the main storage and the arithmetic-logical unit.

The control unit has the following components: **a counter** that selects the instructions, one at a time, from memory; **a register** that temporarily holds the instructions read from memory while it is being executed; **a decoder** that takes the coded instruction and breaks it down into individual

commands necessary to carry it out; a **clock**, which produces marks at regular intervals. These timing marks are electronic and very rapid.



The sequence of control unit operations is as follows. The next instruction to be executed is read out from primary storage into the storage register. The instruction is passed from the storage register to the instruction register. Then the operation part of the instruction is decoded so that the proper arithmetic or logical operation can be performed. The address of the operand is sent from the instruction register to the address register. At last the instruction counter register provides the address register with the address of the next instruction to be executed.

The arithmetic-logical unit (ALU) executes the processing operations called for by the instructions brought from main memory by the control unit. Binary arithmetic, the logical operations and some special functions are performed by the arithmetical-logical unit.

Data enter the ALU and return to main storage through the **storage register**. The **accumulator** serving as a register holds the results of processing operations. The results of arithmetic operations are returned to the accumulator for transfer to main storage through the storage register. The **comparer** performs logical comparisons of the contents of the storage register and the accumulator. Typically, the comparer tests for conditions such as “less than”, “equal to”, or “greater than”.

So as you see the primary components of the arithmetic-logical unit are banks of bistable devices, which are called **registers**. Their purpose is to hold the numbers involved in the calculation and hold the results temporarily until they can be transferred to memory. At the core of the

ALU is a very high-speed binary adder, which is used to carry out at least the four basic arithmetic functions (addition, subtraction, multiplication and division). The logical unit consists of electronic circuitry which compares information and makes decisions based upon the results of the comparison.

Ex. 7. Find in the text *The CPU Main Components* English equivalents of the following word combinations.

Функциональные блоки, устройство управления, арифметико-логическое устройство, управлять работой всей системы, получать команды, основная память, посыпать сигналы, считывать команды поэтапно, таким образом, временно сохранять информацию, производить пометки через равные промежутки времени, последовательность операций, регистр памяти, регистр команд, адресный регистр, счетчик, датчик, дешифратор, адрес операнда, адресный регистр, высокоскоростной двоичный сумматор, по крайней мере, вычитание, сложение, умножение, деление, принимать решения, результаты сравнения.

Ex. 8. Answer the questions upon the text *The CPU Main Components*.

1. What are the functional units of CPU?
2. What is the function of CU?
3. How does CU operate?
4. What is the function of a counter?
5. What role does a decoder play?
6. What is the sequence of CU operations?
7. What is the function of the arithmetic-logical unit?
8. What operations are performed by ALU?
9. What primary components does ALU consist of?
10. What is the function of an accumulator / comparer?

Ex. 9. Complete the table using information from the text *The CPU Main Components*.

Unit	Function
CU	Manages and coordinates the entire computer system

Ex. 10. Speak about the CPU main components, their functions and interconnections.

Ex. 11. Work in groups. Devide the text *The CPU Main Components* into 3 parts and translate it into Russian.

 **Ex. 12.** Read the text *Control Unit* for additional information. Translate it into Russian.

Control Unit

It is known that one of the fundamental parts of the computer is a control unit. This unit controls the computation process automatically, without man's participation. It sends signals to all other parts of the computer to specify what they must do. First, the control unit tells the main memory what data must be transferred to the arithmetic-logical unit and other devices. Then it enables the arithmetic-logical unit to perform the required operation. Finally, it places the obtained results in the main memory.

It is important to note that the control unit operation is determined by an algorithm of a problem solution. The algorithm is a sequence of arithmetic and logical operations. These operations must be performed on the initial data for solving the problem.

Description of an algorithm in a form acceptable by a computer is called a program. A program is a list of sequential computer instructions enabling a computer to solve a problem. In order to be acceptable by the computer instructions must be encoded into a digital form.

In conclusion, it should be pointed out that the main feature of a computer is automatic control of the problem solution process. It is based on the programmed-control principle.

STORAGE

 **Ex. 1.** Read the new words and learn them.

primary / secondary storage – первичное / вторичное запоминающее устройство

main storage – основная память, оперативное запоминающее устройство

internal storage [ɪn'tɜ:n(ə)l 'stɔ:rɪdʒ] – внутреннее ЗУ

sequence ['si:kw(ə)ns] – последовательность, порядок следования

intermediate results [,ɪntə'mi:dɪət rɪ'zʌltɪz] – промежуточные результаты

ongoing process ['ɒnɡəʊɪŋ 'prəʊses] – продолжающийся, постоянный процесс

similarity [sɪmɪ'lærɪtɪ] – сходство, подобие

to retain [rɪ'teɪn] – сохранять, удерживать

to locate [lə(o)keɪt] – размещать(ся), располагать(ся)

value ['væljʊ:] – значение, величина, значимость, ценность, оценка

binary digit ['baɪnərɪ 'dɪdʒɪt] – двоичная цифра, двоичный знак

adjacent [ə'dʒeɪs(ə)nt] – смежный, соседний, примыкающий

strings of characters – последовательность символов

consecutive [kən'sekjutɪv] – последовательный, смежный, соседний

Ex. 2. Choose the right variant.

1. There are primary and (*binary / secondary*) ... storage units.
2. Another name for primary storage is memory, because of its (*similarity / differences*) ... to a function of the human brain.
3. Computer memory must be able (*to transfer / to retain*) ... very large numbers of symbol combinations.
4. The codes used by computer designers are based upon a number system that has only two possible (*states / values*)....
5. Each binary (*digit / storage*) ... is called a bit.

Ex. 3. Match the synonyms from two columns.

characters	to store
adjacent	figure
ongoing	symbols
main	memory
digit	adjoining
to retain	resemblance
value	current
storage	central
similarity	amount

 **Ex. 4. Read the text *Storage Units* and answer the following questions.**

• *What is storage unit?*

• *What types of storage unit have you learned from the text?*

Storage Units

Computer system architecture is organized around the primary storage unit because all data and instructions used by the computer system must pass through primary storage.

There are primary and secondary storage units. Both contain data and the instructions for processing the data. Data and instructions must flow into and out of primary storage.

Primary storage is also called *main storage* or *internal storage*. The specific functions of internal storage are to hold (store):

- 1) all data to be processed;
- 2) intermediate results of processing;
- 3) final results of processing;
- 4) all the instructions required for ongoing process.

Another name for primary storage is **memory**, because of its similarity to a function of the human brain. However, computer storage differs from human memory in important respects. Computer memory must be able to retain very large numbers of symbol combinations, without forgetting or changing any details. It must be able to locate all its contents quickly upon demand. The combinations of characters, that is, the letters, numbers, and special symbols by which we usually communicate, are coded. The codes used by computer designers are based upon a number system that has only two possible values, 0 and 1. A number system with only two digits, 0 and 1, is called *a binary number system*. Each binary digit is called a bit, from Binary digit. As the information capacity of a single bit is limited to 2 alternatives, codes used by computer designers are based upon combinations of bits. These combinations are called *binary codes*. The most common binary codes are 8-bit codes because an 8-bit code provides for 2/8, or 256 unique combinations of 1's and 0's, and this is more than adequate to represent all of the characters by which we communicate.

Data in the form of coded characters are stored in adjacent storage locations in main memory in two principal ways:

- 1) as *strings* of characters – in bytes;
- 2) within fixed-size *boxes* – in words.

A fixed number of consecutive bits that represent a character is called *a byte*. The most common byte size is 8-bit byte. Words are usually 1 or more bytes in length.

Secondary storage. Primary storage is expensive because each bit is represented by a high-speed device, such as a semiconductor. A million bytes (that is, 8 million bits) is a large amount of primary storage. Often it is necessary to store many millions, sometimes billions, of bytes of data. Therefore slower, less expensive storage units are available for computer systems. These units are called *secondary storage*. Data are stored in them in the same binary codes as in main storage and are made available to main storage as needed.

Ex. 5. Answer the questions using information from the text *Storage Units*.

1. How is computer system organized?
2. What are the two main types of storage units?
3. What do they contain?
4. What is the function of a primary storage?
5. Why is primary storage often called *memory*?
6. In what respect does computer memory differ from human memory?
7. What are codes based on?
8. What is *secondary storage* and what is it used for?
9. Why is primary storage expensive?

Ex. 6. Find in the text *Storage Units* English equivalents of the following words.

Первичное запоминающее устройство (ЗУ), вторичное ЗУ, рас-смотрение, поэтому последовательность, оперативное ЗУ, внутрен-няя память, промежуточные результаты, подобие функции человеческого мозга, размешать содержимое по требованию, система счисления, двоичная система счисления, возможные величины, объем информации, двоичный код, смежные ячейки памяти, по-следовательность символов, быстродействующее устройство, полу-проводник, доступный.

Ex. 7. Scan the text *Storage Units* once again. Divide it into several parts. Give a title to all the parts and make a detailed plan of the text.

Ex. 8. Imagine that you are a teacher who is going to deliver a lecture on the topic *Storage Units*. Give the lecture to the class using your plan.

PERIPHERALS OF PC

Ex. 1. Read the definition of peripherals and translate it.

Peripherals – the equipment that allows to input information into the computer or output it from. It generally refers to any external device attached to a PC. The term ‘peripheral’ is used specifically to indicate that the device lies outside the periphery of the PC case. The only thing peripherals have in common with each other is that they provide additional input to the PC, and often capture some of the PC’s output too. In human body terms peripherals are like the eyes, ears, nose, hands and feet of the PC.

Ex. 2. Discuss in pairs:

- *What peripherals do you know?*
- *What peripherals do you have at home?*
- *What peripherals can any computer work without?*

Ex. 3. Learn all the peripherals of a computer. Translate the words into Russian.

Monitor, keyboard, mouse, printer, scanner, touchpad, touch screen, microphone, webcam, TV-tuner, video card, speaker system, floppy-disk (magnetic diskette), USB flash disk, magnetic disk, magnetic tape, sounds cards, digital video camera.

Ex. 4. Find English equivalents of the following words in ex. 3.

Акустические колонки, звуковые карты, микрофон, клавиатура, мышь, тачпад, сенсорный экран, дискета, диск, флеш карта, монитор, видео карта, ТВ-тюнер, магнитная пленка, веб-камера, сканер, цифровая видео камера, принтер.

Ex. 5. Learn more information about peripherals of a PC. Translate the following text in pairs.

Today’s personal computers do so much more than compute and today’s PC peripherals are becoming an ever more integrated. With the right peripheral computers can entertain, educate, connect, monitor, and secure. Peripherals are not obligatory for the work of system. They can be switched off from the computer. However, the majority of personal computers are used together with these or those peripheral devices.

Peripherals are divided into three types:

- 1) input devices – the devices which are used for inputting information in the computer;
- 2) output devices – the devices serving for information output from the computer;
- 3) storage devices – the devices that store information processed by the computer.

Sometimes one peripheral device can belong to several types at once. For example, device of input-output, sound card, network payment.

Ex. 6. Put all the peripherals into three groups according to their types. Work in pairs.

Ex. 7. Read the following definitions and match them with the names of peripherals.

- a) ... displays the computer's user interface and opens programs, allowing the user to interact with the computer;
- b) ... is a digital camera that's connected to a computer;
- c) ... are transducers that convert electromagnetic waves into sound waves;
- d) ... is something you talk into and it magnifies your voice or makes it louder;
- e) ... is a data storage device that includes flash memory and an integrated Universal Serial Bus (USB) interface;
- f) ... is an input device that scans documents such as photographs and pages of text;
- g) ... is a pointing device featuring a tactile sensor, a specialized surface that can translate the motion and position of a user's fingers to a relative position on screen.

Ex. 8. Give your definitions to other peripherals.

INPUT-OUTPUT UNITS

Ex. 1. Divide input and output devices into two columns.

Devices	
Input	Output

Head phones, keyboard, plotter, printer, scanner, digital camera, web-camera, bar code reader, speakers, screen, joystick, touch screen, microphone, graphic tablets, monitor

Ex. 2. Think of your definition of the I/O devices. Compare your definition with your partner's.

V Ex. 3. Learn the new words and word combinations.

environment [ɪn'veɪrənmənt] – среда, окружение, режим работы

external environment – внешняя среда

human-related ['hju:mən rɪ'leɪtɪd] – (взаимо)связанный с человеком

human-independent – независимый от человека

remote terminal [rɪ'məut 'tɜ:min(ə)l] – удаленный терминал

input-output interface – интерфейс (сопряжение, место стыковки)

ввода-вывода

scan ['skæn] – просматривать, сканировать, развертывать

scanner ['skænə] – сканер, устройство оптического считывания

bar-code scanner / bar-code reader – устройство считывания штрих-кода

regardless of [rɪ'ga:dles] – несмотря на, независимо от

to match characteristics ['mætʃ ,kærəktə'rɪstɪks] – сопоставлять параметры

similarly ['simələli] – подобным образом, также, аналогично

to fall between – падать, попадать в интервал между

card reader – устройство считывания платы (карты)

line printer – принтер с построчной печатью

page printer – принтер с постраничной печатью

character printer – принтер с посимвольной печатью

optical character reader – оптическое считающее устройство текста

optical mark reader – оптическое считающее устройство знаков

visual display ['vɪzjʊəl dɪs'plaɪ] – визуальный индикатор

digitizer ['dɪdʒɪtaɪzər] – аналого-цифровой преобразователь, сканер

keyboard input device – клавишное устройство ввода

plotter ['plɔ:tə] – графопостроитель

voice recognition and response unit – устройство распознавания голоса и реагирования

 **Ex. 4. Read the following text and say which devices are related to the input-output environment.**

Input-output Environment

Data and instructions must enter the data processing system, and information must leave it. These operations are performed by input and output (I/O) units that link the computer to its external environment.

The I/O environment may be human-related or human-independent. A remote banking terminal is an example of a human-related input environment, and a printer is an example of a device that produces output in a human-readable format. An example of a human-independent input environment is a device that measures traffic flow. A reel of magnetic tape upon which the collected data are stored in binary format is an example of a human-independent output.

Input-output Interfaces. Data enter input units in forms that depend upon the particular device used. For example, data are entered from a keyboard in a manner similar to typing, and this differs from the way that data are entered by a bar-code scanner. However, regardless of the forms in which they receive their inputs, all input devices must provide a computer with data that are transformed into the binary codes that the primary memory of the computer is designed to accept. This transformation is accomplished by units called I/O interfaces. Input interfaces are designed to match the unique physical or electrical characteristics of input devices to the requirements of the computer system. Similarly, when output is available, output interfaces must be designed to reverse the process and to adapt the output to the external environment. These I/O interfaces are also called channels or input-output processors (IOP).

The major differences between devices are the media that they use and the speed with which they are able to transfer data to or from primary storage.

Input-output Device Speed. Input-output devices can be classified as high-speed, medium-speed, and low-speed. The devices are grouped according to their speed. It should be noted that the high-speed devices are entirely electronic in their operation or magnetic media that can be

moved at high speed. Those high-speed devices are both input and output devices and are used as secondary storage. The low-speed devices are those with complex mechanical motion or operate at the speed of a human operator. The medium-speed devices are those that fall between – they tend to have mechanical moving parts which are more complex than the high-speed devices but not as complex as the low-speed.

High-speed devices: magnetic disk, magnetic tape.

Medium-speed devices: card readers, line printers, page printers, computer output microfilms, magnetic diskette, optical character readers, optical mark readers, visual displays.

Low-speed devices: bar-code readers, character printers, digitizers, keyboard input devices, plotters, voice recognition and response units.

Ex. 5. Answer the questions on the text *Input-output Environment*.

1. What is the purpose of input and output devices?
2. What types of input-output devices do you know?
3. Why are data transformed into a binary code while entering the input device?
4. Give an example of a human independent output.
5. What is an I/O interface?
6. What are the major differences between the various I/O devices?
7. What types of I/O devices tend to be high-speed devices?
8. What types of devices tend to be low-speed devices?

Ex. 6. Find English equivalents of the following word combinations in the text *Input-output Environment*.

Среда устройств ввода-вывода, система обработки информации, внешняя среда, связан с человеком, независим от человека, удаленный банковский терминал, измерять поток данных, бобина с магнитной лентой, хранить собранную информацию, двоичный формат, интерфейс ввода-вывода, вводить с клавиатуры, устройство считывания штрих-кода, не смотря на, преобразовать в двоичный код, сопоставлять параметры, подобным образом, интерфейс вывода, изменить процесс в обратном направлении, настроить устройство ввода-вывода к внешней среде, главное отличие, основная память, вторичная память, низкоскоростные устройства, в соответствии.

Ex. 7. Remember the new words from ex. 3 and translate word combinations with them.

Environment: application, communication, execution, external, hardware, interface, management, multimedia, network, processing, security, software, user.

Interface: channel, common, data, database, display, external, flexible, floppy-disk, general-purpose, hardware, low-level.

Scanner: bar code, black-and-white, colour, desktop, hand, laser, manual, optical, visual.

Terminal: batch, desktop, display, printer, remote, security, logical, text.

Ex. 8. a) Analyze all forms of the Infinitive.

Infinitive	Active	Passive
Simple	<i>to ask</i>	<i>to be asked</i>
Continuous	<i>to be asking</i>	<i>to be being asked</i>
Perfect	<i>to have asked</i>	<i>to have been asked</i>
Perfect Continuous	<i>to have been asking</i>	—

b) Read the following sentences, define the forms of the highlighted infinitives and their functions. Translate the sentences into Russian.

1. A printer is an example of a device **to produce** output in a human-readable format.
2. The high-speed devices **to be used** as secondary storage are both input and output devices.
3. The progress of electronics **to have resulted** in the invention of electronic computers was a breakthrough (прорыв) of the second part of the 20th century.
4. Mendeleev's periodic law **to have been accepted** as a universal law of nature is of great importance nowadays.
5. When output is available, output interfaces must be designed **to reverse** the process and **to adopt** the output to the external environment.
6. The memory stores the instructions and the data **to be** quickly **retrieved** on demand by the CPU.
7. Computers **to have been designed** originally for arithmetic purposes are applicable for great variety of tasks at present.
8. The film **to have been running** for over a month this year attracts attention of many spectators.
9. The CPU of a computer **to be arranged** in a single or very small number of inte-

grated circuits is called a microprocessor. 10. Russia was the first country **to start** the cosmic era.

 **Ex. 9. a) Read the text and give it a title.**

As it is well known, a computer cannot perform or complete any useful work unless it is able to communicate with its external environment. All data and instructions enter and leave the central processing unit through primary storage. Input-output devices are needed to link primary storage to the environment, which is external to the computer system. So input devices are used to enter data into primary storage. Output units accept data from primary storage to provide users with information or to record the data on a secondary storage device. Some devices are used for both the input and output functions.

The data with which these devices work may or may not be in a form that humans can understand. For example, the data that a data entry operator keys into the memory of a computer by typing on a keyboard are readable by humans. However, the data that tell a computer about the performance of an automobile engine are not in a form that humans can read. They are electrical signals from an analog sensor. Similarly, output may be on a printed page, which humans can read easily, or upon some other medium where the data are not visible, such as on magnetic tape or disk.

As we know, all of the data flow from input to final output is managed by the control unit in the CPU. Regardless of the nature of the I/O devices, special processors called I/O interfaces are required to convert the input data to the internal codes used by the computer and to convert internal codes to a format which is usable by the output device.

b) Make up an annotation to the text in English. Use the cliché given below.

The text / article under review ... gives us a sort of information about....
The article deals with the problem....

The subject of the text is....

At the beginning (of the text), the author describes / dwells on / explains / touches upon / analyses / comments / characterizes / underlines / reveals / gives account of....

The article begins with the description of / a review of / the analysis of.... The article opens with....

Then after that / further on / next / the author passes on to / gives a detailed (thorough) analysis (description) / goes on to say that....

To finish with, the author describes.... At the end of the article the author draws the conclusion that / sums it all up (by saying).... In conclusion the author....

INPUT DEVICES

Ex. 1. Label the pictures with the words in the box.

trackball, barcode reader, graphic tablets, touchscreen, joystick, scanner, digital camera, microphone



1. _____

2. _____

3. _____

4. _____



5. _____



6. _____



7. _____



8. _____

Ex. 2. Learn the following new words and word combinations.

keyboard ['ki:bɔ:d] – клавиатура

key [ki:] – клавиша, кнопка, переключатель, ключевой, основной, главный, переключать, набирать на клавиатуре

manipulator [mə'nɪpjʊleɪtə] – манипулятор, блок обработки

trackball ['trækbɔ:l] – трекбол

touch panel ['tætʃ 'pæn(ə)l] – сенсорная панель

graphic plotting tables ['græfɪk 'plɔ:tɪŋ 'teɪbəlz] – графические планшеты

sound card ['saund 'ka:d] – звуковая карта (плата)

enable [ɪ'neɪb(ə)l] – разрешать, позволять, допускать, делать возможным

operating mode ['ə:pə'retiŋ] 'məod] – режим работы

press a button – нажать на кнопку

keep buttons depressed – удерживать кнопки в нажатом состоянии

double-click ['dʌb(ə)l] 'klik] – двойное нажатие

erase images [ɪ'reɪz] 'imɪdʒɪz] – удалить, стереть изображения (объекты)

roller ['rəʊlə] – ролик; валик

track – следить, прослеживать, проходить, след, траектория, путь, дорожка, соединение

by means of – посредством

permitting capacity – разрешающая способность

 **Ex. 3. Read the text and name the devices for inputting information into the computer. Translate the text.**

Input Devices

There are several devices used for inputting information into the computer: a keyboard, some coordinate input devices, such as manipulators (a mouse, a track ball), touch panels and graphical plotting tables, scanners, digital cameras, TV tuners, sound cards 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. A standard keyboard has 104 keys and three more ones informing about the operating mode of light indicators in the upper right corner.

Later when the more advanced graphics became to develop, user found that a keyboard did not provide the design capabilities of graphics and text representation on the display. There appeared manipulators, a mouse and a track ball, that are usually used while operating with graphical interface. Each software program uses these buttons differently.

The mouse is an optic-mechanical input device. 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.

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

Graphical plotting tables (plotters) find application in drawing and inputting manuscript texts. You can draw, add notes and signs to electronic documents by means of a special pen. The quality of graphical plotting tables is characterized by permitting capacity, that is the number of lines per inch, and their capability to respond to the force of pen pressing .

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

Digital video cameras have been spread recently. They enable getting video images and photographs directly in digital computer format. Digital cameras give possibility to get high quality photos.

Sound cards produce sound conversion from analog to digital form. They are able to synthesize sounds. Special game-ports and joysticks are widely used in computer games.

Ex. 4. Answer the questions on the text *Input Devices*.

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. Why do many users prefer manipulators to keyboard? 5. How does the mouse operate? 6. What is its function? 7. What role does the ball on the bottom of the mouse play? 8. What is used in portable computers instead of manipulators? 9. What is the touch pad's principle of operation? 10. Where do graphical plotting tables find application?

Ex. 5. In the text *Input Devices*, find English equivalents of the words given below.

Введение информации, координатные устройства ввода, манипуляторы, мышь, трекбол, сенсорная панель, графические планшеты, цифровые камеры, сканеры, ТВ тюнеры, стандартная клавиатура, числовая и текстовая информация, световые индикаторы, клавиши, режим работы, презентация текста на мониторе, графический интерфейс, программные средства, оптико-механическое устройство ввода, управлять движением курсора, упрощать ориентацию пользователя на экране, указывать и выбирать изображения, удерживать кнопки в нажатом состоянии, двойное нажатие, стирать объекты, ровная поверхность, вращать ролики, следить за вертикальным движением, легко скользить, портативный компьютер, рукописный текст, посредством, разрешающая способность.

Ex. 6. Each text describes one of these devices: *trackball, joystick, lightpen, scanner*. Identify the device with the text. Compare your answer with your partner's.

A. A _____ is another input device you can connect to a computer system. The _____ is able to move in eight directions. _____s are mostly used in computer games to control the way a picture on the screen moves. Sometimes two _____s are connected to a computer so two people can play the game at the same time.

B. A _____ works in exactly the same way as a mouse, except that the ball is on top. The user rolls the ball around with her hand to operate it. If you use a _____, you don't need any extra space on your desk to move it around (like you do with a mouse). _____s are often used on small portable computers and on some video game machines.

C. A _____ can be used to draw pictures directly on to a computer screen or to read the pattern on a barcode. A _____ that can read barcodes detects the difference between the light reflected from a black barcode line and its lighter background.

D. Using a _____, you can input printed drawings, photographs, or text directly into a computer. A _____ works like a

E. Photocopier – a light is shone on the material and the _____ detects the reflected light. You can use a _____ with optical char-

cter recognition (OCR) software to input the scanned text into a word processing package.

Ex. 7. Match the words on the left with the phrases on the right.

Device	Use
1) joystick	a) draw pictures on to a computer screen
2) lightpen	b) copy documents
3) scanner	c) input sound
4) digital camera	d) input text
5) mouse	e) select from a menu
6) keyboard	f) move the cursor rapidly
7) microphone	g) produce photos without film

Ex. 8. Describe the function and use of each device in different ways. Use the prompts given below.

- 1) ... is used for... -ing
- 2) You can
- 3) ... is used in
- 4) Using ... you can....

Example: You can use a mouse to select from a menu.

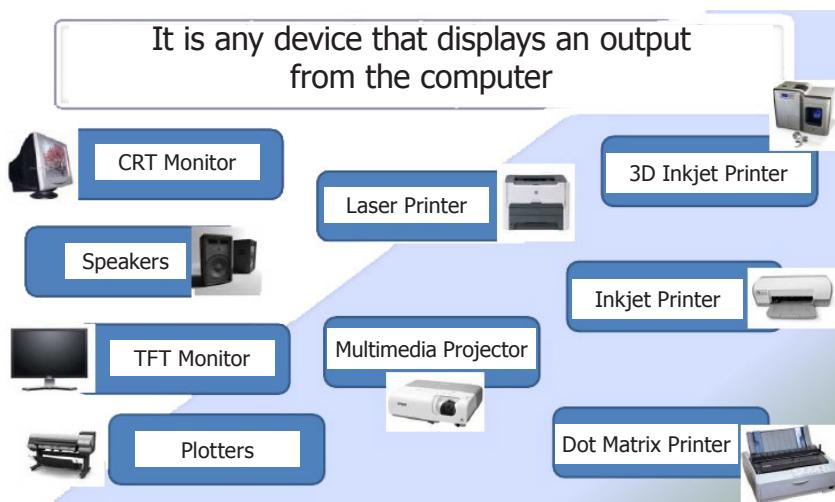
Ex. 9. In pairs decide which input device is best for....

- 1) ... controlling fast-moving objects in a game;
- 2) ... reading the price of things in a shop;
- 3) ... making copies of a page of text and graphics;
- 4) ... storing sounds on a computer;
- 5) ... producing pictures of people and places for storing in a computer;
- 6) ... controlling a computer using speech;
- 7) ... typing text into a computer.

OUTPUT DEVICES

Ex. 1. Study the picture and say:

- *What is an output device?*
- *Which of these output devices do you know?*



V Ex. 2. Learn the new words.

human-readable form – удобная для чтения форма

performance [prə'fɔ:m(ə)ns] – (рабочая) характеристика; производительность, быстродействие, скорость работы, пропускная способность

character printer – принтер с посимвольной печатью, символьный принтер

line printer ['lain 'printə] – принтер с построчной печатью

page printer [peɪdʒ 'printə] – принтер с постраничной печатью

(non) impact printer ['nɒn'ɪmpækt 'printə] – (бес)контактный принтер

letter-quality printer – принтер с типографским качеством печати

dot-matrix printer ['dɒt'meɪtrɪks 'printə] – точечно-матричный принтер

ink-jet printer ['ɪnk dʒet 'printə] – струйный принтер

laser-beam printer ['leɪzə 'bi:m 'printə] – лазерный принтер

to identify [aɪ'dentifai] – идентифицировать, распознать, обозначить

approach [ə'prəʊtʃ] – подход, метод, принцип, приближение

at a time – за один раз, одновременно

to cause [kɔ:z] – вызывать, приводить к (ч.-л.), заставлять, вынуждать

to strike against a ribbon – ударять по ленте
 typewriter ['taipraɪtə] – печатное устройство
 to spray drops of ink – распылять капли чернил
 to affect [ə'fekt] – влиять, воздействовать, оказываться на (ч.-л.)
 technique [tek'nɪ:k] – метод, способ, техника, методика, технология
 printer output – вывод на печать, распечатываемые данные

 **Ex. 3.** Read some information about different types of printers and answer the questions given below the text.

Output Devices. Printers

Printers provide information in a permanent, human-readable form. They are the most commonly used output devices and are components of almost all computer systems. Printers vary greatly in performance and design. We will classify printers as character printers, line printers and page printers in order to identify three different approaches to printing, each with a different speed range. In addition, printers can be described as either impact or nonimpact. Printers that use electromechanical mechanisms that cause hammers to strike against a ribbon and the paper are called impact printers. Nonimpact printers do not hit or impact a ribbon to print.

Character printers print only one character at a time. A typewriter is an example of a character printer. Character printers are the type used with literally all microcomputers as well as on computers of all sizes whenever the printing requirements are not large. Character printers may be of several types.

A letter-quality printer is a character printer which produces output of typewriter quality. Letter-quality printers typically have speeds ranging from 10 to 50 characters per second.

Dot-matrix printers form each character as a pattern of dots. These printers have a lower quality of type but are generally faster printers than the letter-quality printers. They have speeds in the range of 50 to 200 characters per second.

One of the newest types of character printer is **the ink-jet printer**. It sprays small drops of ink onto paper to form printed characters. The ink has a high iron content, which is affected by magnetic fields of the printer.

These magnetic fields cause the ink to take the shape of a character as the ink approaches the paper.

Line printers are electromechanical machines used for high-volume paper output on most computer systems. Their printing speeds are such that to an observer they appear to be printing a line at a time. They are impact printers. The speeds of line printers vary from 100 to 2500 lines per minute. Line printers have been designed to use many different types of printing mechanisms. Two of the most common print mechanisms are the drum and the chain. **Drum printers** use a solid, cylindrical drum, rotating at a rapid speed. Speeds of drum printers vary from 200 to over 2000 lines per minute. **Chain printers** have their character set on a rapidly rotating chain called a print chain. Speeds of chain printers range from 400 to 2400 lines per minute.

Page printers are high-speed nonimpact printers. Their printing rates are so high that output appears to emerge from the printer a page at a time. A variety of techniques are used in the design of page printers. These techniques, called electrophotographic techniques, have developed from the paper copier technology. **Laser-beam printers** use a combination of laser beam and electrophotographic techniques to create printer output at a rate equal to 18000 lines per minute.

1. What are the three types of printers?
2. What is a letter-quality printer?
3. What is a dot-matrix printer?
4. What type of printer is the most common with microcomputer systems?
5. What is the most common printer type used on large computer systems?
6. What is an impact printer?
7. What is a nonimpact printer?
8. What are the most widely used printers?
9. How do you distinguish between a letter-quality printer and a dot-matrix printer?
10. Which of these printers is slower?
11. What types of character printers do you know?
12. How are printed characters formed by means of an ink-jet printer?
13. What are the main types of a line printer? Which of them is faster?
14. What techniques are used in the operation of page printers?

Ex. 4. In the text *Output Devices. Printers*, find English equivalents of the following word combinations.

Удобная для восприятия человека форма, наиболее часто употребляемые устройства вывода информации, различаться по ра-

бочим характеристикам и внешнему виду, принтеры с посимвольной печатью, принтеры с построчной печатью, принтеры с постраничной печатью, различные методы печати, диапазон скорости, принтеры контактные и бесконтактные, ударять по ленте, печатать по одному символу, буквально все компьютеры, а также; требования печати, принтер с типографским качеством печати, точечно-матричные принтеры; струйные принтеры; разбрзгивать капли чернил, высокое содержание железа, магнитные поля, принимать форму символа, печатают по строчке, барабанный принтер, цепочечные принтеры, лазерный принтер.

 **Ex. 5. Write a paragraph describing the printer you use at home or at work. Try to use some connectors. Dwell on the following aspects: *type, speed, resolution, print quality, memory, cost, print consumables (ink cartridges, etc.)***

Ex. 6. In pairs, choose the most suitable printer for each of these situations. Give your reasons.

1. You want to print documents, web pages and occasional photographs at home.
2. A small company needs a printer which will be shared by various users on a local area network (LAN).
3. A professional team of architects and engineers need accurate representations of objects in technical drawings.
4. A graphic arts business needs a printer to produce catalogue, brochures and other publications.

Ex. 7. Describe the features of your ideal printer.

 **Ex. 8. Read the following text for additional information and make the summary of it in English.**

Magnetic Media Devices

Some of the devices mentioned above can perform both the input and output functions. Magnetic disc, magnetic diskette, and magnetic tape are examples of such devices. Magnetic discs, diskettes, and tapes can record data as output from primary storage and can also serve as input devices returning the data to primary storage.

Data are recorded on magnetic discs and magnetic tapes either by outputting the data from primary storage or by using a data recorder. Data recorders are not input devices, and they are not connected to the computer system. Instead they are offline recorders. The magnetic media recording devices are key-to-disk, key-to-diskette, and key-to-tape machines.

Key-to-disk devices are used as data recording stations in multistation shared-processor systems. They are able to correct data before storing it on a magnetic disk and before its entry into the main computer system.

Key-to-diskette systems store data on flexible discs, called diskettes. Diskettes are inexpensive and reusable.

Key-to-tape devices can record data on reels, on cassettes, and on tape cartridges. The magnetic tape reels produced by key-to-tape systems are in a computer-compatible format for subsequent direct data input into a computer. However, data on cartridges and cassettes often are transferred to higher-speed media, such as a full-sized reel of magnetic tape or magnetic disc, for data transfer to the computer.

 **Ex. 9. Work in groups. Read the following text for additional information, devide it into parts and translate them, each group translates one part.**

Keyboard Devices

1. There is a wide variety of keyboard devices, or terminals, available for use in entering data directly into a computer.

The visual display terminal (VDT) is the most popular type of I/O device in use today. It consists of a typewriterlike keyboard for inputting and a cathode ray tube (CRT) for displaying output data. Each character entered through the keyboard is also displayed on the CRT. When keyed the data are held in a small memory, called a buffer, within the terminal itself. The data are not sent on to the computer until the operator presses an enter key on the keyboard. This allows the operator the opportunity to proofread or verify the data being entered by reading the data displayed on the screen. There are three major uses of VDT's: alphanumeric displays, graphic displays, and input through a light pen.

Alphanumeric displays. The most common use of the visual display terminal is to display alphanumeric data, that is, character data. Because

of their relatively fast output rates and their ability to provide a viewer with an “instant” output, video displays have replaced printers for many applications.

Graphic displays. Visual display terminals with a graphic display capability provide a very powerful and versatile tool for many users. Graphic-display devices provide not only a means of displaying high-resolution drawings but also the capability of manipulating and modifying the graphic display. The businessperson can use the graphic display to present data in the form of line charts, bar charts, or pie charts. Graphic displays can be very effective in information systems for business manager.

2. Different types of keyboard devices, such as visual display terminals, teleprinter terminals, and point-of-sale devices are among the keyboard devices.

A light pen is a photosensitive penlike instrument which can sense a position on the cathode ray tube (CRT) when the end of the pen is held against the screen. The light pen is an input device. By sensing the position on the screen when you touch it by the light pen, you are inputting data to the main storage. The light pen is commonly used by engineers to modify designs.

Teleprinter terminals. There are situations where it is desirable to have a printed copy of data outputted to a terminal. If a user finds a printed copy to be required, the solution could be a teleprinter terminal. A teleprinter terminal has a keyboard for input and a typewriterlike printer for output. These printers are character printers and are therefore slower output devices than CRT displays.

A point-of-sale (POS) device is the electronic equivalent of a cash register, however it is capable of capturing more data than a cash register. Most point-of-sale devices are online terminals attached to a computer for processing the transaction while the customer is making the purchase. The significant features of most of the current electronic POS devices include: the capability of entering extensive information about the sale, the guiding of the operator through the possible transactions by a series of lighted indicators or messages, a provision for transmission of the data to a central computer, and the provision for a local computational capability such as price extensions and tax calculations.

 **Ex. 10. Read the text about scanners. Make 10 questions to this text. Ask your partner to answer them.**

Scanners

Scanners provide a capability for direct data entry into the computer system. The major advantage of this direct data entry is that humans do not have to key the data. This leads to faster and more accurate data entry. The two major types of scanners are optical scanners and magnetic-ink character recognition devices.

Optical scanners are input devices that can “read” data recorded on paper. The scanning techniques used involve a light source and light sensors; thus, they are called optical devices. The data to be scanned may be typed or handwritten characters, data-coded as pencil marks, or data-coded as bars. The common optical scanner devices are called optical character readers, optical mark readers, and bar-code readers.

An **optical character reader (OCR)** inputs data by using optical scanning mechanisms that can detect or scan alphabetic and numeric characters printed on paper. If the data are typewritten, they must be typed using a special type font, called an OCR font. Examples of the use of OCR devices include the scanners used by the Postal Service to aid in sorting bulk mail, and as first-draft input for word processing system.

Optical mark readers (OMR) are able to detect pencil marks, made on special paper forms. The actual inputting of data through an OMR device involves shining a light on the page being scanned and detecting the reflections from the pencil marks. Pencil marks made with a soft lead pencil (high graphite content) will reflect the light. It is this reflection that the OMR device detects.

Optical bar-code readers detect combinations of marks or printed bars that represent the data. Bar codes have been used for a number of years for some types of credit card processing and by the post office for mail sorting. It is very common to use bar-code readers in conjunction with point-of-sale devices. The most widely known bar code is the universal product code (UPC), which now appears on almost all retail packages.

Magnetic-ink character recognition (MICR) devices were developed to assist the banking industry. MICR devices speed up data input

for the banking industry by reading characters imprinted on paper documents using a magnetic ink (an ink that contains iron oxide particles). Check and deposit form processing is the largest application of MICR.

STORAGE DEVICES

Ex. 1. Read the definition of a storage device. Translate it with your partner. Answer the question *What do we need data storage devices for?*

A **data storage device** is a device for storing information or data. A storage device may hold information, process information, or both. A device that only holds information is a recording medium. Devices that process information (data storage equipment) may either access a separate portable (removable) recording medium or a permanent component to store or retrieve data.

Ex. 2. Make a list of storage devices you know. Compare it with your partner's.

☒ **Ex. 3. Learn some words to the text *Hard Disk Drive*.**

hard-disk drive (HDD) – жесткий диск

assistant – помощник

video game consoles – игровые приставки

“grains” placed on solid circular platters – «зерна», размещенные на прочной круговой пластине

servo arm – сервопривод

capacity – мощность, объем, способность

☒ **Ex. 4 Read the following text and give the definition of a hard disk drive.**

Hard Disk Drive

A **hard disk drive** (HDD), also known as a **hard disk** or **hard drive**, is a data storage device used in many types of electronic equipment including computers, digital music players, personal digital assistants, video game consoles, and digital video recorders.

A hard drive stores data in small magnetic “grains” placed on solid circular platters. The grains act like small magnets and store data by

virtue of their alignment. Data are read and written using a “read / write head” at the end of a “servo arm”. Most modern hard drives have multiple platters, read/write heads, and servo arms.

New recording technology has allowed for current hard drive capacities to reach the Terabyte mark. As a result, modern electronic devices can store enormous amounts of data of many different types. Thus, they can perform a wide range of functions. Capacity of a hard disk drive is usually quoted in gigabytes, however Tera bytes are now also being used.

Ex. 5. Complete the sentences according to the text *Hard Disk Drive*. Translate them.

1. A hard disk drive also known as a ... or
2. HDD is a data storage
3. A hard drive ... data in small magnetic “grains” placed on solid circular platters.
4. New recording technology has allowed for current hard drive ... to reach the Terabyte mark.
5. Modern electronic devices can store enormous amounts of

Ex. 6. Answer the questions on the text *Hard Disk Drive*.

1. What is HDD?
2. What is the main function of HDD?
3. Where is it used?
4. How does it store data?
5. What do modern hard drives have?
6. What is the capacity of HDD?

Ex. 7. Work in groups of three. Read the following texts and complete your sections of the table.

There are many different kinds of storage device for computers, and developments are taking place all the time.

A. Some computers now still use floppy disks. Floppies conform to a standard and you can use them to carry data from one place to another. They are also very cheap but they are slow and have a limited capacity.

B. Almost all desktop computers have hard disks. They are fast and can store much greater amounts of data than floppies but they are fixed inside the computer and you cannot use them to transfer data.

C. You can move data from place to place using removable hard disks. They are almost as fast as fixed hard disks and also have high capacities

but they are relatively expensive. They do not all conform to one standard and they are not very common.

D. CD-ROM disks are very common and conform to a standard. They are removable and can hold large amounts of data. They are also cheap. However, they are usually read-only. You cannot change the information on them. They are also slow compared to hard disks.

E. Magneto-optical disks are like CD-ROMs but you can write data on to them. They are removable, have large capacities and last for a long time but they are expensive and do not all conform to one standard. For this reason they are not very common.

F. Magnetic tape is a cheap medium and it is rarely used now. You could use it to store very large amounts of data but it does not allow random access. Every time you read or write a piece of data, you start at the beginning of the tape. Tape drives are slow. Therefore, it is only suitable for doing backups.

G. USB Flash Drive is a small, portable flash memory card that plugs into a computer's USB port and functions as a portable hard drive. Flash drives are available in sizes such as 256MB, 512MB, 1GB, 5GB, and 16GB and are an easy way to transfer and store information. If the drive share with many different computers and computer systems, flash drive files can become corrupted and unreadable as a result.

H. Memory Card is an electronic flash memory storage disk commonly used in consumer electronic devices such as digital cameras, MP3 players, mobile phones, and other small portable devices. Memory cards are usually read by connecting the device containing the card to your computer, or by using a USB card reader. Memory cards are small storage devices that are used to store the data backups such as the text, the pictures, audio, video; they are more compact and portable than CDs or DVD. Memory cards are very portable, they can be used in small devices, they do not produce noise at work, and they allow more immediate access. But memory cards can easily break, they can be lost, misplaced or crushed easily, they can be affected by electronic corruption, and they make all the unreadable card and they are more expensive than CD or DVD.

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Medium	Advantages	Disadvantages
Floppy disk 		
Fixed hard disk 		
Removable hard disk 		
CD-ROM disk 		
Magneto-optical disk 		
Magnetic tape 		
USB Flash Drive 		

End of the table

Medium	Advantages	Disadvantages
Memory Card 		

Ex. 8. Now exchange the information with the other students in your group to complete all the sections of the table. Ask questions like these:

- *What are the advantages of floppy disks?*
- *What are the disadvantages of magnetic tape?*

Ex. 9. Follow the history of Digital Storage. Tell the class your history.



 **Ex. 10.** Look at the words in the boxes A and B. Are they nouns, adjectives, verbs or adverbs? Underline the suffixes. Complete the sentences below using these words.

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A.

magnet
magnetism
magnetic
magnetize
magnetically
magnetized

B.

fragment
defragmenter
fragmentation
fragmented

A.

1. _____ is the science of _____ phenomena and properties.
2. Floppy disks and hard drives are _____ storage devices.
3. Data is recorded on a disk in the form of _____ spots called bits.

B.

1. After you create, delete and modify a lot of files, the hard drive becomes _____, with bits and pieces spread all over the disk.
2. _____ slows down the speed at which data is accessed because the disk drive has to work harder to find the parts of a file stored in many different locations.
3. To recognize your hard drive, you can use a disk optimizer or _____; this will reorder your files into continuous clusters.



TEST YOURSELF

Test 1

1. Put in the necessary word.

A computer is a ... with an intricate ... of electronic circuits that operate ... or magnetize tiny metal cores. The switches, like the ..., are capable of being in one or two possible ..., that is, on or ...; magnetized or The machine is capable of ... and manipulating numbers, ..., and characters (symbols).

machine, switches, storing, states, network, demagnetized, letters, cores, off

2. Find 12 words on the topic *Computer*.

magnetiseghtcomputerkhjgdevicerrainstructionsklotscreenoitj-binformationgrtsoutputwerprinterjfntswitcherlajastoreplkusergkhjodisks

3. Match the two columns and make as many word combinations as possible.

to perform	information
possible	a user
processing of	operations
communication with	problems
input	states
to solve	device

4. Translate the following words and words combinations into Russian.

The switches, outputting device, to process information, to turn on / off, instructions, data, to process the information, to store information, logical decisions, perform mathematical operations.

Test 2

1. Choose the right variant.

1. Programs and data to be processed must be in the ... memory.
 - a) internal; b) external; c) secondary
2. The control unit ... instructions from the program.
 - a) sends; b) changes; c) obtains
3. The results of arithmetic operations are returned to the ... for transferring to main storage.
 - a) decoder; b) counter; c) accumulator
4. The instruction to be ... in control unit is read out from primary storage into the storage register.
 - a) calculated; b) executed; c) read out
5. The ... performs logical comparisons of the contents of the storage register and the
 - a) adder; b) accumulator; c) comparer
6. The read out command is passed from the ... register to the ... register.
 - a) instruction; b) address; c) storage
7. CPU is designed to and to ... basic instructions for the computer.
 - a) control; b) consist; c) carry out
8. CU and ALU consist of electronic circuits with millions of
 - a) sensors; b) servers; c) switches

2. Match the two columns.

- | | |
|----------------|---|
| 1) CPU | a) performs the processing operations |
| 2) ALU | b) carries out logical comparisons of storage |
| 3) clock | c) executes basic arithmetic functions |
| 4) CU | d) coordinates the operation of the whole system |
| 5) accumulator | e) selects data from memory |
| 6) register | f) breaks the instructions into separate commands |
| 7) decoder | g) produces electronic marks at regular intervals |
| 8) comparer | h) holds the results of processing operations |
| 9) counter | i) controls the flow between the primary storage
and the arithmetic-logical unit |
| 10) adder | j) keeps the instruction while it is being performed |

Test 3

1. Choose the right variant.

1. Input-output devices allow the computer to ... with its external environment.
 - a) compute; b) command; c) communicate
2. An I/O interface is a special ... that converts input data to the internal codes.
 - a) register; b) processor; c) plotter
3. The ... devices allow the computer to communicate with its external environment.
 - a) high-speed; b) medium-speed; c) low-speed
4. Data are entered from a ... in a manner similar to typing.
 - a) keyboard; b) digitizer; c) printer
5. A remote banking terminal is an example of a ... input environment.
 - a) human-dependent; b) human-independent; c) human-related
6. Input ... match the physical or electrical characteristics of input devices to the requirements of the computer system.
 - a) interconnections; b) interfaces; c) intercommunication
7. They ... data into the binary codes.
 - a) transmit; b) translate; c) transform

2. Match the words and their definitions.

- | | |
|-------------------|--|
| 1) scanner | a) a device producing output in a human-readable format |
| 2) keyboard | b) a manipulator used mainly in computer games |
| 3) touch pad | c) a device enabling to get video images in digital form |
| 4) mouse | d) a device converting the finger movement into the cursor movement, across the screen |
| 5) plotter | e) a device for direct data entry, which can convert images into the computer form |
| 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 disc | 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 |

UNIT 3. OPERATING SYSTEMS

COMPUTER SOFTWARE

Ex. 1. Answer the questions using different search engines.

1. What is computer software? Give the best definition of it.
2. How is software created?
3. What types of software are there?

Ex. 2. Read the following text and compare the information with your answers.

What is Computer Software?

Computer software, or simply software, is a set of instructions or encoded information that tells a computer what to do or how to perform a task. It can also mean all software on a computer, including the applications and the operating system. Applications are programs that do a specific thing, such as a game or a word processor. The operating system (Mac OS, Microsoft Windows, Linux, etc.) is the software that helps the applications run, and controls the display and the keyboard.

Computer software includes computer programs, libraries and related non-executable data, such as online documentation or digital media.

The majority of software is written in high-level programming languages that are easier and more efficient for programmers, meaning closer to a natural language.

How do we use computer software? When the software has been installed on to your computer hard drive, the program can be used anytime by finding the program on the computer. On a Windows computer, a program icon is added to the Start Menu or Start Screen, depending on your version of Windows.

How to maintain software? After the software has been installed on your computer it may need to be updated to fix any found errors. Updating a program can be done using software patches. When updates are installed any problems that may have been experienced in the program will no longer occur.

How is software created and how does it work? A computer programmer or several computer programmers write the instructions using a programming language that tell the software how to function and what to do. When the program has been completed, it is compiled into a language that the computer can understand.

What are different types of PC computer software?

There are basically as many different types of personal computer (PC) software as there are needs for such software. Software programs have been designed to help professionals in various ways, such as word processing programs for writers and journalists, graphics editors for graphic designers and illustrators, and money management programs for business owners and financial experts.

Other PC computer software programs are developed for recreation and communications through programs such as PC games, instant messaging utilities, social networking websites and applications, and media players.

There are also numerous PC computer software programs for use in other professional spheres. This can include anything from financial analysis and money management programs, often used by business owners, investors, and managers, to programs used to analyze symptoms and help diagnose illnesses.

Ex. 3. Answer the questions on the text *What is Computer Software?*

1. What is computer software? 2. What does it include? 3. Why is computer software written in high-level programming languages? 4. How do we use computer software? 5. How do we maintain software on a computer? 6. Who creates computer software? 7. How does it work after completing? 8. What types of computer software are there? 9. How do we use computer software in professional spheres?

Ex. 4. Find English equivalents of the following words in the text *What is Computer Software?*

Набор инструкций, закодированная информация, выполнять задачи, приложение, цифровые средства массовой информации, жесткий диск компьютера, в любое время, значок программы, версия, найденные ошибки, исправления программного обеспечения, появляться, программист, язык программирования, функционировать, собранные в, программы обработки текста, графические редакторы, программы управления денежными средствами, развлечения, общение через программы, анализировать симптомы, помогать диагностировать болезни.

Ex. 5. Translate the text *What is Computer Software?* into Russian.

 **Ex. 6. Write an annotation to the text *What is Computer Software?***

OPERATING SYSTEMS

Ex. 1. Look at the words in the box and complete the definition of an operating system. Translate it.

an operating system / designed / a / to / run / on / a / other / run /
is / program / programs / computer

An operating system is....

Ex. 2. Give more definitions to an operating system. Use the Internet if you need.

 **Ex. 3. Read the beginning of the text and its translation made by electronic translator www.translate.ru. Do you like such translation? Do you understand the text clearly? Make this translation correct.**

An Operating System

A computer's operating system is its most important program. It is considered the backbone of a computer, managing both software and hardware resources. Operating systems are responsible for everything from the control and allocation of memory to recognizing input from external devices and transmitting output to computer displays. They also manage files on computer hard drives and control peripherals, like printers and scanners.

Операционная система компьютера – своя самая важная программа. Это считают магистралью компьютера, управляя обоими ресурсами программного и аппаратного обеспечения. Операционные системы ответственны за все от управления и выделения памяти к распознаванию ввода от внешних устройств и передачи вывода к компьютерным дисплеям. Они также управляют файлами на жестких дисках и управляют периферийными устройствами, как принтеры и сканеры.

 **Ex. 4 Continue reading the text *An Operating System* and answer the question *What is the main function of an operating system?***

Part I. The operating system of a large computer system has even more work to do. Such operating systems monitor different programs and users. An operating system also has a vital role to play in security. Its job includes preventing unauthorized users from accessing the computer system.

There are multiuser, multiprocessing, multitasking, multithreading, and real-time operating systems. A multiuser operating system enables multiple users to run programs simultaneously. This type of operating system may be used for just a few people or hundreds of them. In fact, there are some operating systems that are used to allow thousands of people to run programs at the same time.

A multiprocessing operating system allows a program to run on more than one central processing unit (CPU) at a time. This can come in some work environments, at schools, and even for some home-computing situations. Multitasking operating systems make it possible to run more than one program at a time. Multithreading operating systems are even more different, allowing varied parts of one program to be used simultaneously.

Real-time operating systems are designed to allow computers to process and respond to input instantly. Usually, general-purpose operating systems, such as disk operating system (DOS), are not considered real time, as they may require seconds or minutes to respond to input. Real-time operating systems are typically used when computers must react to the consistent input of information without delay (for example, in navigation).

Today's operating systems tend to have graphical user interfaces (GUIs) that employ pointing devices for input. A GUI lets you use your mouse to click **icons**, **buttons**, and **menus**, and everything is clearly displayed on the screen.

Ex. 5. Complete the sentences according to the text *An Operating System* Part I and translate them.

1. An operating system job includes preventing....
2. There are ... operating systems.
3. A multiuser operating system enables....
4. A mul-

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tiprocessing operating system allows.... 5. Multitasking operating systems make it possible.... 6. Real-time operating systems are designed.... 7. A GUI lets you use....

 **Ex. 6. Find in the text *An Operating System Part I* the examples of verbs, nouns, pronouns, prepositions, adverbs, adjectives and complete the table.**

Verb	Noun	Pronoun	Preposition	Adverb	Adjective

 **Ex. 7. Make new words from the following and translate them. Use the text *An Operating System Part I* for help.**

operate, _____
differ, _____
authority, _____
user, _____
process, _____
task, _____
simultaneous, _____
computer, _____
instant, _____
real, _____
inform, _____
graphic, _____

Ex. 7. Put in the necessary prepositions from the box.

of, at, in, by, in, of, on, of, from, for

1. An operating system is created ... a computer programmer.
2. An operating system is a program that plays an important role ... security.
3. GUI helps you ... using everything to be clearly displayed ... the screen.
4. Multithreading operating systems allow different parts ... one program to be used simultaneously.
5. The main function ... any operating system is preventing unauthorized users ... accessing the computer system.
6. This type of operating system may be used ... just a few people or hundreds ... them.
7. There are some operating systems that are used to allow thousands of people to run programs ... the same time.

Ex. 8. Read the text *An Operating System Part II* and learn the types of operating systems.

Part II. Commonly used operating systems for personal computers include Microsoft Windows, Linux, and Mac OS X.

Microsoft Windows

Microsoft created the Windows

operating system in the mid-1980s. Over the years, there have been many different versions of Windows, but the most recent ones are **Windows 10** (released in 2015), **Windows 8** (2012), **Windows 7** (2009), and **Windows Vista** (2007). Windows comes pre-loaded on most new PCs, which helps to make it the most popular operating system in the world.

Mac OS X

Mac OS is a line of operating systems created by Apple. It comes preloaded on all new Macintosh computers, or Macs. All of the recent versions are known as **OS X**(pronounced O-S Ten), and the specific versions include **El Capitan** (released in 2015), **Yosemite** (2014), **Mavericks** (2013),

Mountain Lion (2012), Lion (2011).

According to StatCounter Global Stats, Mac OS X users account for less than 10 % of global operating systems—much lower than the percentage of Windows users (more than 80%). One reason for this is that Apple computers tend to be more expensive.

Linux

Linux is a family of open-source operating systems, which means they can be modified and distributed by anyone around the world. The advantages of Linux are that it is free, and there are many different versions you can choose from.

According to StatCounter Global Stats, Linux users account for less than 2 % of global operating systems.

Operating systems for mobile devices

The operating systems for mobile devices such as phones, tablet computers, and MP3 players are different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include **Apple iOS** and **Google Android**. In the screenshot below, you can see iOS running on an iPad.

Ex. 9. Answer the questions on the text *An Operating System*
Part II.

1. What are commonly used operating systems for personal computers? 2. When was the Windows created? 3. What is Mac OS? 4. What are Mac OC versions? 5. What is the specific of Linux? 6. What is the advantage of Linux? 7. What is the most popular operating system? 8. Is an operating system for mobile devices different to operating systems used in PCs?

Ex. 10. Translate two parts of the text *An Operating System* into Russian.

HARDWARE AND SOFTWARE

Ex. 1. Look at the pictures above and answer the questions.



1. How do you understand the terms ‘software’ and ‘hardware’? 2. What is the difference between them? 3. What does software include? 4. What does hardware include?

V Ex. 2. Learn the new words and word combinations.

hardware – аппаратное обеспечение, аппаратура, оборудование
software – программное обеспечение, программные средства
system software – системное программное обеспечение
application software – прикладное программное обеспечение
firmware – встроенное / микропроцессорное программное обеспечение

visible units – видимый блок, устройство
procedure – процедура, процесс; метод, методика; алгоритм
to associate – соединять, объединять, связывать
associated documentation – соответствующая документация
to execute applications programs – выполнять прикладные программы
payroll – платежная ведомость
inventory control – инвентаризация, переучет
investment analysis – анализ инвестиций (капиталовложений)

- to protect – защищать
 read-only memory (ROM) – постоянное запоминающее устройство (ПЗУ)
 to refer to – относиться к; ссылаться на
 to substitute – заменять, замещать
 to cause – заставлять, вынуждать; причина, основание
 to accomplish – завершать, заканчивать; выполнять, осуществлять
 performance – производительность, быстродействие, рабочая характеристика

Ex. 3. Match the words with the transcription.

- | | |
|-------------------|--------------------|
| 1) hardware | a) ['fə:mweə] |
| 2) software | b) [prə'si:dʒə] |
| 3) firmware | c) ['invəntəri] |
| 4) units | d) ['eksikju:t] |
| 5) procedure | e) ['ha:dweə] |
| 6) to associate | f) [pə'fɔ:m(ə)ns] |
| 7) to execute | g) ['svf(t)weə] |
| 8) payroll | h) [kɔ:z] |
| 9) inventory | i) [ə'næləsi:z] |
| 10) investment | j) [ə'kʌmplɪʃ] |
| 11) analysis | k) ['peirəol] |
| 12) to substitute | l) ['ju:nɪts] |
| 13) to cause | m) [ə'səʊfɪərt] |
| 14) to accomplish | n) [aplɪ'keɪʃ(ə)n] |
| 15) performance | o) ['sabstɪtju:t] |
| 16) application | p) [in'vestmənt] |

Ex. 4. Remember the meanings of highlighted words and translate the word combinations.

Architecture: communication, computer, disk, microprocessor, network, security, system, virtual.

Software: system, application, database, disk, educational, game, management, simulation.

Hardware: computer, device, display, memory, mouse, network, system, video.

Procedure: accounting, computational, control, data-processing, decision, error-correcting, formatting, installation, management, solution.

Protection: computer, data, device, display, error, hardware, software, resource, security, system, virus.

 **Ex. 5. Read the following text and answer the questions.**

- *What is hardware?*
- *What is software?*

Hardware, Software and Firmware

The units that are visible in any computer are the physical components of a data processing system, or **hardware**. Thus, the input, storage, processing and control devices are hardware. Not visible is the **software** – the set of computer programs, procedures, and associated documentation that make possible the effective operation of the computer system. Software programs are of two types: systems software and applications software.

Systems software are the programs designed to control the operation of a computer system. They do not solve specific problems. They are written to assist people in the use of the computer system by performing tasks, such as controlling all of the operations required, to move data into and out of a computer and all of the steps in executing an application program. The person who prepares systems software is referred to as a systems programmer. Systems programmers are highly trained specialists and important members of the architectural team.

Applications software are the programs written to solve specific problems (applications), such as payroll, inventory control, and investment analysis. The word program usually refers to an application program, and the word programmer is usually a person who prepares applications software.

Often programs, particularly systems software, are stored in an area of memory not used for applications software. These protected programs are stored in an area of memory called readonly memory (ROM), which can be read from but not written on.

Firmware is a term that is commonly used to describe certain programs that are stored in ROM. Firmware often refers to a sequence of instructions (software) that is substituted for hardware. For example, in an instance where cost is more important than performance, the computer system architect might decide not to use special electronic circuits

(hardware) to multiply two numbers, but instead write instructions (software) to cause the machine to accomplish the same function by repeated use of circuits already designed to perform addition.

Ex. 6. Answer the questions on the text *Hardware, Software and Firmware*.

1. What is hardware?
2. Give the definition of software.
3. What are the types of software?
4. What are systems software?
5. What kind of tasks do systems software perform?
6. Who prepares systems software?
7. What are applications software?
8. What problems do applications software solve?
9. What is firmware?
10. How can a computer system architect use firmware?

Ex. 7. Find English equivalents of the following words in the text *Hardware, software and firmware*.

Видимые устройства, система обработки данных, аппаратное обеспечение, набор компьютерных программ, соответствующая документация, эффективная работа, системное программное обеспечение, прикладное программное обеспечение, системный программист, платежная ведомость, переучет, анализ инвестиций, прикладная программа, работающий только в режиме чтения, постоянное запоминающее устройство, последовательность команд, в случае; производительность, электронная цепь, умножать числа, заставить машину выполнять ту же функцию, выполнять сложение.

Ex. 8. Find the Infinitive in the following sentences and translate them.

1. They are written to assist people in the use of the computer system by performing different tasks.
2. Systems software are the programs designed to control the operation of a computer system
3. Applications software are the programs written to solve specific problems (applications).
4. Firmware is a term that is commonly used to describe certain programs that are stored in ROM.
5. The computer system architect might decide not to use special electronic circuits (hardware) to multiply two numbers, but instead write instructions (software) to cause the machine to accomplish the same function by repeated use of circuits already designed to perform addition

Ex. 9. Complete the sentences with appropriate pronouns.

1. (*Every, all, such*) ... physical components of a data processing system are the units (*that, who, where*) ... are visible in (*ours, any, his*) ... computer.

2. The software is the set of computer programs, procedures, and associated documentation (*that, who, but*) ... make possible the effective operation of the computer system.

3. They can perform different tasks, (*so, which, such*) ... as controlling (*every, all, some*) ... of the operations required and (*others, the other, other*)....

4. A programmer is usually a person (*which, that, who*) ... prepares applications software.

5. It can cause the machine to accomplish (*the same, another, the other*) ... function by repeated use of circuits already designed to perform addition.

Ex. 10. Work in groups. Devide the text *Hardware, Software and Firmware* and translate it.

Ex. 11. Imagine that you are a lecturer and you have to explain to your students what the meanings of software, hardware, and firmware are. Give your lecture to the class.

GRAPHICAL USER INTERFACE

Ex. 1. How do you say these in Russian?

- Graphical User Interface
- WIMP: Windows, icons, mouse, and pointer
- Graphics and intuitive tools

Ex. 2. Read the following words and word combinations and translate them .

User interface, a procedure, to interact, to access, complex, memorize, contents, to respond, an expert, user-friendly interface, to produce, to design, an aim, tools, an emphasis, a background, a screen, labelled, to click, to launch a program, a location, a level, consistency, similar, a network, multitasking, at the same time.

 **Ex. 3.** Read the following text and answer the question *Why is there a growing emphasis on user-friendly systems?*

Introduction to Graphical User Interface

The term user interface refers to the standard procedures that the user follows in order to interact with a computer. In the late 1970s and early 80s, the way users accessed computer systems was very complex. They had to memorize and type a lot of commands just to see the contents of a disk, to copy files or to respond to a single prompt. In fact, it was only experts who used computers, so there was no need for a user-friendly interface.

In 1984, Apple produced the Macintosh, the first computer with a mouse and a graphical user interface (GUI). Macs were designed with one clear aim: to facilitate interaction with the computer. A few years later, Microsoft launched WINDOWS, another operating system based on graphics and intuitive tools. Nowadays, computers are used by all kinds of people, and as a result, there is a growing emphasis on accessibility and user-friendly systems.

A GUI makes use of a WIMP environment: **Windows, Icons, Menus and Pointer**. The background of the screen is called the desktop, which contains labelled pictures called **icons**. These icons represent files or folders. Double-clicking a folder opens a window, which contains programs, documents, or more nested folders. When you are in a folder, you can launch a program or document by double-clicking the icon or you can drag it to another location. When you run a program, your PC opens a window that lets you work with different tools. All the programs have a high level of consistency, with similar toolbars, menu bars, buttons and dialog boxes. A modern OS also provides access to networks and allows multitasking, which means you can run several programs – and do various tasks – at the same time.

Ex. 4. Complete the sentences with only one word according to the text *Introduction to Graphical User Interface* and translate them.

1. In the late 1970s and early 80s, the way users accessed computer systems was very....
2. It was only ... who used computers, so there was no need for a user-friendly interface.
3. The Macintosh ... the first computer with a mouse and a graphical user interface (GUI).
4. WINDOWS

is another operating ... based on graphics and intuitive.... 5. A modern OS also provides access to ... and allows.... 6. Nowadays, computers are used by all kinds of ..., and as a result there is a growing emphasis on accessibility and ... systems.

Ex. 5. Say whether the statements are true or false according to the text *Introduction to Graphical User Interface*.

1. The term user interface refers to the standard procedures that the user follows in order to interact with a computer. 2. They didn't have to memorize and type a lot of commands just to see the contents of a disk, to copy files or to respond to a single prompt. 3. In 1984, the Macintosh produced Apple, the first computer with a mouse and a GUI. 4. Macs were designed with two aims: to facilitate interaction with the computer and help people to use computers clearly. 5. A GUI makes use of a WIMP environment: windows, icons, menus and pointer. 6. Double-clicking a folder closes a window which contains programs, documents, or more nested folders. 7. When you run a program, your PC opens a window that lets you work with different utilities. 8. All the programs have a low level of consistency.

Ex. 6. Add more information from the text *Introduction to Graphical User Interface* to the statements.

1. In the late 1970s and early 80s, it was only experts who used computers because the way users accessed computer systems was very complex. 2. In 1984, Apple produced the Macintosh with one clear aim. 3. A GUI makes use of a WIMP environment. 4. All the programs have a high level of consistency.

MAC OS OPERATING SYSTEM

Ex. 1. What is the Russian for...?

Desktop, folder, pull down menu, window, menu bar, scroll bar, icon, drop-down menu, dock.

Ex. 2. Label the interface features (a–j) on the screenshot of Apple's Mac OS X operating system with words in bold from this list.

1. **Desktop** – the background screen that displays icons and folders.

2. **Window** – a scrollable viewing area on screen; it can contain files or folders.
3. **Icon** – a picture representing an object, for example, a documents, program, folder or hard drive icon.
4. **Folder** – a directory that holds data, programs and other folders.
5. **Menu bar** – a row of words that open up menus when selected.
6. **Drop-down (pull down) menu** – a list of options that appears below a menu item when selected.
7. **Scroll bar** – a horizontal or vertical bar that is clicked and dragged in the desired direction.
8. **Dock** – set of icons at the bottom of the screen that give you access to the things you use most.



Ex. 3. Read the text about Mac OS and its translation. Look for the words and expressions associated with your profession.

Mac OS X Operating System

Mac OS (originally named **Mac OS X** until 2012, then rebranded to **OS X** until 2016) is the current series of Unix-based graphical operating systems developed and marketed by Apple Inc. It is designed to run on Apple's Macintosh computers. Within the market of desktop, laptop and home computers, it is the second most widely used desktop OS after Microsoft Windows.

Launched in 2001 as Mac OS X, the series is the latest in the family of Macintosh operating systems. Mac OS X succeeded the “classic” Mac OS, which was introduced in 1984, and the final release of which was

Mac OS 9 in 1999. An initial, early version of the system, Mac OS X Server 1.0, was released in 1999. The first desktop version, Mac OS X 10.0, followed in March 2001. The latest version of macOS is macOS 10.12 Sierra, which was publicly released on September 20, 2016.

A popular feature of its latest version, Mac OS X, is a desktop interface with some 3D-appearance characteristics. OS X has a modular design intended to make it easier to add new features to the operating system in the future. It runs UNIX applications. Операционная система Mac OS.

Mac OS (первоначально названная Mac OS X до 2012, затем переименована в OS X до 2016 года) является текущей серией Unix на базе графических операционных систем, разработанных и продаваемых компанией Apple Inc. Она предназначена для работы на компьютерах Macintosh от Apple. Среди портативных компьютеров, ноутбуков и стационарных компьютеров, она является второй наиболее широко используемой настольной ОС после Microsoft Windows.

Созданная в 2001 году как Mac OS X серия, она является последней в семействе операционных систем Macintosh. Mac OS X удалось создать “классическую” Mac OS, которая была представлена в 1984 году, а ее окончательный релиз был Mac OS 9 в 1999. Самая первая и ранняя версия системы Mac OS X Server 1.0 была выпущена в 1999 году. Первая версия рабочего стола Mac OS X 10.0 последовала в Марте 2001 года. Последней версией MacOS является Macos 10,12 Sierra, которая была публично выпущена 20 сентября 2016 года.

Отличительная особенность последней версии Mac OS X – это интерфейс рабочего стола с 3D-характеристиками. OS X имеет модульный дизайн, предназначенный для облегчения добавления новых функций операционной системы в будущем. Она запускает приложения UNIX.

Ex. 4. Analyze the use of prepositions and pronouns in the text *Mac OS X Operating System*.

 **Ex. 5. Put some questions to the text *Mac OS X Operating System*. Ask your partner to answer different kinds of questions.**

Ex. 6. Compare the Mac OS X user interface with a Windows or Linux interface. What are the similarities and differences? Which feature of each interface do you personally prefer?

MS DOS OPERATING SYSTEM

Ex. 1. Read the information about MS DOS operating system in Text 1. Pay attention to its main modules, their functions.

Text 1. Operating System MS DOS

One of the most popular operating systems in the mid 90-ies was the disk operating system of Microsoft MS DOS (Microsoft Disk Operating System).

In modern Windows to work with DOS commands uses the command-line, which can cause: Start / run, in the dialog type cmd and click OK. Another way to invoke a command prompt – start/Programs/accessories/Command prompt.

MS DOS

In operating system MS DOS consists of the following main modules:

- basic system I/O (BIOS);
- the block bootstrap (Boot Record);
- expansion module BIOS (IO.SIS);
- module interrupt handling (MS DOS.SYS);
- the command processor (COMMAND.COM);
- files drivers, which, when loaded into memory ensure operation of such devices, as a mouse, CD-ROM, etc.
- utilities OS, performs various service functions (the formatting of the drives, etc.).
- basic system BIOS is hardware dependent and is ROM PC. This part of the operating system is a built-in PC.

It implements the following main functions:

Automatically check hardware components when starting the PC;

The call block bootstrap OS (loading into memory the operating system programs occurs in two stages: first boot block bootstrap (Boot Record) and control is transferred, then use this block – other modules).

The block bootstrap (Boot Record) – this is a very short program (about 512 bytes), located in the first sector of each disk with the operating system DOS. Boot Record loads in memory two module OS (system files io.sys, msdos.sys), which complete the process of loading DOS.

The IO module.SIS BIOS extension is an extension to the BIOS in the ROM. It configures the OS to a specific PC configuration and lets you add new driver for non-standard devices I/o.

Module interrupt handling MS DOS.SYS – implements services related to the maintenance of file system operations and I / o.

The command processor COMMAND.COM – handles the team, entered by the user.

Ex. 2. Read Text 2 and say how you can download MS DOS.

Text 2. Download MS DOS

Download MS DOS is an operating system is read from the external storage device into RAM, its up and running.

After powering the computer on, running the operating system MS DOS, automatically the following processes occur:

- testing PC (The BIOS performs a set of primary test computer);
- download MS DOS (read the operating system from external storage device into RAM);
- setup MS DOS (configuring the OS runs on commands, recorded in the files config.sys and autoexec.bat).

After OS loading the monitor screen is displayed inviting the user to enter commands, which consists of the disk name and symbols:

A:> or C:>

This means, that DOS is ready to receive commands.

Invitation DOS contains information about the current drive and the current directory. For example,

A:> – the drive And:, the root directory:

C:windows> – drive;, the windows directory.

Disk, are working at the moment PC, is called the current.

Entering and Editing Commands

To enter commands you should type this command on the keyboard and press Enter. To edit the commands you can use the following keys:

Backspace, Delete, Ins, Esc, The arrow keys.

General Purpose Commands

VER – to check the OS version (A:>VER, press Enter);

CLS – clear screen (A:> CLS, press Enter);

TIME – checking and correction of the system clock (A:>TIME, press Enter);

DATA – verification and correction system calendar (A:> DATA, press Enter).

The Basic Commands For Working With Files, Directories, Discs

File

Create a text file: A:>copy con (file name) – after entering this command will need to turn to enter the line of the file. At the end of each line need to press Enter, and after entering the last line – press F6 (or Ctrl +Z) and then Enter. On the disk will create a file with the specified name.

To copy the file: A:>a copy:urok lesson (lesson to copy from the root directory to the directory urok).

Delete file: A:>del less, click Enter.

Rename: A:>ren lesson conon, click Enter (renamed file – conon).

Conclusion file on screen: TYPE example: A:>TYPE prim.1, click Enter.

Working with Directories

Create directory: A:>urok md, press Enter.

To delete a directory: A:>rd urok, press Enter.

Directory browsing (the directory listing): A:>DIR, press Enter.

Change the current directory: A:>cd urok, press Enter. Get: A:urok> (the drive And; catalog urok).

The transition in root directory: A:urok>cd.., press Enter. Get: A:> (drive a;, the root directory).

Displays the list of disk directories: A:>TREE AND: /F, press Enter.

Handling Discs

The transition from disk to disk: With: windows >A:, press Enter, get A:>;

Formatting disks: C:> format a;, press Enter;

The job of the label on the disk: A:vol, press Enter;

Ex. 3. Read about the main commands and existing errors in MS DOS in Text 3.

Text 3. Commands and Errors in MS DOS

Just as you will run programs to create and update files containing your data, you will also need to run some special programs, called MS-DOS commands that let you work with entire files.

When you type MS-DOS commands, you are asking the computer to perform tasks. For example, when you use the diskcopy command to copy your MS-DOS master disk, you are using a file named *diskcopy.exe*, whose task is to copy the files on the MS-DOS disk.

I n t e r n a l D O S C o m m a n d s

del, erase – delete files

rd, rmdir – delete directories

dir – show content of directories

cd, chdir – change current directory

cls – clear the screen

md, mkdir – create a directory

copy – copy of one or several files

ren, rename – rename of files or directories

type – shows the content of text files

set – shows the DOS environment variables or defines a new one

ver – shows the DOS version number

vol – shows the name of the storage drive

E x t e r n a l D O S C o m m a n d s

attrib – shows the attributes of files or set one of those

fdisk – partitioning or modify of the hard disk

move – move of files

mem – shows the occupancy of working memory

tree – shows the directory structure

format – format of storage drives

E r r o r M e s s a g e s

If you or your computer makes a mistake when using a device or MS-DOS command, MS-DOS displays an appropriate *error message*. Error messages apply to general errors (such as misspelling a command) or to device errors (such as trying to use a printer that is out of paper). These are several error messages:

Bad Command or File

The CHKDSK command located lost blocks when checking the disk. If you type Y(YES), CHKDSK will create a directory entry with the filename FfLEnnnn.CHK. If you type N(no), CHKDSK frees the lost blocks so they can be reallocated.

Disk Error

An error has occurred reading from or writing to a disk. Attempt to correct the problem and retry this operation.

File not Found

The file named in a command does not exist on the disk in the specified directory or drive. Check your file name entry or drive selection and try again.

Format Failure

A disk error was encountered while attempting to FORMAT a disk. An explanatory message usually follows.

Incorrect DOS Version

The following MS-DOS commands only run under the exact version of MS-DOS for which they were configured (use the same version of MSDOS).

Bad Partition Table

When you try to format the fixed disk, and encounter this message, MS DOS has not found a partition on the fixed disk. You must run FDISK to create a DOS partition on your fixed disk.

Неправильная команда или имя файла

Команда CHKDSK обнаружила потерянные блоки во время проверки диска. Если вы ответите Y(Yes), CHKDSK создаст файл с именем FILEnnnn.CHK. Если вы ответите N(No), CHKDSK освободит потерянные блоки, так что они могут быть перераспределены.

Ошибка диска

Произошел сбой при чтении или записи на диск. Попытайтесь устранить причину и повторите действия.

Файл не найден

Файл, названный в команде, не существует на диске в указанном каталоге или устройстве. Проверьте введенное имя или выбор устройства и повторите действия.

Сбой формата

Произошел сбой при форматировании диска командой FORMAT. Обычно далее следует объясняющее сообщение.

Неверная версия DOS

Следующие команды MS DOS выполняются только в соответствующей им версии, для которой они были настроены (используйте такую же версию MS DOS)

Плохая таблица разделов

Когда вы пытаетесь форматировать жесткий диск, и встречаете такое сообщение, это означает, что MS DOS не нашла раздел на жестком диске. Вы должны запустить FDISK для создания раздела DOS на вашем диске.

Incorrect Number of Parameters

You specified either too few or too many options in the JOIN or SUBST command line.

Insert disk with COMMAND.COM in drive A and strike any key when ready.

Insufficient Disk Space

The disk doesn't have enough free space to hold the file or perform the specified operation. Use another disk. You may have lost some data as a result of the operation that caused this message to appear.

Insufficient Memory

There is not enough memory available to perform specified operation. Restart the system and remove memory-resident programs.

Invalid Directory

One of the directories in the path you specified does not exist. Retry the command using a valid directory.

Invalid Drive Specification

You have entered the wrong drive parameter on the command line. Refer to the syntax of the command you have selected and try again. With some commands, an explanatory message is also displayed.

Invalid Parameter(s)

You have entered an incorrect parameter. Refer to the syntax of the command you have selected and retry.

Неверное количество параметров

Вы указали недостаточное или излишнее количество параметров в командной строке у JOIN или SUBST.

Вставьте диск с COMMAND.COM в дисковод А и нажмите любую клавишу, когда есть готовность.

Недостаточно места на диске

Диск не имеет достаточного свободного пространства, чтобы содержать файл или выполнить команду MS DOS. Воспользуйтесь другим диском. Результатом действия, вызвавшего появления этого сообщения, может быть потеря данных.

Недостаточно памяти

Для выполнения указанного действия недостаточно имеющейся памяти. Перезапустите систему и удалите резидентные программы.

Неверный каталог

Один из каталогов, указанных вами в пути поиска не существует. Повторите попытку, указав каталог из имеющихся на диске.

Неверный указатель на дисковод

Вы ввели неверный параметр в командной строке. Посмотрите по справочнику синтаксис выбранной вами команды и повторите действия снова. Некоторые команды выводят также поясняющее сообщение.

Неверный параметр(ы)

Вы ввели неверный параметр. Уточните синтаксис и повторите ввод.

Path not Found

The path specified in a command does not exist in the directory of the drive specified.

Primary DOS Partition Already Exists

You're trying to create primary DOS partition with the FDISK command but one already exists. If there's space available on your fixed disk, try to create an extended DOS partition instead.

Program Too Big to Fit in Memory

The command or program you attempted to load is too large to fit in the memory available. Free additional memory by deleting memory-resident commands like MODE, PRINT and GRAPHICS, or reset the BUFFERS command in your CONFIG.SYS file to a lower value and restart MS DOS. If you still receive this message, you may have to upgrade your computer's memory.

Syntax Error

The command you entered was incorrect.

System Transferred

This message is displayed after the SYS and FORMAT/S commands have successfully copied the system files to the target disk.

Путь не найден

Путь, указанный в команде, не существует в каталоге или диске, которые указаны.

Первичный раздел DOS уже существует

Вы пытаетесь создать раздел DOS программой FDISK, но такой уже существует. Если на вашем жестком диске еще осталось место, попытайтесь лучше создать расширенный раздел DOS.

Программа слишком велика, чтобы поместиться в память

Команда или программа, которую вы пытаетесь загрузить в память, слишком велика и не помещается в имеющуюся память. Освободите память, удалив резидентные программы, такие как MODE, PRINT, GRAPHICS, или переустановите команду BUFFERS в файле CONFIG.SYS и перезагрузите MS-DOS. Если вы опять получаете это же сообщение, возможно, что вам необходимо увеличить объем компьютерной памяти.

Ошибка в синтаксисе

Введенная вами команда была некорректна.

Система перенесена

Это сообщение выдается после успешного перенесения системных файлов на диск командами SYS или FORMAT/S.

Track 0 Bad – Disk Unusable

The FORMAT command detected an irrecoverable error at the beginning of the target disk. It cannot be fixed using CHKDSK; use another disk.

Unable to Create Directory

The MKDIR or XCOPY commands could not create the directory you specified. Check to see whether the disk is full or the director name already exists.

CHKDSK has found lost clusters on your disk.

These may be parts of data files that have somehow been separated from their original files.

If you type Y(YES), the clusters are written into file places in the root directory under the name(s) FILEnnnn.CHK.

You can then attempt to repair damaged files or delete these safety files.

Дорожка 0 плохая – диск невозможна использовать

Команда FORMAT обнаружила неустранимую ошибку в начале диска. Она не может быть устранена при помощи CHKDSK; используйте другой диск.

Невозможно создать каталог

Команда MKDIR или XCOPY не смогли создать указанный вами каталог. Проверьте, не переполнен ли диск и не существует ли уже такой каталог.

CHKDSK обнаружила потерянные кластеры на вашем диске.

Это могут быть части файлов данных, которые каким-то образом были отделены от их первоначальных файлов.

Если вы ответите Y(YES), то кластеры записываются в файлы, помещенные в корневой каталог текущего диска под именем(ами) FILEnnnn.CHK.

Далее вы можете попытаться восстановить поврежденные файлы или удалить эти страховые файлы.

Ex. 4. Answer the questions on Text 1.

1. Was the disk operating system of Microsoft MS DOS one of the most popular operating systems in the mid 90-ies? 2. What are the main modules of MS DOS? 3. What functions does MS DOS implement?

Ex. 5. Use computers and try to perform all task described in Text 2.

MS DOS

- Download MS DOS.
- Enter and edit commands (VER, CLS, TIME, DATA).
- Create a text file (named English).
- Copy the file and transfer it on desktop.
- Rename it (My English lesson).
- Delete the file.

Working with directories

- Create a directory.
- Delete a directory.
- Browse directory.
- Change the current directory.
- Transit in root directory.
- Display the list of disk directories.

Ex. 6. Discuss what error messages you've probably faced when using a device or MS-DOS command. Compare with your partner's experience. Make a list of the most frequently occurring errors.

WINDOWS NT OPERATING SYSTEM

Ex. 1. a) Read the following words.

preemptive – упреждающий

success – успех

to discover – открывать

rapidly – быстро

scalability – масштабируемость

to include – включать

host – главный, главная вычислительная машина

complement – дополнение

to bring – приносить

commitment – передача, обязательство

to leverage – поднимать, передвигать

implementation – воплощение

investment – (капитало)вложение, помещение денег, инвестирование

to benefit (from) – помогать, приносить пользу (извлекать пользу, выгоду)

compliant – податливый, уступчивый

performance – производительность

to publish – публиковать

to let – позволять

thread – нить, жила провода, прошивать

to enhance – увеличивать, усиливать, расширять
to allocate – размещать, распределять, назначать
to distribute – распределять
to mean – означать, значить
corruption – порча, искажение
to assure – уверять, гарантировать, страховать
integrity – целостность, сохранность
to include – включать
to share – разделять, совместно использовать
remote – удаленный, дальний
available – доступный, имеющийся в распоряжении, наличный
important – важный
sensitive – важный, точный
vendor – продавец, торговец
level – уровень, степень

b) Translate the cognate words

to prove – доказывать; proven – _____
to demand – требовать; demand (*n*) – _____
to invent – изобретать; inventory – _____
to produce – производить; productivity (*n*) – _____; productive (*adj*) – _____

to rely on smb. – полагаться на к.-ниб.; reliable (*adj*) – _____; reliability (*noun*) – _____
to respond – реагировать, отвечать; responsive (*adj*) – _____
security – безопасность; secure (*adj*) – _____
robust – живучий, устойчивый; robustness (*n*) – _____
to complete – завершать, комплектовать; complete (*adj*) – _____
to advance – продвигать(ся) (вперед), повышать(ся); advanced (*adj*,
participle) – _____; advantage (*n*) – _____
to lock – запирать; to unlock (*v*) – _____
to access – иметь доступ, осуществлять доступ; access (*n*) – _____
to exist – существовать; existing (*participle*) – _____
to develop – развивать; development (*n*) – _____; developer (*n*) – _____

to deliver – доставлять, питать, выдавать; delivery (*n*) – _____

Ex. 2. Make sure you remember the words.

Across, such as, as, both ... and, without, all of which, as well as, through, the most, more, every, away, with, that, above, for, along with, into, other, around, each.

Ex. 3. Find predicates among the words given below, and indicate auxiliary verbs in the verb forms if they have any.

Have discovered, places, is advancing, have, is, does away with, allows, allow, provides, can work.

 **Ex. 4. Look through Text 1 and answer *What are the advantages of Microsoft Windows NT?*****Text 1**

The real success of Microsoft Windows is that millions of personal computer users have discovered something important to every business. It makes them more productive than ever before.

Today's business environment places more demands on computing technology, however. Complex, line-of-business applications such as inventory management, financial trading, and on-line transaction processing demand powerful hardware and reliable, responsive and secure operating systems. Just as PC hardware is rapidly advancing to take on these problems, now the Microsoft Windows NT operating system gives personal productivity and the power to handle complex business demands.

Microsoft Windows NT is a robust platform, with advanced features needed to build sophisticated line-of- business solutions. It provides fully 32-bit operations, preemptive multitasking, advanced security and reliability, built-in networking, and complete scalability across hardware platforms, for users of powerful PCs, workstations and network servers.

Windows NT provides the ease of use and proven productivity of the Windows intuitive, graphical interface. It unlocks the potential of a wide range of advanced PC hardware, including machines based on the Intel® 80x86 processor family and RISC architectures such as the MIPS R3000 and R4000. It also supports symmetric multiprocessing systems.

Moreover, you have access to a host of existing applications for MS-DOS® and Windows that run on this hardware – without modification – as well as new, powerful 32-bit Windows-based applications. The Windows NT implementation of the Windows operating system is a com-

plement to the MS-DOS – based version, bringing high-end computing to PC systems.

As a result, the Microsoft Windows NT operating system both protects and extends your software and hardware investment.

All of which reflects Microsoft's commitment to leverage your organization's investment in the world's most widely-used PC operating systems – MS-DOS and Windows – helping users benefit from on-going advances in the 1990's.

 **Ex. 5. Read Texts 2–4. What is each text about? Use the following clichés in your answers.**

This text is about....

The author comments on....

This part tells us about....

The main idea of this part is....

Text 2

The Windows NT operating system takes advantage of the productive, easy to learn and use Windows graphical environment:

- runs popular MS-DOS and Windows-based applications on both Intel and RISC based systems without modification, as well as new 32-bit Windows-based applications;
- delivers proven productivity through the easy to learn Windows 3.1 user interface;
- supports OS/2®-server and POSIX-compliant applications;
- provides an ideal platform for new high-performance applications and complex processes such as inventory management, financial trading and modeling, publishing, corporate applications development, and technical applications.

Text 3

The scalable architecture of the Windows NT operating system lets you run multiple applications more efficiently.

- Full 32-bit internal architecture moves data around more efficiently.
- 32-bit flat memory model does away with 64K segments to provide developers access to more and allows for easier development of programs that deal efficiently with larger amounts of data.

Multiple threads of execution allow applications to be more powerful and responsive.

- Symmetric multiprocessing support makes Windows NT scalable; you can enhance system performance by adding more CPU's.
- Memory protection provides the operating system and programs their own memory space to prevent data corruption and assure data integrity.
- Preemptive multitasking allows the operating system to efficiently allocate processing time to each application .
- Expanded RAM and disk storage capacity (4 GB RAM and effectively unlimited storage) means you can work with more complex applications.
- Freedom to choose your hardware platform: Intel 80386 and above or RISC processors such as the MIPS R3000 and R4000.

Text 4

The Windows NT operating system is ready for workgroup computing.

- It includes built-in file and print-sharing capabilities, along with powerful workgroup application services.
- Developing distributed applications is easy through remote procedure calls (RPCs) for easy interprocess communication.
- Advanced network and systems management facilities are available through LAN Manager for Windows NT (available separately).
- Open networking interface allows other network vendors to incorporate Windows NT into their network.
- Desktop security for sensitive data and applications is an important element in today's computing environment. The Windows NT operating system delivers all the security you are likely to need.

Ex. 6. Find in texts 1–4 English equivalents of the following words and word combinations.

Действительный успех; управление запасами; финансовая коммерция; обработка трансакций в режиме on-line; вытесняющая многозадачность; повышенная защищенность и надежность; полная масштабируемость на всех аппаратных платформах для пользователей мощных PC, рабочих станций, серверов (network servers); простота использования и доказанная производительность; интуитивный графический интерфейс; машины, основанные на; симме-

тричные мультипроцессорные системы; большое количество существующих приложений; работают на этой аппаратуре; самые широко используемые в мире операционные системы для ПК; продуктивная, легко изучаемая и используемая графическая среда Windows; легкий в изучении пользовательский интерфейс Windows; приложения, удовлетворяющие POSIX; масштабируемая архитектура; плоская модель памяти; организация исполнения в виде нескольких потоков; предотвращать искажение данных; гарантировать целостность данных; распределять процессорное время; возможность работать с расширенной оперативной и дисковой памятью; практически неограниченный объем памяти; встроенные средства разделения файлов и принтеров; мощные средства обеспечения приложений для рабочих групп; распределенные приложения; удаленный вызов процедур; межпроцессорное взаимодействие; расширенные средства управления сетью и системой; открытый интерфейс взаимодействия с сетью.

Ex. 7. Match the headlines with texts 1–4.

More Power to More Windows Desktops.

The Windows Nt Os and Graphical Environment.

The Real Success.

A High-End Operating System for High-End Computing Systems.

Ex. 8. Find the answers to the following questions in texts 1–4.

1. Can you prove that the Windows NT meets the requirements of modern business?
2. Will the MS DOS software be lost while migrating to the Windows NT?
3. What can you say about graphical interface of the Windows NT?
4. What means does the Windows NT provide for networking?
5. What capabilities does the Windows NT provide to corporate users?
6. Does the Window NT really provide secure environment?

DIRECT PORT I/O AND WINDOWS NT

▀ Ex. 1. a) Read the following words.

feature – черта, характеристика

acquisition – приобретение, сбор

to allow – позволять

piece – кусок, участок

entire – целый, весь

blessing – благо, благословение

generally – в целом

to shake – трясти(сь), поколебать

interrupt – прерывать, прерывание

to prevent – препятствовать, предотвращать

sprinkling – разбрасывающий

to verify – контролировать, проверять, сличать

b) Translate the cognate words.

to implement воплощать, реализовывать, вводить; implementation – _____

to insert – вводить, вставлять; insertion – _____

exception – исключение; exceptionally – _____

to terminate – завершать (цикл), выходить (из цикла); terminal – _____; terminating – _____

to debug – налаживать, отлаживать, устранять (неполадки); debugging – _____

bug – ошибка, дефект, помеха; buggy – _____

to attempt – пытаться, пробовать, делать попытку; attempt – _____

to restrict – ограничивать; unrestricted – _____

trash – хлам, мусор, отбросы; to trash – _____

intention – намерение; unintentionally – _____

to trust доверять(ся), полагать(ся); trusted – _____

adversely – враждебно, неблагоприятно, вредно; adverse – _____

to consume – потреблять; consuming – _____; costly time-consuming – _____

Ex. 2. Translate the following word and word combinations without using a dictionary.

To communicate, privileged instruction, the option of terminating, console, application, port I/O, operating system, in contrast, to interact, I/O subsystem, prevent you, actual driver, for my oscilloscope, thousands of cycles, monitor the voltage on the scope.

Ex. 3. Make sure you remember the functional words given below.

However, either, either... or..., both... and..., with, without, via, this, these, whenever, about, the same, some, several, through, since, among, so that, so, each, for, for instance, one of.

 **Ex. 4. Look through the text in ex. 5, find predicates, point out auxiliary verbs.**

Ex. 5. Read the following text and translate it as detailed as possible.

Direct Port I/O and Windows NT

Port I/O instructions allow all 80x86 CPUs to communicate with other hardware devices in the system. For low-level, direct control of a hardware device, the C functions `_inp()` and `_out()` (implemented using the 80x86 processor's IN and OUT instructions let you read from or write to an I/O port. However, inserting `_inp()` or `_out()` in a Windows NT application gives you a privileged-instruction exception message and the option of terminating or debugging the offending app. If you attempt port I/O from a 16-bit DOS app in an NT console window, the I/O is either ignored or emulated by NT's virtual device drivers – you don't get an exception. But you don't get the direct I/O either.

This isn't a bug, NT is supposed to work this way. The NT architects decided that it would be too risky to allow applications to directly access the system hardware. With unrestricted I/O access an application could turn off all interrupts, take over the system, and trash the display or the hard drive. A buggy program could unintentionally do the same. NT's architecture requires that all hardware be accessed via kernel-mode device drivers – special, trusted pieces of software that essentially become part of the operating system when loaded. These device drivers have complete access to entire system memory, all hardware devices, and all privileged processor instructions. In contrast, applications run in user mode, where they have restricted access to memory – and where the CPU can't execute certain privileged operating-system instructions, including I/O instructions.

The restriction on I/O port access is both a blessing and a curse. On one hand, it makes NT exceptionally stable. Generally, application pro-

grammers can write, crash, and debug programs all day long without shaking NT. Several applications can run without adversely affecting one another. On the other hand, I/O restrictions prevent you from communicating directly and quickly with the hardware without taking the relatively large amount of time required for a call to a device driver. Whenever you want to communicate with a device driver, you must send a request through NT's I/O subsystem. This can take about 30 clock cycles.

Why would you ever need to put I/O instructions in user mode code? When writing a device driver, it might make things easier if you could write a quick program to interact with the device, sprinkling *printf()*s and *getchar()*s among port I/O instructions so that you could verify that you are driving the device correctly before you put the code into an actual device driver and chance a system lockup. On the other hand, you may want to write a portion of a driver in a user-mode DLL (as with video drivers, for instance) to achieve a desired level of performance. One of my favorite uses of I/O is for using an oscilloscope to debug programs and time sections of code. To do this, you need to set and clear a bit in a digital output port and monitor the voltage on a scope.

Since direct, user-mode port I/O in NT seems so useful, you'd think there would be an accepted way to achieve it. A quick look through the sample source code in the Windows NT Device Driver Kit (DDK) reveals a program called "PORTIO". Initially, I thought this would provide direct port I/O from an app. However, PORTIO is merely an example showing how to use Win32 *DeviceIoControl()* calls to kernel-mode device driver, which implements the actual I/O. Using PORTIO, each I/O operation requires a costly, time-consuming call to the device driver. This was useless for my oscilloscope timings. I needed a better way.

Ex. 6. Translate the following sentences into English. Pay attention to the pronouns.

1. Вы не получаете результат, который вам нужен.
2. Я люблю работать подобным образом.
3. Было бы слишком рискованно работать подобным образом.
4. Мне не понравилась вся программа.
5. С одной стороны, это интересно, с другой стороны, это рискованно.
6. Я могу работать с компьютером день напролет.
7. Человек и машина не могут существовать без воздействия одного на другое.

8. Хорошая программа оберегает вас от глупых ошибок. 9. Это может занять относительно большое количество времени. 10. Вы можете приходить, когда бы вы ни захотели связаться с нами. 11. Зачем вам вообще нужно читать это? 12. Это решение могло бы облегчить дело. 13. Windows NT – одна из моих любимых операционных систем. 14. Чтобы читать это, вам нужно учить английский. 15. Учить немного каждый день – приемлемый способ достигнуть этого. 16. Быстрый просмотр текста помогает понять его идею. 17. Работать ночью бесполезно для меня. 18. Мне нужен лучший способ.

UTILITIES

Ex. 1. Read the words and word combinations and translate them into Russian.

Utility, to include, to improve, accessories, to activate, to turn on, functions, to fight against computer viruses, configuration, parameters, to reduce, useful, harmful, crackers, to steal.

 **Ex. 2. Read the text about utilities and define their main functions.**

Utilities (англ. *utility* – служебная программа) – small programs included with an OS that improve a system's performance. They can be desk accessories, device drivers, or system extensions activated when you turn on the PC. They can perform a great variety of functions from carrying out typical tasks to fighting against computer viruses, and configuration management of additional equipment. Utilities also monitor performance metrics of computer parts such as CPU, video card and hard drives. Utilities help to control the parameters of the optional integral and peripheral equipment: CD / DVD-drive, printer, fan, etc. For example, there is a utility for the printer, which reduces ink consumption.

However, utilities are not always useful, but also harmful. It can be programs created by crackers which damage your computer and steal your personal files.

Ex. 3. Analyze the use of prepositions in the text of ex. 2. Translate the text without preparation.

Ex. 4. Learn the information about different utilities.

1. A **crashed disk rescue** is used to restore disks and corrupted files.
2. An **accessibility program** makes a PC easier for disabled users to use.
3. A **compression utility** rewrites data so that it takes less space on disk.
4. A **media player** lets you watch DVDs, play music and listen to the radio on the Web.

Ex. 5. Which utility would you use to do these things?

- to play and organize multimedia on your PC;
- to diagnose and repair damaged disks;
- to help computer users with sight, hearing or mobility difficulties;
- to make files smaller, so you can send them with e-mails.

 **Ex. 6. Scan the following text and find the words your don't know. Translate them into Russian.**

Utility Software

Utility software is system software designed to help analyze, configure, optimize or maintain a computer. It is a type of system software, used to support the computer infrastructure, by contrast with application software, which is aimed at directly performing tasks that benefit ordinary users. Utility software can be seen in many operating systems (Windows XP, Windows Vista, Mac OS X, etc.).

Utility software is extremely useful in maintaining our computers. This kind of software lays emphasis on the working of computer operating systems, application software, data storage and computer hardware.

 **Ex. 7. Read the text about the types of utility programs. Discuss it in pairs.**

Types of Utility Programs

Disk Defragmenter Often the contents of files get broken up at different locations in the hard disk. With the help of disk defragmenter, it is possible to bring all the fragments at one location and raise efficiency of working.	Дефрагментация диска Часто содержимое файлов разбивается по разным местам на жестком диске. С помощью дефрагментации диска, можно вывести все фрагменты в одно место и повысить эффективность работы.
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Disk Cleaners Sometimes the hard disk becomes full of unwanted files. Disk cleaners are used to detect such unwanted files and delete them.	Очистка диска Иногда жесткий диск заполняется ненужными файлами. Очистители дисков используют для обнаружения таких ненужные файлов и их удаления.
Backup Utilities With the help of backup utilities, you can copy all the information on a particular disk and restore the files which you want.	Резервное копирование С помощью программы для резервного копирования, вы можете скопировать всю информацию на диск и восстановить файлы, которые вы хотите.
Disk Compression Disk compressors can help you increase the capacity of your disk by compressing its contents.	Сжатие диска Диск компрессоры могут помочь вам увеличить емкость диска за счет сжатия его содержания.
Virus Scanners Virus scanners in computer terminology are also known as antivirus software which can help to protect useful and important files from computer viruses.	Программа сканирования вирусов Сканеры вирусов в компьютерной терминологии также известны как антивирусное программное обеспечение, которое может помочь защитить полезные и важные файлы от компьютерных вирусов.
Network Utilities Configuration of network settings and analyzing network connectivity are the main uses of network utilities.	Сетевые утилиты Конфигурация сетевых настроек и анализ сетевых подключений – основные направления использования сетевых утилит.
File Managers With the help of file managers, you can easily move, copy, merge, generate, rename, catalog and delete files.	Менеджер файлов С помощью файловых менеджеров вы можете легко перемещать, копировать, объединять, создавать, переименовывать и удалять файлы в каталоге.

System Profilers System profilers help to know details about the hardware and software used in the computer.	Система профайлеров Система профайлеров помогает получить сведения об аппаратном и программном обеспечении, используемом в компьютере.
Cryptographic Utilities Cryptographic Utilities can help in converting ordinary language into code and also converting code into ordinary language. Thus, it is useful in encrypting and decrypting files.	Криптографические утилиты Криптографические утилиты могут помочь в превращении обычного языка в код, а также преобразовании кода в обычный язык. Таким образом, это полезно для шифрования и дешифрования файлов.
System Monitors System monitors assist in analyzing the performance of the computer system.	Мониторинг системы Системы мониторинга оказывают помощь в анализе производительности компьютерной системы.
Registry Cleaners Registry cleaners help in removing old registry keys, which are out of use.	Программа очистки реестра Чистильщики реестра оказывают помощь в удалении старых ключей реестра, которые вышли из употребления.
Disk Space Analyzers Disk space analyzers are useful in detecting the distribution of the used space.	Анализаторы дискового пространства Анализаторы дискового пространства являются полезными для выявления распределения используемого пространства.

Ex. 8. Match a utility program on the left with the task it can perform on the right.

- | Utility program | Purpose |
|------------------------|---|
| 1) File sorting | a) Reorder the files on the hard disk to make them contiguous |
| 2) File renaming | b) Test the system to see if any problems |
| 3) File conversion | c) Move, copy, delete files |
| 4) File transfer | d) Convert a sound file to MP3 |
| 5) Diagnostic tools | e) Rename existing files |
| 6) Defragmentation | f) Performs data backups at regular times |

- | | |
|--------------------------|---|
| 7) Disk formatting | g) Sort files by size, type, date |
| 8) System information | h) A record of all the hardware and details of operating system |
| 9) Anti virus | i) Check files before opening for viruses.
Performs scans of system |
| 10) Backup | j) Preparing the disk to store files |
| 11) System cleanup tools | k) Removes all installation details, temporary files and dead shortcuts |

Ex. 9. Complete the sentences with the necessary pronouns.

1. ... but file managers can help you in moving, copying, generating and deleting files.
2. ... can easily use utility programs in his or her PC.
3. ... utility program can help you in making your computer work better.
4. If ... wants to increase the capacity of disk by compressing its contents, he or she may use disk compressors.
5. ... virus scanners are very useful in protecting PC from viruses.
6. ... knows when his or her computer will need help?
7. But not ... use all utility programs while working with PC.
8. My friend is a programmer and he can answer ... questions about ... computer programs.
9. Are there ... who can install software on my PC?
10. – Where can I find a system manager?
11. – Oh, he is ... on the second floor!



TEST YOURSELF

1. Choose the best words.

1. Software which is easy to use is....
a) user-easy; b) user-friendly; c) usable
2. Software which is obvious to use is ...
a) intuitive; b) guessable; c) comprehensible
3. Software which is not obvious to use is
a) counter-intuitive; b) unintuitive; c) non-intuitive

4. Software for use by children and schools is ...
a) learning; b) teaching; c) educational
5. Software for use by businesses is ...
a) commercial; b) businesslike; c) busy
6. Software made specially for one company is ...
a) one-off; b) unique; c) tailor-made
7. Software for use at home is ...
a) for home use; b) for house use; c) for household use
8. Software which has been illegally copied is ...
a) unreal; b) pirated; c) fake
9. Software which has been bought from the company that produces it is ...
a) real; b) justified; c) licensed

2. Answer the following questions and complete the tasks. Work in pairs.

1. What is software? 2. What is hardware? 3. What is firmware?
4. Who prepares systems software? 5. What are the types of software?
6. What is an operating system responsible for? 7. What are the types of operating systems? 8. What are commonly used operating systems?
9. What is applications software? 10. What does the abbreviation “GUI” mean? 11. What does the abbreviation “WIMP” mean? 12. What is a desktop? 13. What is an icon? 14. Translate the words: user interface, procedures, commands tools, nested folders, to launch a program.
15. Who created MAC OS? 16. Name the main modules of MS DOS.
17. How can we enter and edit commands in MS DOS? 18. Name several error messages in MS DOS. 19. What is Microsoft Windows NT?
20. What are the advantages of Microsoft Windows NT? 21. What is the English for *служебная программа*? 22. Give the definition of *utilities*.
23. What is utility software? Name its advantages.

3. Compile a glossary of terms on the topic *Operating systems*.

UNIT 4. MODERN INFORMATION TECHNOLOGY

WHAT IS MODERN INFORMATION TECHNOLOGY?

Ex. 1. Discuss the questions in pairs.

How often do you ...

- send e-mails?
- look for information on the Internet?
- take photos with a mobile phone?
- listen to music on an MP3-player?
- play computer games?

Ex. 2. Do you agree with these statements? Use the words from the box in your response.

strongly disagree, disagree, not sure, agree, strongly agree

1. Information technology has made people's lives better in a lot of ways.
2. In future, people won't have to work hard, because computers will do most of the work.
3. People are getting fat and lazy because they spend too much time using computer.
4. Older people don't need to use information technology – it's for young people.

 Ex. 3 Read the following text and answer the question *Are information technologies important for our society?*

Modern Information Technology

Modern information technology is an essential to the Information Society. They allow you to satisfy the needs of humanity and are necessary in the process of automation. Modern information technology can make easier labor rights and can greatly speed up the production process.

Computerization and modern information technologies allow to develop the technical basis, contribute to social progress of society, provide fast and qualitative results, obtain data and information.

Also, modern information technology to rapidly, reliably and efficiently share information and actively participate in various telecommunication discussions. Today, no one developing company can

not imagine working without modern computers and information technologies, which are essential in the process of doing business and establishing relationships with foreign partners.

Modern information technologies are used for data processing and analysis, detection of deviations from targets the actual result, but also provide an opportunity to make a decision optimization.

Important role in the development of modern information technology is taking the Internet, which allows to receive large amounts of information required to communicate with other people through their computers and quickly send and transmit data to colleagues who are on long distances.

Without modern information technology can not be normal and proper functioning of the information society and its activities.

By definition, information technology is a set of interrelated, scientific, technological, engineering disciplines that study the methods of efficient organization of people employed processing and storage of information; computing techniques and methods of organization and interaction with people and production equipment, their practical applications, as well as associated with all of these social, economic and cultural issues.

The “informatization of society” is broader than “computerization of society,” and aims to make rapid progress of information to meet their needs. The notion of “informatization of society” should focus not so much the technical means, but on the nature and purpose of social and technological progress. Computers are a basic technical component of the process of informatization of society.

Ex. 4. Put different kinds of questions to the text *Modern Information Technology*. Ask your class mates to answer them.

Ex. 5. Form new words from these ones. Translate them into Russian.

inform	communicate	organize
humanity	technology	rapid
efficient	to discuss	to develop
quickly	science	efficiently
computer		

Ex. 6. Think about the difference between “informatization of society” and “computerization of society”. Give the definitions to these concepts .

NETWORKS

Ex. 1. Discuss the following questions with your partner.

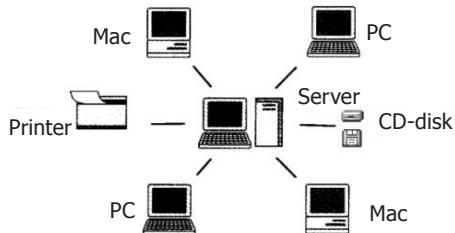
1. What is a network?
2. What are its important components?
3. What is the difference between a local area network (LAN) and a wide area network (WAN)?
4. In you opinion, what advantages do networks have?

Ex. 2. Read the following text and check your answers. Look at the pictures attentively.

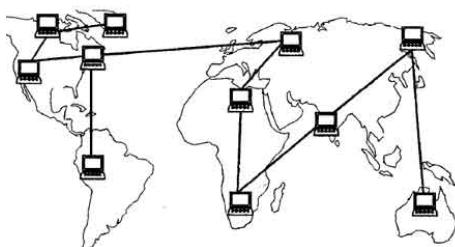
What is a Network?

A **network** is simply two or more computers linked together. It allows users to share not only data files and software applications, but also hardware like printers and other computer resources such as fax.

Most networks link computers within a limited area – within a department, an office, or a building. These are called Local Area Networks, or LANs.



But networks can link computers across the world, so you can share information with someone on the other side of the world as easily as sharing with a person at the next desk. When networks are linked together in this way, they are called Wide Area Networks, or WANs.



Networks increase productivity by allowing workers to share information easily without printing, copying, telephoning, or posting. They also save money by sharing peripherals such as printers.

Ex. 3. Translate the following terms from the text *What is a Network?* into Russian.

Data files, software applications, hardware, computer resources, limited area, Local Area Networks, Wide Area Networks, peripherals.

Ex. 4. Find the sentences with the verbs in the Passive Voice in the text *What is a Network?* Translate them into Russian.**Ex. 5 Translate the text *What is a Network?* into Russian. Compare your translations with your partner's.**

NETWORKING AND THE INTERNET

Ex. 1. Read aloud the text and answer the following questions.

- *What is the main idea of the text?*
- *Do you agree with it?*

Use the phrases given below in your answers.

I consider..., I fully agree with..., To my mind..., I disagree..., I reckon..., I believe....

Computer networking is one of the most important technological aspects of our time. The Internet interconnects millions and even billions of computers all over the world, providing a global communication, storage, and computation infrastructure. Besides, the Internet today being integrated with mobile and wireless technology, presents a wide range of new applications.

Ex. 2. Learn the new words and word combinations.

computer networking – компьютерная сеть

technological – технический, технологический

global communication – глобальная связь

computation – вычисление

wireless technology – беспроводная технология

application – приложение

network – сеть

to link – соединять

share data – обмениваться данными

transfer information – передавать информацию

Transmission Control Protocol – протокол управления передачей
Internet Protocol – интернет-протокол
to identify – определять, опознавать
IP number – номер устройства в сети Internet
software – программное обеспечение
connection – соединение
to connect – соединять
modem – модем
access – доступ
to convert – преобразовывать
to transmit – передавать
external – внешний
internal – внутренний
an expansion card – плата расширения
versatile – универсальный
a dial-up telephone connection – коммутируемая телефонная связь
a broadband connection – широкополосное соединение, широкополосная связь
drastically – решительно
essential – важный
satellites orbiting the earth – спутники, вращающиеся вокруг земли

 **Ex. 3. Read two texts given below and say what topic connects them.**

What is the Internet?

The Internet is an International computer Network made up of thousands of networks linked together. All these computers communicate with one another; they share data, resources, transfer information, etc. to do it they need to use the same language or protocol: TCP/IP (Transmission Control Protocol / Internet Protocol) and every computer is given an address or IP number. This number is a way to identify the computer on the Internet.

Getting Connected

To use the Internet you need a computer, the right connection software and a modem to connect your computer to a telephone line and then access your ISP (Internet Service Provider).

The modem (modulator-demodulator) converts the digital signals stored in the computer into analogue signals that can be transmitted over telephone lines. There are two basic types: external with a cable that is plugged into the computer via a USB port, and internal, an expansion card inside the computer. A PC card modem is a different, more versatile option for laptops and mobile phones.

At first most computers used a dial-up telephone connection that worked through the standard telephone line. Now a broadband connection, a high data transmission rate Internet connection, has become more popular: either ADSL (Asymmetric Digital Subscriber Line), which allows you to use the same telephone line for voice and fast access to the Internet, or cable, offered by most TV cable providers.

The basic equipment has changed drastically in the last few years. You no longer need a computer to use the Internet. Web TV provides email and access to the Web via a normal TV set plus a high-speed modem. More recently, 3Generation mobile phones and PDAs, personal digital assistants, also allow you to go online with wireless connections, without cables.

Telephone lines are not essential either. Satellites orbiting the earth enable your computer to send and receive Internet files. Finally, the power-line Internet, still under development, provides access via a power plug.

Ex. 4. Decide if the sentences are true or false according to the text of ex. 3. If they are false, correct them.

1. The Internet and the World Wide Web are synonyms.
2. Computers need to use the same protocol (TCP/IP) to communicate with each other.
3. Web TV can provide access to the Net.
4. ADSL and cable are two types of dial-up connections.
5. External, internal and PC card are types of connections.
6. Information can be sent through telephone lines, satellites and power lines.
7. The computer IP number is a way to identify it on the Internet.

 **Ex. 5. Make 5 different kinds of questions to the text of ex. 3. Ask your partner to answer them.**

HISTORY OF THE INTERNET

V Ex. 1. Learn the new words.

Defense Advanced Research Projects Agency (DARPA) – Управление перспективного планирования оборонных научно-исследовательских работ

to initiate – начать, инициировать

interlinking – связывание

bulk – большая часть

packet network – пакетная сеть

the system of networks – система сетей

day-to-day function – каждодневная функция

to convene – собираться

face-to-face meetings – встречи один на один

to integrate – интегрировать, объединять в единое целое

protocol suites – пакет протоколов, совокупность протоколов

networking fabric – сетевая структура

to made up of – состоять из

networking facilities – сетевые средства, сетевые возможности

to manage – управлять

Book Ex. 2. Read the following text and answer the question *What is Intercontinental Network?*

A Brief History of the Internet

In 1973 the Defense Advanced Research Projects Agency (DARPA) initiated a research program to investigate techniques and technologies for interlinking packet networks of various kinds. The objective was to develop communication protocols which would allow networked computers to communicate transparently across multiple, linked packet networks. This was called the Internettng project and the system of networks which emerged from the research was known as the “Internet” (Intercontinental Network).

During the course of its evolution, particularly after 1989, the Internet system began to integrate support for other protocol suites into its basic networking fabric. By the end of 1991 the Internet has grown to include some 5000 networks in over three dozen countries, serving over 700,000 host computers used by over 4,000,000 people.

The bulk of the system today is made up of private networking facilities in education and research institutions, business and in government organizations across the globe.

A secretariat has been created to manage the day-to-day function of the Internet Activities Board (IAB) and Internet Engineering Task Force (IETF). IETF meets three times a year in plenary and in approximately 50 working groups convene at intermediate times by electronic mail, teleconferencing and at face-to-face meetings.

There are a number of Network Information Centres (NICs) located throughout the Internet to serve its users with documentation, guidance, advice and assistance. As the Internet continues to grow internationally, the need for high quality NIC functions increases. Although the initial community of users of the Internet were drawn from the ranks of computer science and engineering its users now comprise a wide range of disciplines in the sciences, arts, letters, business, military and government administration.

Ex. 3. Find English equivalents of the following words and word combinations in the text *A Brief History of the Internet*.

Исследовательская программа, пакетные сети, цель, развивать протоколы связи, проект межсетевого взаимодействия, совокупность (комплекс) протоколов, электронная почта, организация телеконференций, располагаться, руководство, высокое качество, увеличиваться, сообщество, составлять (включать).

Ex. 4. Make the following sentences negative.

1. In 1973 DARPA initiated a research program.
2. The objective was to develop communication protocols which would allow networked computers to communicate transparently across multiple.
3. By the end of 1991 the Internet has grown to include some 5000 networks.
4. The bulk of the system today is made up of private networking facilities.
5. A secretariat has been created to manage the day-to-day function of the Internet Activities Board and Internet Engineering Task Force.
6. IETF meets three times a year in plenary.
7. 50 working groups convene at intermediate times by electronic mail, teleconferencing and at face-to-face meetings.

Ex. 5. Analyze the use of the verb forms in the text *A Brief History of the Internet*.

 **Ex. 6. Make the plan of the text *A Brief History of the Internet*.**

Ex. 7. Retell the text *A Brief History of the Internet* according to your plan.

INTRODUCTION TO THE INTERNET AND WORLD WIDE WEB

 **Ex. 1. Learn the new words.**

to retrieve – извлекать
variety – спектр
humanities – гуманитарные науки
recreation – развлечение
business transaction – коммерческие операции
web – паутина
browser – браузер (программа поиска информации)
access – доступ
to provide – обеспечивать чем-либо
provider – провайдер (компания, предоставляющая доступ к WWW)
broadcast live – передавать в прямом эфире
to link – соединять
hyperlink – гиперссылке
to compete – соревноваться

 **Ex. 2. Read the following text and answer the question *What is WWW?***

Millions of people around the world use the Internet, to search for and retrieve information on all sorts of topics in a wide variety of areas including the arts, business, government, humanities, news, politics and recreation. People communicate through electronic mail (e-mail), discussion groups, chat channels and other means of informational exchange. They share information and make commercial and business transactions. All this activity is possible because tens of thousands of networks are connected to the Internet and exchange information in the same basic ways.

The World Wide Web (WWW) is a part of the Internet. But it's not a collection of networks. Rather, it is information that is connected or linked together like a web. You access this information through one interface or tool called a Web browser. The number of resources and services that are part of the World Wide Web is growing extremely fast. In 1996 there were more than 20 million users of the WWW, and more than half the information that is transferred across the Internet is accessed through the WWW. By using a computer terminal (hardware) connected to a network that is a part of the Internet, and by using a program (software) to browse or retrieve information that is a part of the World Wide Web, the people connected to the Internet and World Wide Web through the local providers have access to a variety of information. Each browser provides a graphical interface. You move from place to place, from site to site on the Web by using a mouse to click on a portion of text, icon or region of a map. These items are called hyperlinks or links. Each link you select represents a document, an image, a video clip or an audio file somewhere on the Internet. The user doesn't need to know where it is, the browser follows the link.

All sorts of things are available on the WWW. One can use Internet for recreational purposes. Many TV and radio stations broadcast live on the WWW. Essentially, if something can be put into digital format and stored in a computer, then it's available on the WWW. You can even visit museums, gardens, cities throughout the world, learn foreign languages and meet new friends. And of course you can play computer games through WWW, competing with partners from other countries and continents.

Just a little bit of exploring the World Wide Web will show you what a much of use and fun it is.

Ex. 3. Answer the questions according to the text of ex. 2.

1. What is the Internet used for?
2. What activities are possible through the Internet and why?
3. What is World Wide Web?
4. What is a Web browser?
5. What does user need to have an access to the WWW?
6. What resources are available on the WWW?
7. What are the basic recreational applications of WWW?

Ex. 4. Say whether the statements are true or false according to the text *A Brief History of the Internet*.

1. There are still not so many users of the Internet.
2. There is information on all sorts of topics on the Internet, including education and weather forecast.
3. People can communicate through e-mail and chat programs only.
4. Internet is tens of thousands of networks which exchange the information in the name basic way.
5. You can access information available on the World Wide Web through the Web browser.
6. You need a computer (hardware) and a special program (software) to be a WWW user.
7. Films and pictures are not available on the Internet.
8. Radio and TV-broadcasting is a future of the Internet. It's not available yet.

Ex. 5. Find English equivalents to the following sentences in the text *A Brief History of the Internet*.

1. Объем ресурсов и услуг, которые являются частью WWW, растет чрезвычайно быстро. 2. Каждая ссылка, выбранная вами, представляет собой документ, графическое изображение, видеоклип или аудио файл где-то в Интернет. 3. Интернет может быть также использован для развлечения. 4. Вы получаете доступ к ресурсам сети Интернет через интерфейс или инструмент, который называется веб-Браузер. 5. Вся эта деятельность возможна благодаря десяткам тысяч компьютерных сетей, подключенных к Интернету и обменивающихся информацией в одном режиме. 6. Пользователи общаются через электронную почту, дискуссионные группы, чат-каналы (многоканальный разговор в реальном времени) и другие средства обмена информацией.

 **Ex. 6. Give definitions of the following words using a dictionary.**

- 1) Internet – _____;
- 2) World Wide Web – _____;
- 3) Web browser – _____;
- 4) Internet provider – _____.

PROTOCOLS AND THE INTERNET

Ex. 1. Read the information and answer the question *Have you ever heard of protocols on the Internet?*

You've probably heard of several protocols on the Internet. For example, **hypertext transfer protocol** is what we use to view Web sites through a browser – that's what the **http** at the front of any Web address stands for. If you've ever used an **FTP server**, you relied on the **file transfer protocol**. Such protocols and dozens more create the framework within which all devices must operate in order to be a part of the Internet.

V Ex. 2. Read the words using transcriptions and remember their correct pronunciation.

language [læŋgwɪdʒ]

equipment [ɪ'kwɪpmənt]

transmission [trænz'miʃən]

exactly [ɪg'zæktli]

to establish [ɪ'stæblɪʃ]

unique [ju.'ni:k]

server ['sɜ:və]

architecture ['a:kɪ:tɛktʃə]

to configure [kə'nfigə]

hypermedia ['haɪpə,mi:dɪə]

to exchange [ɪks'tʃeɪndʒ]

methods [meθədz]

collaboration [kə'læbə'reɪʃən]

multiple ['mʌltipl]

layer ['leɪə]

to access ['ækses]

data ['deɪtə]

mechanism ['mekənizəm]

anonymously [ə'nɒnɪməslɪ]

to encrypt [ɪn'krɪpt]

suitable ['sju:təbəl]

hypertext ['haɪpə,tekst]

Ex. 3. Look through the text in ex. 4 and find the English translation to the definition given in the box below.

Протоколы – это стандарты, определяющие формы представления и способы пересылки сообщений, процедуры их интерпретации, правила совместной работы различного оборудования в сетях.

Ex. 4. Read the following text and give it a title.

Internet users work on the same rules. As the common language in the Internet communication they use protocols. Protocols are the standards, which define the forms of representation and transferring methods of

messages, the procedures of their interpretation, the rules of collaboration of different equipment on networks.

The protocol is rules of interaction. Thus the possibility of connection to the Internet of different computers (IBM, Macintosh) which work under control of different operating systems is carried out (Windows, UNIX, MS DOS).

Two of the most important protocols are the **Transmission Control Protocol (TCP)** and the **Internet Protocol (IP)**. We often group them together – in most discussions about Internet protocols you'll see them listed as TCP/IP. All other multiple protocols are based on exactly the TCP/IP.

The Internet has several protocol layers that interact with each other.

1. TCP/IP

Transmission Control Protocol (TCP) and the **Internet Protocol (IP)** at their basic level establish the rules for how information passes through the Internet. Without these rules, you would need direct connections to other computers to access the information they hold. You'd also need both your computer and the target computer to understand a common language.

Protocol TCP splits the information into portions (packets) and then number all portions in order to collect the information properly when obtaining it. Next, using the IP protocol all the portions are sent to the recipient, where using TCP it is checked whether all the packets are obtained. As the individual parts can surf the Internet in various ways, the order of obtaining of parts can be broken. After receiving all the parts TCP put them in the correct order and gathers together.

IP protocol is an address protocol. Every computer connected to the Internet forms a unique IP-address. IP-address consists of a network number and the computer number. Network addresses are 32-bit numbers. IP protocol is responsible for addressing all the network. It means that due to using protocols IP each computer (device) on the network has a unique address (IP-address). All the data is transmitted for these addresses (www.rambler.ru, www.ozon.ru, etc.).

2. File Transfer Protocol – FTP

File Transfer Protocol (FTP) – a standard network protocol used to transfer computer files between a client and server on a computer network. It is a mechanism for copying a file from one host to another.

FTP is built on a client-server model architecture and uses separate control and data connections between the client and the server. FTP users may authenticate themselves with a clear-text sign-in protocol, normally in the form of a username and password, but can connect anonymously if the server is configured to allow it. For secure transmission that protects the username and password, and encrypts the content, FTP is often secured with SSL/TLS (FTPS).

3. Hypertext Transfer Protocol (HTTP)

The Hypertext Transfer Protocol (HTTP) – an application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web.

HTTP is an object-oriented protocol which is suitable for solving many problems, such as setting up of name servers, distributed object-oriented management systems, and others.

Hypertext is structured text that uses logical links (hyperlinks) between nodes containing text. HTTP is the protocol to exchange or transfer hypertext.

Ex. 5. Translate the following derivatives.

common –	collaboration –
commonly _____	to collaborate _____
communication –	collaborative _____
to communicate _____	different –
communicative _____	to differ _____
definition _____	interaction –
to define – _____	to interact _____
representation –	possibility –
to represent _____	possible _____
interpretation –	impossible _____
to interpret _____	connection –
	to connect _____

transmission –
to transmit _____
discussion –
to discuss _____
information –
to inform _____
informative _____

computer –
to compute _____
architecture –
an architect _____
management –
to manage _____
text –
hypertext _____

Ex. 6. Translate the questions into English and answer them according to the text of ex. 4.

1. Что такое протоколы Интернет? 2. Для чего нужны протоколы Интернет? 3. Какие протоколы передачи данных существуют? 4 Как работает протокол TCP/IP в сети Интернет? 5. Что такое FTP? 6. В чем особенность протокола HTTP? 7. Существуют ли в сети Интернет уровни, которые взаимодействуют между собой? 8. Какой протокол используется для передачи файлов от одного компьютера к другому? 9. Для чего используется протокол HTTP? 10. Что такое IP адрес в сети Интернет?

 **Ex. 7. Make a list of terms from the text in ex. 4 and translate them into Russian.**

Ex. 8. Divide the text of ex. 4 into parts and translate it.

FACES OF THE INTERNET

Ex. 1. Discuss with your partner the following questions.

1. Where can people use the Internet?
2. Is the Internet a part of our everyday life?
3. Does the Internet consist of many systems?
4. What components of the Internet can you name?

 **Ex. 2. Look through the text *Components of the Internet* and add more detailed information to your answers.**

Components of the Internet

The Internet consists of many systems that offer different facilities to users.

WWW, the World Wide Web, a collection of files or pages containing links to other documents on the Net. It's by far the most popular system. Most Internet services are now integrated on the Web.

E-mail, or electronic mail, for the exchange of messages and attached files.

Mailing lists (or listservs) based on programs that send messages on a certain topic to all the computers whose users have subscribed to the list.

Newsgroups, where people send, read and response to public bulletin board messages stored on a central computer.

Chat and instant messaging, for real-time conversations; you type your messages on the keyboard.

Internet telephone, a system that lets people make voice calls via the Internet.

Video conference, a system that allows the transmission of video and audio signals in real time so the participants can exchange data, talk and see one another on the screen.

File Transfer Protocol (FTP), used to transfer files between computers.

TELNET, a program that enables a computer to function as a terminal working from a remote computer and so use online databases or library catalogues.

 **Ex. 3. Read Internet Frequently Asked Questions (FAQs) and the answers to them. Ask your partner to answer the same questions about the Internet.**

1. Internet FAQs:

How old is the Internet (the Net)? When was it created?

It's hard to say exactly. The research that led to what we now know as the Internet was begun in the 1960s.

Who created the Internet?

Again, it's hard to say exactly who created it. The initial research was carried out by the Advanced Research Projects Agency in America, funded by the US government.

Did the Internet become popular quickly?

It took many years for the Internet to become popular around the world. It's only really since the mid-90s that the Internet has been a part of our daily lives.

How do you get online?

To get connected, you need a computer, the right connection software and a modem connected to the phone line. You also need an account with an Internet Service Provider (ISP), which acts as a gateway between your PC and the rest of the Net.

How fast are today's internet connections?

Today, ISPs offer a broadband, high-speed connection. The most common types are cable – offered by local cable TV companies – and ADSL (Asymmetric Digital Subscriber Line), which works through phone lines. They are both faster than the traditional dial-up telephone connection. Broadband access is also offered by some electricity networks. This competing technology, known as power-line Internet, provides low-cost access via the power plug, but is still in development.

How long has broadband existed?

Since the late 1990s.

How much does broadband access cost?

It depends on which company you choose. Nowadays, some companies even offer free broadband.

Why do you need a modem?

A modem (**modulator/demodulator**) converts digital signal into analogue signals so that data can be transmitted across the phone or cable network.

What does TCP/IP mean?

The language used for data transfer on the Internet is known as TCP/IP (Transmission control protocol / Internet protocol). This is like the internet operating system. Every computer connected to the Net is identified by a unique IP address.

Are there other ways of accessing the Internet?

Other methods of internet access include Wi-Fi, satellite, mobile phones and TV sets equipped with a modem. Wi-Fi enabled laptops or PDAs allow you to connect to the Net if you are near a wireless access

point, in locations called hotspots (for example, a Wi-Fi café, park or campus). Satellite services are used in places where terrestrial access is not available (for example, on ships at sea). High-end mobile phones provide access through the phone network.

2. Internet FAQs:

What is e-mail?

E-mail lets you exchange messages with people all over the world. Optional attached files can include text, pictures and even audio and animation. A mailing list uses email to communicate messages to all its subscribers – that is, everyone that belongs to the list.

Which e-mail program is the best?

Outlook Express is a popular program, but many users use web-based e-mail accounts such as Hotmail.

What does the Web consist of?

The Web consists of billions of documents living on web servers that use the HTTP protocol. You navigate through the Web using a program called a web browser, which lets you search, view and print web pages.

How often are web pages updated?

It depends on the page. Some are updated thousands of times a day.

What do chat and instant messaging (IM) allow you to do?

Chat and Instant Messaging technologies allow you to have real-time conversations online, by typing messages at the keyboard.

What is FTP used for?

FTP, or file transfer protocol, is used to transfer files over a TCP/IP network. Nowadays, this feature is built into Web browsers. You can download programs, games and music files from a remote computer to your hard drive.

What is TELNET?

Telnet is a protocol and a program used to log onto remote computer systems. It enables you to enter commands that will be executed as if you were entering them directly on the remote server.

What are Newsgroups?

Newsgroups are the public discussion areas which make up a system called Usenet. The contents are contributed by people who post articles or respond to articles, creating chains of related postings called message

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threads. You need a newsreader to subscribe to newsgroups and to read and post messages. The newsreader may be a stand-alone program or part of a web browser.

Ex. 4. Complete the sentences using a), b) or c).

1. The Internet was...
a) invented in the mid-90s; b) popular in the 1960s; c) probably created in the USA.
2. Which term describes any fast, high-bandwidth connection?
a) broadband; b) dial-up connection; c) Wi-Fi connection.
3. The power-line Internet provides broadband access through...
a) telephone line; b) satellites; c) electrical power lines.
4. Which device converts computer data into a form that can be transmitted over phone lines?
a) ADSL; b) a mobile phone; c) a modem.
5. The standard protocol that allows computers to communicate over the Internet is called...
a) an IP address; b) TCP/IP; c) wireless network device.
6. The geographical region covered by one or several access point is called a...
a) wireless access point; b) hotspot; c) wireless network device.

Ex. 5. Discuss with your partner which of the internet systems you would use to do the following tasks.

- | | |
|----------------|--|
| 1. E-mail | a) transfer files from the Internet to your hard drive |
| 2. The Web | b) send a message to another person via the Internet |
| 3. Newsgroups | c) have a live conversation online |
| 4. Chat and IM | d) connect to a remote computer by entering instruction |
| 5. FTP | e) take part in public discussion areas on specific topics |
| 6. TELNET | f) download and view documents published on the Internet |

Ex. 6. Find the words and phrases with the following meanings in the text of ex. 3.

- 1) a system used to distribute email to many different subscribers at once;
- 2) a program used for displaying web pages;
- 3) to connect to a computer by typing your username and password;
- 4) a series of interrelated messages on a given topic;
- 5) a program for reading usenet newsgroups.

Ex. 7. Complete the questions using the prompts. Then practice asking and answering them with your partner.

1. What type of internet connection / have at home?
2. How fast / your internet connection?
3. How much / pay for broadband access?
4. How often / access the Internet?
5. Which email program / use?
6. Who / send e-mail to?
7. Do / use your mobile phone to access the Internet?
8. Do / use the Internet in public places using Wi-Fi?
9. Do / play games online?
10. How many newsgroups / subscribe to?

E-MAIL

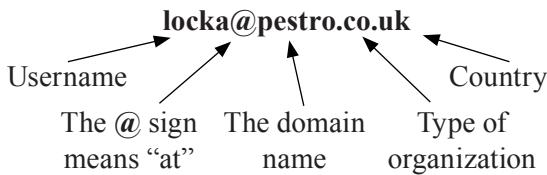
 **Ex. 1. Read the information about an email and find out its structure.**

What is an E-mail

An **e-mail** is an electronic message sent from one computer to another that can also include attachments: documents, pictures, sounds and even computer programs.

Although it's much faster and easier to use than the post, snail mail, the two have many things in common: you send an e-mail to a mail server (an electronic post office) where it is stored in a mailbox, which holds incoming mail until the recipient downloads it. Users are given an e-mail address and a password by an Internet Service Provider (ISP).

A typical e-mail address (of Anna Lock who works for the Pestro company in the UK): locka@pestro.co.uk



Anatomy of an E-mail

E-mails usually have two main parts.

1. **The header** generally includes these parts:

TO (name and address of the recipient);

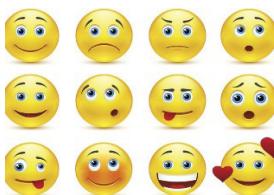
CC (carbon copy sent to another addressee);

BCC (blank / blind carbon copy);

Subject (topic of the message).

2. **The body** (the message itself).

Some e-mail programs also include a signature, with added information about the sender, at the end of the message.



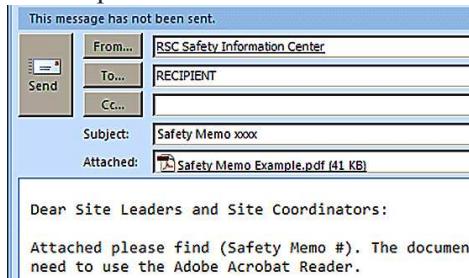
You can make your message look more expressive or attractive by using smileys (also called emotions): little pictures either made with characters from the keyboard such as :) for happy, :-o surprised, :-(| sad, etc. or download images and animations.

Spam

Spam, or junk e-mail, is the name given to unwanted messages, mainly commercial advertising. Some companies, spammers, use it extensively because it's cheaper than other types of advertising: you or your Internet Service Provider pay for it.

Mailing lists and newsgroups

A mailing list is a basic type of discussion group that uses e-mail to communicate. The messages are distributed to all the subscribers, i.e. everyone who belongs to the list.



Newsgroups are similar. The main difference is that the message is not sent to someone's mail server but to a bulletin board where everyone can read and answer the message.

Ex. 2. Find the words in the text of ex. 1 that mean the following.

1. A file that has been included as part of an e-mail message.
2. Conventional mail delivered very slowly in contrast with e-mail.
3. Symbols used to express emotions in an e-mail.
4. The part of the e-mail address that identifies the user of the service.
5. The computer that provides you with mail service.
6. A facility that allows users to send and receive messages via the Internet.
7. The part of the e-mail where you write the information about the addresses and subject.
8. The part of the e-mail address that identifies the server.
9. The place where your Internet Service Provider stores new e-mail for you.

Ex. 3. Study these examples of symbols of organizations and countries in the e-mail structure.

Organizations	Countries
.com or .co commercial organization	.at Austria
.edu / ac education	.au Australia
.gov government	.ca Canada
.int international organizations	.se Switzerland
.mil military	.de Germany
.net network provider	.es Spain
.org not-for-profit and other organizations	.fr France
	.it Italy

Ex. 4. Whose e-mail addresses are these? Match the addresses and the list of users

- | | |
|-----------------------------|-------------------------------------|
| 1) redcrossyouth@algonet.es | a) a UN organization based in Italy |
| 2) webmaster@fao.org.it | b) a US politician |
| 3) today@bbc.co.uk | c) a Swedish |
| 4) jsmith@smith.senate.gov | d) a student at a French university |

- | | |
|--------------------------------|---|
| 5) rossi@cantsoc.com.it | e) a news programme on a public
broadcasting service in the UK |
| 6) sales@demon.net | f) an Italian wine co-operative |
| 7) lunchx@swtol.usace.army.mil | g) a military organization based in
the US |
| 8) S.larrieu@ly.ac.fr | h) an ISP |

Ex. 5. Imagine the following situation: a manager is giving his / her colleagues some advice how to prevent from spam. Complete the sentences with the words in the box.

mailing list; spam; e-mail address; newsgroups; spammers

1. Never ever reply to a ... e-mail or click on a link within the e-mail – this will lead to more junk email being sent to you. Unsubscribing only confirms you do actually exist, so they've hit the jackpot.
2. Don't let your email address be displayed anywhere on the Internet, including, chat room any websites.
3. Never forward a spam to other people – might be able to track their addresses too, and you could end up losing friends!
4. Send your emails on a strictly “need to know” basis; don't include everyone on a Unless it is really necessary.
5. Treat your ... like your phone number – don't give it out randomly. Try to use a different one when shopping online.

THE WORLD WIDE WEB AS A PART OF THE INTERNET

**Ex. 1. Read the definition of the Web and translate it into Russian.
What can you add to this definition?**

What the Web is

The World Wide Web, Web or WWW is a network of documents that works in a hypertext environment, i.e. using text that contains links, **hyperlinks** to other documents.

 **Ex. 2. Read the text thoroughly. Write down all terms from this text in your exercise-books.**

The files, **web pages**, are stored in computers, which act as **servers**. Your computer, the client, uses a **web browser**, a special program

to access and download them. The **web pages** are organized in **websites**, groups of pages located on the Web, maintained by a **webmaster**, the manager of a website.

The Web enables you to post and access all sorts of interactive multimedia information and has become a real **information highway**.

How to Surf the Web

To surf the Web, access and receive web pages or websites, you need a computer with an Internet connection and a web browser. After you have launched it, you must type the website address or URL (Uniform Resource Locator), which may look like this: **http://www. cup.org/education/sample.htm**

http:/ indicates the type of protocol that the server and browser will use to communicate. Here it is Hypertext Transfer Protocol;

www. shows that it is a resource on the World Wide Web;

cup.org is the domain name of the webserver that hosts the website;

education is the path, the place where a web page is located;

sample.htm is the filename or name of a single web page.

The different parts are separated by full stops (.) and forward slashes (/). When we say a URL, we say dot (.) and slash (/).

To find interesting sites you can use **search engine**, where the website information is compiled by **spiders**, computer robot programs that collect information from **sites** by using keywords, or through **web indexes**, subject directories that are selected by people and organized into hierarchical subject categories. Some **web portals** – websites that offer all types of services, e.g. email, forums, search engines, etc. – are also good starting points.

The most relevant website addresses can be stored in your computer using the **bookmarks** or **favourite** functions in your **browser**.

Websites usually have a beginning page or home page. From this starting point you can navigate by clicking your mouse on hyperlinks in texts or images.

What Can you Do on the Web

The Web is an open door to a universe of multimedia resources that people use in many different ways. Here are just a few:

In my weblog, an electronic journal I maintain on the Web, you can read and post opinions in chronological order. In my role as blogger, the manager of a blog, I can promote this new type of discussion.

E-learning, education via the Web, is a great opportunity for people like me who haven't got time to attend classes.

Online shopping i.e. cybershopping or e-commerce, saves you time and gives you the comfort of buying from your personal computer. The goods are then sent to you, so it's very easy.

 **Ex. 3. Complete the following instructions *How to Navigate a Website* with the words in the box.**

client, web page, surf, web browser, search engine, webserver, websites, URL

How to Navigate a Website

1. Start up your computer and connect to the Internet.
2. Open your....
3. Type the ... to access a website.
4. Your web browser sends the request to the correct....
5. The server looks for the document and sends it to the ... computer.
6. Your web browser displays the selected ... on the screen.
7. From the home page of the ... you can ... to other pages by clicking on hyperlinks.
8. If you want to find more websites, use a....

Ex. 4. Discuss the following questions with your partner using the text of ex. 2.

1. What is a website?
2. What is a web browser?
3. What do you need to surf the Web?
4. What does HTTP mean?
5. What is a domain?
6. How can you find interesting sites?
7. What is web indexes?
8. How can the most relevant website addresses be stored in your computers?
9. What can you do on the Web?

Ex. 5. Give examples of your most popular website addresses.

Ex. 6. Tell the class how website addresses look like.

CHATTING AND VIDEO CONFERENCING

Ex. 1. Look at the picture and discuss in pairs.

1. What are these people doing now?
2. How do they communicate?
3. How many people are involved in the conversation?
4. Is it convenient to communicate like this?
5. Have you ever taken part in such conversations?
6. Do you personally prefer communications via the Internet or live meetings?



Ex. 2. Read the words. Check the correct pronunciation of your partner.

channel [tʃænl]	buddy [bʌdi]
to participate [pə:tɪsipeɪt]	engaged [ɪn'geɪdʒd]
client ['klaɪənt]	incorporate [ɪn'kɔ:pəreɪt]
server ['sɜ:və]	facility [fə'siliti]
identify [aɪ'dentɪfai]	alternative [ɔ:l'tɜ:nətɪv]
during ['djʊərɪŋ]	microphone ['maɪkrofəʊn]
join [dʒɔɪn]	analogue ['anəlɒg]

Ex. 3. Read the information about chatting and video conferencing. *What is the purpose of chatting and video conferencing system?*

1. IRC and web chat

IRC (Internet relay chat) is a system that allows Internet users to meet in **channels (or chat rooms)** in order to have live conversations on the topic of the chosen channel.

To participate you need to install **a chat client**, a special type of software, on your computer to connect to the **chat server**, the computer where the meeting takes place.

Once you have logged into an IRC server or a **web chat** site, you have to choose a username or **nickname** that will identify you during the chat.

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After choosing the channel, you can read the conversations, type and send messages. You can post messages to everyone in the channel or have private conversations with someone.

Channels are run by **channel operators**, *chanops* or just *ops* who control the content and the people who join and may ban users or ask them to leave the room.

2. Instant messaging

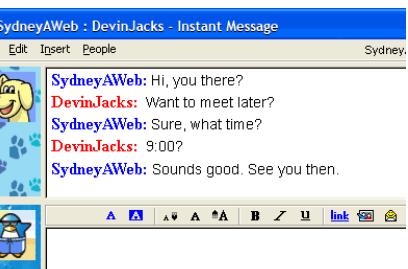
IM (instant messaging) programs allow Internet users to communicate in one-to-one conversations; they are a chat room for just two people.

With programs such as ICQ (I seek you) and MSN Messenger you can maintain a list of people, called a **buddy list** or **contact list**.

The program opens up a small window where the people engaged in the conversation type their messages.

The latest IM programs also incorporate telephone, video and file-sharing facilities and are becoming an alternative to traditional video conferencing programs.

3. Video and voice calls



Video conferencing (video call) system allows a live connection between two or more participants in separate locations using the Internet to exchange audio and video data. The users need a computer with broadband access, a webcam, a microphone and speakers. Some popular programs are *CU-SeeMe* and *Windows Netmeeting*.

The Net can also be used for online telephone conversations, either computer-to-computer or computer-to-phone, which require special soft-

ware or an applet, a Java application that runs from the browser when you access a web page, and also a microphone, sound card and speakers.

This type of communication uses VoIP (Voice over Internet Protocol), which turns analogue audio signals, like the ones on the telephone, into digital data that can be sent via the Internet.

 **Ex. 4. Write down professional oriented words from the text in ex. 3. Translate them into Russian.**

Ex. 5. What would you prefer a web chat or video conferencing...

- **for communicating with close friends?**
- **for communication with a pen-friend?**
- **for conducting a business conference?**

Ex. 6. Make several questions to the text of ex. 3 and ask your partner to answer them.

 **Ex. 7. Transform the following sentences into the Passive Voice.**

1. To participate in IRC you need to install a chat client. 2. Once you have logged into an IRC server or a web chat site. 3. You have to choose a username or nickname. 4. After choosing the channel, you can read the conversations. 5. You can post messages to everyone in the channel. 6. The latest IM programs also incorporate telephone, video and file-sharing facilities. 7. The users need a computer with broadband access, a webcam, a microphone and speakers. 8. Online telephone conversations require special software or an applet.

Ex. 8. There are certain rules you should follow if you want to use chat rooms and other communication environments correctly. When you enter a chat room, keep them in mind.

NETIQUETTE COMMANDMENTS

- Be polite. You're speaking to a human being not to a machine.
- Don't use CAPITAL LETTERS! This is considered as shouting.
- Have a look at the tone of the conversation in the room before you take part. You may not like that channel.
- Ignore those people who don't follow these rules.
- Don't believe all the things people might tell you. Some people lie just for fun.

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- Don't give personal information (your real name, address, password, etc.).
- Protect your computer. Use a firewall and antivirus programs.
- Don't accept files from people you don't know. They might be or contain Trojans.
- In short, follow the same rules as in real life.
- Enjoy your chat and have fun!

TEST YOURSELF

Test 1

Ex. 1. Fill in the gaps in the sentences and then put the stages of *Shopping on the Net* in order.

E-commerce

account, delivery, add, browse, details, invoice, shopping basket, checkout, confirm, sign in

1. You usually have to allow at least working days for ... (1). 2. Choose an item, and ... (2) it to your ... (3). 3. Click ... (4). Now it's too late change your mind! 4. When you have finished shopping, click proceed to ... (5). 5. Usually, you will receive an ... (6) by e-mail. 6. Enter your name, address and card ... (7). 7. Before you can start shopping, you usually have to ... (8) to the site. (If you don't already have an ... (9), you have to create one.) 9. ... (10) the website, and decide what you want to buy.

Ex. 2. Choose the right prepositions.

Booking a Hotel Online

You can often make a hotel reservation *by / over* the internet, but you may have to pay a deposit. The deposit will usually be returned *to / for* you if you cancel your reservation a week or more *in / with* advance.

You will usually receive notification *about / of* the booking *by / from* e-mail. When you check *in / into* the hotel, your details will probably already be *on / inside* the hotel system. When you check *out / out of*, you will usually be given a receipt.

Ex. 3. Match the browser toolbar button with the function.**Internet Browsers**

- | | |
|-------------------------------|---|
| 1) back | a) shows a list of the websites you have visited recently. |
| 2) forward | b) opens the media bar, accessing internet radio, music, video etc. |
| 3) stop | c) displays the page you were on before. |
| 4) refresh1 / reload2 | d) shows the latest version of the page. |
| 5) home | e) opens the search panel. |
| 6) search | f) displays the page you were on before using the back button. |
| 7) favourites1/
bookmarks2 | g) displays the page you have set as your home page. |
| 8) media | h) prints the current page. |
| 9) history | i) stops a page from downloading. |
| 10) mail | j) displays the web addresses you have chosen as your favourites. |
| 11) print | k) shows email options. |

Ex. 4. Do you agree with the following statements? If they are not correct, make them true.

1. All browsers (Internet Explorer, Mozilla Firefox, etc.) have exactly the same functions.
2. Cookies are data sent by an internet server to a browser. They identify the user, and track the user's access to the server.
3. You can get your browser to delete the cookies it has stored. (In Internet Explorer go to Tools, then to Internet Options, then to Delete Cookies.)
4. Pages you have viewed are stored in the Temporary Internet Files folder. These cannot be deleted.
5. You can tell your browser how long to store web addresses in the History.
6. You can set your browser to block pop-up windows.
7. All pop-ups are advertisements.
8. You can add extra toolbars to your browser window, for example a toolbar from Google.

Test 2

Ex. 1. Put the words in the box into the spaces.

click on, criteria, database, hyperlinks, keywords, matches, media refine, returns, sponsored, view

Using a Search Engine

Stage 1: Enter one or more....

Stage 2: The search engine looks for ... in all the web pages on their....

Stage 3: The search engine ... the matches (or ‘hits’) with ... to the web pages.

Stage 4: The search engine may also return ‘... links’. These are links to the websites of companies who have paid the search engine company.

Stage 5: You ... the hyperlink to ... the web page.

Stage 6: If necessary, you can ... your search by using advanced search ... such as language, country or the type of ... you are looking for.

Ex. 2. Match the activities with the Internet functions.

Things on the Net

- | | |
|--|------------------------|
| 1. Keep a public diary of your journey through South America | a) webmail |
| 2. Lose lots of money | b) online music store |
| 3 Find out about the First World War | c) instant messaging |
| 4. Download songs | d) online radio |
| 5. Listen to music in real time | e) portal |
| 6. Check your email from any computer | f) blog |
| 7. Find links to other websites | g) online encyclopedia |
| 8. Exchange messages in real time with friends or colleagues | h) currency converter |
| 9. Check the latest exchange rates | i) e-zine |
| 10. Read new articles about a subject that interests you | j) online casino |

**Ex. 3. Can you match these activities with the Internet features?
It's not easy – the terms are sometimes confused.**

- | | |
|---------------------|---------------------------------|
| a) newsgroup | d) bulletin board / noticeboard |
| b) forum | e) chatroom |
| c) discussion group | |

1. Exchange messages in real time about anything you like with strangers.
2. Post messages about your favourite pop group, and maybe reply to other fans' messages.
3. Exchange information and messages about saving a local wood from development with anybody who wants to join in.
4. Exchange information and views about the economy of Australia with other Australian economists.
5. Post / download photos, video clips and messages among a group of friends.

UNIT 5. COMPUTER SECURITY

WHAT IS A COMPUTER VIRUS?

 **Ex. 1. Read the words and translate them into Russian.**

To alter, knowledge, executable, to spread, to generate, specific, to implement, havoc, erasing, payload, benign, malignant, creator, to inflict, malicious, viral code, to terminate, partition, mounting, to launch, destructive, bugs.

 **Ex. 2. Skip the first paragraph of the text of ex. 3 and say what this text is about.**

Ex. 3. Read the following text for general information and complete the statements given below.

A **virus** is a piece of software designed and written to affect your computer by altering the way it works without your knowledge or permission. In more technical terms, a virus is a segment of program code that implants itself to one of your executable files and spreads systematically from one file to another. Computer viruses do not spontaneously generate. They must be written and have a specific purpose. Usually a virus has two distinct functions:

1. It spreads itself from one file to another without your input or knowledge. Technically, this is known as **self-replication** and **propagation**.

2. It implements the symptom or damage planned by the perpetrator. This could include erasing a disk, corrupting your programs or just creating havoc on your computer. Technically, this is known as the virus payload, which can be benign or malignant at the whim of the virus creator.

A **benign virus** is one that is designed to do no real damage to your computer. For example, a virus that conceals itself until some predetermined date or time and then does nothing more than display some sort of message is considered benign.

A **malignant virus** is one that attempts to inflict malicious damage to your computer, although the damage may not be intentional. There are a significant number of viruses that cause damage due to poor programming and outright bugs in the viral code. A malicious virus might alter

one or more of your programs so that it does not work, as it should. The infected program might terminate abnormally, write incorrect information into your documents. Or, the virus might alter the directory information on one of your system area. This might prevent the partition from mounting, or you might not be able to launch one or more programs, or programs might not be able to locate the documents you want to open.

Some of the viruses identified are benign; however, a high percentage of them are very malignant. Some of the more malignant viruses will erase your entire hard disk, or delete files.

The text deals with the problem of....

There are two functions of a virus. They are....

The text views a computer virus as a....

 **Ex. 4. Read the text of ex. 3 again for understanding its main points and answer the ‘What’-questions given below.**

1. What is a virus in more technical terms?
2. What is the virus payload?
3. What is a benign virus?
4. What is a malignant virus?
5. What can some of the more malignant viruses do with your entire hard disk?

Ex. 5. Complete the following sentences according to the text of ex. 3.

1. Computer viruses must be written and have a.... 2. It spreads itself from one file to another without your ... or.... 3. This could include ... a disk, corrupting your ... or just creating ... on your computer. 4. A benign virus is a ... that conceals itself until some predetermined date or time and then does nothing more than display some sort of.... 5. There are a significant number of viruses that cause damage due to.... 6. The ... program might terminate.... 7. Programs might not be able to ... you want to open.

Ex. 6. Correct the statements according to the text of ex. 3 and translate them into Russian.

1. Some viruses are programmed to improve the data on your computer. 2. A malignant virus is one that is designed to do no real harm to

your computer. 3. A benign virus is one that attempts to inflict malicious damage to your computer. 4. The infected program can terminate normally. 5. Virus spread themselves from one file to another with your input or knowledge. 6. Viruses implement the symptoms or damage planned by the virus program.

Ex. 7. Complete the following sentences. Add 4–5 phrases of your own. Retell the text of ex. 3.

- A. The text under discussion draws our attention to....
- B. Computer viruses....
- C. Usually computer viruses have 2 functions....
- D. Two types of viruses ... and ... are described in the text.
- E. A benign virus....
- F. A malignant virus....

HOW DO VIRUSES ACT?

 **Ex. 1. Read the following text and say what it is about. You can begin your answer with the words *This text is about....***

Virus's main mission is to spread out and then get active. Some viruses just spread out and never activate. Viruses when they spread out, they make copies of self and spreading is harmful.

How viruses spread out

Viruses' mission is to hop from program to other and this should happen as quickly as possible. Usually viruses join to the host program in some way. They even write over part of the host program.

A computer is infected with a boot sector virus if it is booted from an infected floppy disk. Boot sector infections cannot normally spread across a network. These viruses spread normally via floppy disks which may come from virtually any source:

- unsolicited demonstration disks;
- brand-new software;
- disks used on your PC by salesmen or engineers;
- repaired hardware.

A file virus infects other files, when the program to which it is attached is run, and so a file virus can spread across a network and often

very quickly. They may be spread from the same sources as boot sector viruses, but also from sources such as Internet FTP sites and newsgroups. Trojan horses spread just like file viruses.

A multipartite virus infects boot sectors and files. Often, an infected file is used to infect the boot sector: thus, this is one case where a boot sector infection could spread across a network.

What Viruses Do

Some viruses are programmed specifically to damage the data on your computer by corrupting programs, deleting files, or erasing your entire hard disk. Many of the currently known Macintosh viruses are not designed to do any damage. However, because of bugs (programming errors) within the virus, an infected system may behave erratically.

What Viruses Don't Do

Computer viruses don't infect files on write-protected disks and don't infect documents, except in the case of Word macro viruses, which infect only documents and templates written in Word 6.0 or higher. They don't infect compressed files either. However, applications within a compressed file could have been infected before they were compressed. Viruses also don't infect computer hardware, such as monitors or computer chips; they only infect software.

Finally, viruses don't necessarily let you know that they are there – even after they do something destructive.

How viruses activate

We are always afraid that viruses do something harmful to files when they get active, but not all the viruses activate. Some viruses just spread out, but when viruses activate they do very different things. Might play a part of melody or play music in the background, show a picture or animated picture, show text, format hard disk or do changes to files.

As an example, in one unnamed company: over a long period, the files in a server were corrupted just a bit. So backup copies were taken from the corrupted files, and after they noticed that something was wrong, it was too late to get back the data from the backups. That kind of event is the worst that can happen for the users.

There is also a talk that viruses have done something to hardware like hard disk or monitor. Viruses can not do any harm to hardware but they can do harm to programs and for example to BIOS so that computer does

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not start after that. Usually you can start the computer from a boot diskette if the computer does not start otherwise.

Ex. 2. Answer the questions on the text of ex. 1. Use the phrases given below the questions.

1. What is the main viruses' mission? 2. How do they spread out?
3. What does a multipartite virus infect? 4. What do viruses do on your computer? 5. What don't viruses do? 6. How do they activate?

I think..., I consider..., I reckon..., To my mind..., As far as I remember..., As far as I know..., As I have understood from the text...

 **Ex. 3. Find examples of different parts of speech in the text and complete the table.**

Nouns	Adjectives	Adverbs	Verbs	Prepositions

 **Ex. 4. Work in groups of 3. Translate the text of ex. 1. Write down the translation in your exercise-books.**

DIFFERENT MALWARE TYPES

 **Ex. 1. Learn the new words. Pay attention to the word formation of different parts of speech.**

Nouns

malware – вредоносное программное обеспечение, harm – вред, boot sector – загрузочный сектор, knowledge – знание, a password – пароль, connections – связь, multi-user system – многопользовательская система, virus – вирус;

Adjectives

harmless – безопасный, безвредный, executable – выполнимый, harmful – вредный, different – несходный, random – случайный, widespread – широко распространенный, destructive – разрушительный;

Verbs

to take into account – принять во внимание, to execute – выполнять, to operate – работать, to notice – замечать, to overwrite – пере-

писывать, to spread – распространять(ся), to infect – заразить, to detect viruses – обнаружить вирусы, to remove viruses – удалить вирусы, to differ – отличаться, to reproduce – воспроизвести, to disguise – (за)маскировать, to corrupt – (ис)портить;

Adverbs

on purpose – нарочно, специально, in common – в общем, inadvertently – непреднамеренно.

Ex. 2. Match the words from two columns to make word combinations.

A

- 1) widespread
- 2) to corrupt
- 3) harmful
- 4) destructive
- 5) to overwrite
- 6) random
- 7) to remove
- 8) to infect

B

- a) harm
- b) viruses
- c) multi-user system
- d) knowledge
- e) on purpose
- f) virus
- g) malware
- h) a password

Ex. 3. Complete the sentences. Use the words in the box. Change their forms if necessary.

spread, disguise, harmful, harm, different, infect, detect, take into account, remove, password

1. This type of virus ... by an unknown user. 2. His computer ... by some viruses. 3. Some harmless viruses ... in that multi-user system. 4. Nobody could ... those viruses from her computer system. 5. Some users use a ... while working on the Internet. 6. Many users don't ... a destructive ... of viruses. 7. Are all the viruses...? 8. All the viruses are ... and can ... very quickly on your computer.

Ex. 4. Read the text of ex. 5 for general information and find the English equivalent for the following sentence.

Общее название всех программ, которые разработаны для изменения или повреждения данных, программного обеспечения, деталей компьютера – вредоносная программа.

 **Ex. 5.** Read this text for detailed information. Answer the question *What types of viruses are described in the text?*

Different Malware Types

Malware is a general name for all programs that are harmful; viruses, trojan, worms and all other similar programs.

V i r u s e s

A computer virus is a program, a block of executable code, which attach itself to, overwrite or otherwise replace another program in order to reproduce itself without a knowledge of a PC user.

There are a couple of different types of computer viruses: boot sector viruses, parasitic viruses, multi-partite viruses, companion viruses, link viruses and macro viruses. These classifications take into account the different ways in which the virus can infect different parts of a system. The manner in which each of these types operates has one thing in common: any virus has to be executed in order to operate.

Most viruses are pretty harmless. The user might not even notice the virus for years. Sometimes viruses might cause random damage to data files and over a long period they might destroy files and disks. Even benign viruses cause damage by occupying disk space and main memory, by using up CPU processing time. There is also the time and expense wasted in detecting and removing viruses.

T r o j a n

A Trojan Horse is a program that does something else that the user thought it would do. It is mostly done to someone on purpose. The Trojan Horses are usually masked so that they look interesting, for example a *saxophone.wav* file that interests a person collecting sound samples of instruments. A Trojan Horse differs from a destructive virus in that it doesn't reproduce. There has been a password trojan out in AOL land (the American On Line). Password30 and Pasword50 which some people thought were *wav. files*, but they were disguised and people did not know that they had the trojan in their systems until they tried to change their passwords.

The Trojan steals passwords and sends an E-mail to the hackers fake name and then the hacker has your account in his hands.

Worms

A worm is a program which spreads usually over network connections. Unlike a virus which attach itself to a host program, worms always need a host program to spread. In practice, worms are not normally

associated with one person computer systems. They are mostly found in multi-user systems such as Unix environments. A classic example of a worm is Robert Morris's Internet-worm 1988.

Macro virus

Macro viruses spread from applications which use macros. The macro viruses which are receiving attention currently are specific to Word 6.0, WordBasic and Excel. However, many applications, not all of them Windows applications, have potentially damaging and infective macro capabilities too.

A CAP macro virus, now widespread, infects macros attached to Word 6.0 for Windows, Word 6.0.1 for Macintosh, Word 6.0 for Windows NT, and Word for Windows 95 documents.

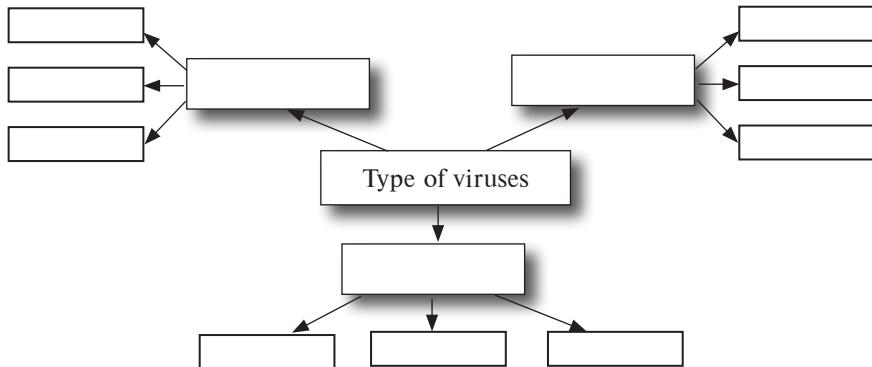
What makes such a virus possible is that the macros are created by WordBASIC and even allows DOS commands to be run. WordBASIC in a program language which links features used in Word to macros.

A virus, named *Concept*, has no destructive payload; it merely spreads, after a document containing the virus is opened. Concept copies itself to other documents when they are saved, without affecting the contents of documents. Since then, however, other macro viruses have been discovered, and some of them contain destructive routines.

Microsoft suggests opening files without macros to prevent macro viruses from spreading, unless the user can verify that the macros contained in the document will not cause damage. This does NOT work for all macro viruses.

Why are macro viruses so successful? Today people share so much data, email documents and use the Internet to get programs and documents. Macros are also very easy to write. The problem is also that Word for Windows corrupts macros inadvertently creating new macro viruses.

 **Ex. 6.** Complete this logical cluster using the information of the text *Different Malware Types*. Point out the names of viruses, how they spread, how they act, give some examples.



Ex. 7. Work in groups. Be ready to tell the class about different types of viruses. Use the following scheme for help.

Trojan

A Trojan horse is.... It is mostly done.... A Trojan horse differs from....
A Trojan horse is usually masked.... There has been a.... The Trojan steals....

Worms

A worm is.... Worms always need.... Worms are not associated....
They are mostly found.... Robert Morris's internet – worm 1988 is....

Macro virus

Macro viruses spread.... A CAP macro virus infects.... The macros are created by ... *Concept* virus has no.... Concept copies itself... without.... Microsoft suggests.... Macro viruses are so successful because....

FILE INFECTORS

Ex. 1. What do you know about a file infector?

1. What is a *file infector*?
2. Would you translate the term into Russian?
3. Where can you find this virus?

4. Is it harmful or harmless?
5. How can you avoid computer virus?

 **Ex. 2. Read the following text for general information and say what the text is about.**

A. File infector viruses are the ‘classic’ form of virus, those to which the term is most commonly and, along with boot sector viruses, most appropriately applied.

When an infectious file is executed on a system, the infection routine will seek out other files and insert its code into them. The entry point of the file is redirected to the start of the virus code to ensure that it is run when the file is executed, and control may or may not be passed on to the original program in turn.

File infector viruses often misinfect, either leaving the file completely non-functional or simply failing to run the viral code at all.

B. When surfing the internet, you are exposing yourself to a wide range of security threats. Some of the most common dangers are computer viruses. Many types of viruses may attempt to slither into your computer and spread an infection throughout the system. And while several are similar in function, most have notable distinctions that set them apart.

The role of a file infector is to infect the files of a computer. This is one of the most frequently deployed viruses and has been known to inflict considerable damage. Upon running a program that has been corrupted by a file infector, the virus duplicates the malicious code and applies it to other executable applications on the computer. Files that are the most vulnerable to this type of infection bare the extensions of EXE. (execute) and .COM (command), though any file capable of execution can be infected.

C. A popular example of the file infector is *the Cascade virus*, an infection that has basically become obsolete. The original variation of this virus was designed to deliver a payload from October 1st through December 31st in 1988. Upon execution, the characters on the victim’s monitor descend and find themselves piled at the bottom of the screen. The Cascade virus has spawned a number of variants over the years, most of which have displayed the same basic function.

A more recent example of a file infector is *the Cleevis virus*, which is reported as being first discovered in January of 2006. When executed, it seeks out the current directory, the system directory and the Windows directory. It then infects all portable executable files within them. Because the infection typically displays a message upon execution, it is fairly easy to detect.

D. Although there are many different kinds of file infector viruses, most of them operate the same and take the following course of actions:

- Once a user executes an infected file, the virus copies the file and places into an area where it can be executed. In most cases, this would be the RAM.
- The malicious code runs first while the infected file remains quiescent.
- The virus then copies itself in a location separate from where the infection occurred, allowing it to continuously infect files as the user functions other programs.
- When the initial process is set in to place, the virus grants control back to the infected file.
- When a user opens another application, the dormant virus proceeds to run again. It then inserts a copy of itself into files that were previously uninfected which enables the cycle to repeat consistently.

File infectors can be both a nuisance, as well as a tremendous threat to your computer. For this reason, it is recommended to protect your system with anti-virus software that receives free updates for the latest virus definitions.

Ex. 3. Choose the title to each part of the text of ex. 2.

The Way File Infectors Act

File Infectors' Actions

The Examples of File Infectors

File Infector Virus

Ex. 4. Complete the sentences. Use the text of ex. 2.

1. The entry point of the file is *redirected / infected ...* to the start of the virus code.
2. It is recommended to protect your system with anti-

virus *software / hardware*.... 3. The original variation of the *Cascade virus / Cleevix virus* ... was designed to deliver a payload from October 1st through December 31st in 1988. 4. File infector viruses often *infect / hit* ... either leaving the file completely non-functional or simply failing to run the viral code at all. 5. Once a user executes an infected file, the virus *copies / reproduces* ... the file and places into an area where it can be executed. 6. The malicious code runs first while the *infected / destructive* ... file remains quiescent. 7. The role of a file infector is *to infect / to cure* ... the files of a computer.

Ex. 5. Find English equivalents of the following words and word combinations in the text of ex. 2.

Соответственно примененный, инфицированный, выполненный в системе, установленный порядок, будет искать, перенаправленный, гарантировать, абсолютно нефункциональный файл, вы подвергаете себя, угроза безопасности, известные различия, развернутые вирусы, причинять значительный ущерб, вредоносный код, выполняемые приложения, уязвимый, был разработан, знаки на мониторе, выполняют такие действия, выполняет зараженный файл, зараженный файл остается неподвижным, файловый вирус может быть не приятностью, огромная угроза вашему компьютеру, бесплатные обновления.

Ex. 6. Make a short summary of the text of ex. 2. Use the following scheme. Work in pairs.

1. The text gives us information about....
2. The text deals with the problem of....
3. The subject of the text is....
4. The text has ... parts.
 - a) The first part is about....
 - b) The second tells us about....
 - c) The third part gives us a description of....
 - d) The fourth part goes on to say that....
5. At the end of the text the author sums all up. In conclusion he....

PROTECTION AGAINST VIRUSES

Ex. 1. Answer the questions.

1. How can you protect your computer against viruses? 2. What do you need for it? 3. What is an anti-virus program? 4. Do you know any of them? 5. What anti-virus program do you use to protect PC?

Ex. 2. Do you agree that the best way to protect your computer against (from) viruses is to think about it in advance?

Ex. 3. Read the following text and say what it is about.

Viruses are not the only forms of malicious code that may invade your system. Worms, Trojans, adware, spyware, key loggers together with viruses form part of malware running in the wild may seriously harm your system and your data while also hogging system resources, reducing PC performance and Internet bandwidth.

Malware is everywhere. Malware has been around for almost 25 years already and, every year, millions of people and businesses lose valuable data to viruses, Trojans, worms and other related malicious code. At times, this data is irrecoverable. The malware toll is not only on your data but also on your system settings and resources, PC performance and Internet connections making it impossible to work or play without adequate protection.

Ways of Fighting Viruses, Worms and Trojans

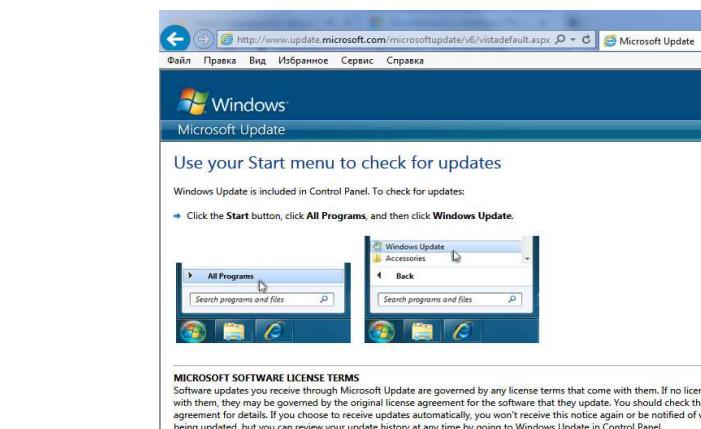
1. Update your Operating System Regularly

The first step to protecting your PC and your valuable data is to ensure that the operating system (OS) is updated with the latest security patches. This is critical as OS manufacturers such as Microsoft Windows update security features of their products continuously to cover any potential and actual loopholes.

To check whether you have the latest update, click on the Start Menu > All Programs and select the Windows Update icon  [Windows Update](#)

Windows will take you to <http://update.microsoft.com/>

Click on the appropriate button to download and install required updates. We usually advise that this be done at least once every two weeks.



2. Buy Good Anti-Virus Software

Secondly, you should have updated anti-virus software running on your system.

Make sure to choose one of the better ones on the market today – a few dollars won't break you but malware will.

Make sure that the anti-virus software is updated frequently (sometimes even daily if needs be) with fixes to the actual engine and to the database files that contain the latest cures against new viruses, worms and Trojans.

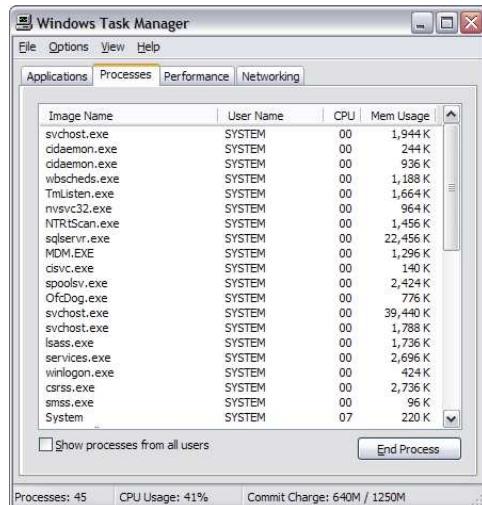
The anti-virus software must have the ability of scanning email and files as they are downloaded from the Internet to help prevent malware reaching your system. You should also make sure that the anti-virus software chosen awards you protection while on the Internet.

3. Know your Processes

Knowing what is running on your computer will increase your ability to identify potential harmful processes.

Call up the Windows Task Manager (press **CTRL+ALT+DEL**) and familiarize yourself with the processes running at any point in time.

II. Main Course



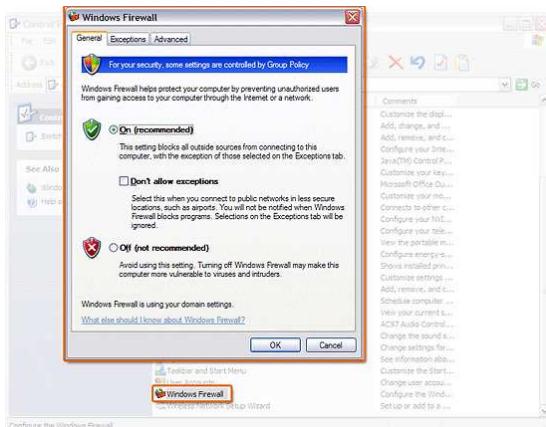
Many are using processlibrary.com to learn about the processes they have running on their computer. This website is a free resource library containing a comprehensive description of over 9,000 that may be running on your computer. Searching for the processes is similar to using a search engine – type in the process name and processlibrary.com returns the full description including information on security threat levels if any and ways on removing the malicious code.



Just click on the i-button next to process and you can pull down information from the Internet regarding the process in question. With the Task Manager and process library data you can identify some of the threats. We say some because the Task Manager does not show you all the processes running at any point in time. For that, you need a more powerful tool (such as WinTasks, read, WinTasks 5.0 Professional Unplugged – A Tutorial Guide).

4. Use Firewalls on the Internet

You should also seriously consider installing firewall software or using the native Windows firewall. To activate your Windows Firewall click on your control panel and select Windows Firewall. Switch the firewall on by ticking the “On” radio button.



A good firewall prevents unauthorized use and access to your computer from external sources (e.g. hackers or hijackers) plus giving you additional protection against the more common Trojans and worms. A firewall on its own will not get rid of the virus problem but when used in conjunction with your OS updates, anti-virus software and processlibrary.com information, it will give you deeper system security and protection.

5. Know your Registry

The statistics show that on average almost each PC will have about 150 errors on them due to registry fragmentation, and corrupt, unused, missing, orphaned or obsolete entries.

Residual files, unused and undeleted drivers, and corrupt or bad entries in registry settings will quickly litter even the newest of computers. The result? Frequent error messages, slow start-ups, declining and poor performance and registry integrity, unstable and frequent application errors and crashes, and, at times, even an inability to start Windows.

Some malware does affect your registry. If you keep your registry clean and know what is inside, you will be in a better position to realize immediately when performance has taken a downturn. We advise you to invest in a good registry cleaner, one that allows you to scan your registry deeply and fix all errors. Moreover, the cleaner must be able to backup your registry.

6. Backup your Data

Prevention is better than cure, however, you may still catch a virus no matter how tight your security is. It is always advisable to backup all your data regularly – at least once a week. In addition, if you are a frequent PC user, you should backup your data on a daily basis.

Fighting Spyware, Adware and Related Forms of Malware

In some cases, it is not that easy to realize that spyware and related forms of malware are installed on your system. In other cases, you will almost immediately notice changes to your web browser that you didn't make. These changes include toolbars that you didn't want installed, different homepage settings or changes to your security settings and favorites list.

Other signs of spyware include advert pop-ups which are not related to the website being viewed at the time. Many such adverts usually relate to emoticons, or diet pills and are not displayed as they are usually shown on legitimate adverts. Adverts may also appear when you are not surfing the web. Spyware is not only annoying but it slows your system performance, causes start-up time to increase, hogs your Internet connection and on occasion will lead to system crashes.

7. Invest in Anti-Spyware Software

You should install an anti-spyware software package. There are some good ones on the market and many experts go as far as suggesting installing two or three since any single package may not be powerful enough to find all the entries and changes to your registry and other files

made by spyware. Such malware is installed like any other application on your system thus leaving traces of itself on the registry files of and other places with your system. Anti-spyware works by looking for these traces and deleting them.

Also beware of what you download from the Internet. Make sure that the sources that you download stuff from are known to you – and even here you have to pay extreme attention. For example, not all companies who claim their software contains adware are really offering adware only! There's always the possibility that there is spyware disguised in the program. Make sure that you read privacy policies and license agreements.

If all these components of security architecture are included, you can feel safe that your valuable personal data is secure from prying eyes and malicious intent.

Ex. 4. Look through the text of ex. 3 again and sum up the main tips for protection from viruses?

Ex. 5. What ways of protection from viruses would you recommend to all PC users? Present your ideas to the group.



TEST YOURSELF

Test 1

1. Choose the right variant.

1. A general name for all programs that are harmful is...
 - a) software; b) hardware; c) malware.
2. What is not a type of a computer virus?
 - a) inner virus; b) companion virus; c) boot sector virus.
3. A Trojan Horse differs from a destructive virus in that it doesn't...
 - a) change; b) reproduce; c) spread.
4. Macro virus spread...
 - a) from applications that use macros; b) over network connections;
 - c) through password.
5. Robert Morris's worm 1988 is a classical example of...
 - a) macro virus; b) Trojan; c) worm.

II. Main Course

6. Why are macro viruses so successful?
 - a) They spread very quickly; b) They are harmless; c) People share much data.
7. Choose the best translation for the following sentence “Any virus has to be executed in order to operate.”
 - a) Любой вирус должен быть приведен в действие, чтобы он работал; b) Любой вирус должен быть создан, чтобы он работал; c) Любой вирус необходимо внедрить для того, чтобы он работал.
8. A computer virus is a...
 - a) program; b) file; c) segment.
9. Most viruses are pretty...
 - a) executed; b) useful; c) harmless.
10. A worm always need a ... to spread
 - a) a network connection; b) host program; c) infected computer.

2. Make your own vocabulary of terms on the topic *Computer Security*.

3. Enjoy yourself with Quiz! Write down full answers.

1. What is a computer virus? 2. What are the two functions of a computer virus? 3. What is a benign virus? 4. What is a malignant virus?
5. What do viruses do on a computer? 6. What don't viruses do? 7. What is malware? 8. What types of malware do you know? 9. What classification of computer viruses do you know? 10. What operation systems do you know? 11. Does resident virus infect memory? 12. How can you protect your computer from a computer virus? 13. What anti-virus programs do you know? 14. What are the key components of your security architecture?

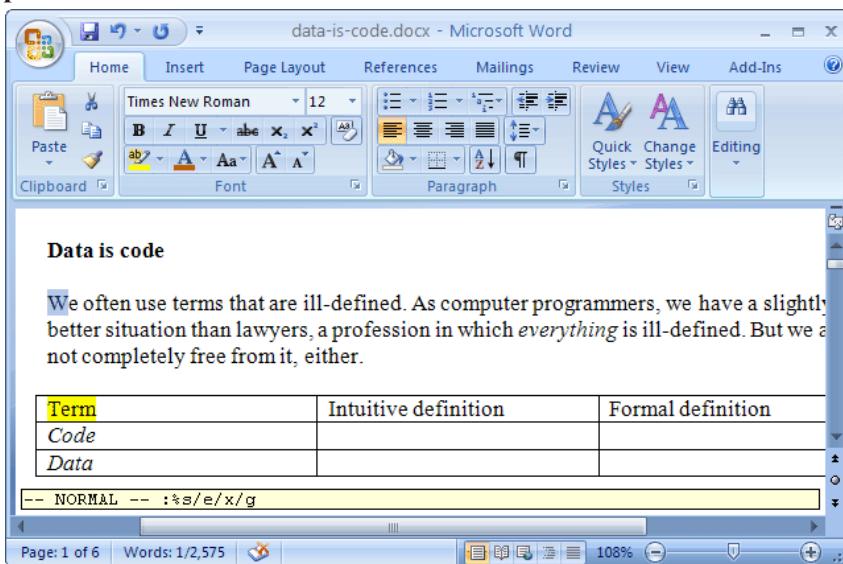
UNIT 6. E-OFFICE

WORD PROCESSING

Ex. 1. General purpose packages such as word processor and spreadsheets have a number of features in common. Match the commands 1–7 to their meanings a–g.

- | | |
|-----------|---|
| 1) Open | a) Alter data in the document. |
| 2) New | b) Begin a new file containing no data. |
| 3) Save | c) Alter the appearance of the text (e.g. change the font). |
| 4) Print | d) Start the application ready for use. |
| 5) Insert | e) Enter information into the file. |
| 6) Edit | f) Save the document to disk. |
| 7) Format | g) Send the data to the printer to be printed out. |

Ex. 2. Study the word processing screen. Can you identify its components? Use the words in the box.



Menu bar, Insertion point, Status bar, Title bar, Formatting toolbar, Standard toolbar, Ruler

Ex. 3. What is the Russian for...?

- Menu bar _____
- Insertion point _____
- Status bar _____
- Title bar _____
- Formatting toolbar _____
- Standard toolbar _____
- Ruler _____

Ex. 4. What components on the screen allow you to...

- a) insert a table?
- b) print?
- c) change the font?
- d) know which page you're on?
- e) underline part of a text?

 **Ex. 5. Read the following text and answer the question *What is the main advantage of word processing?***

Word Processing

Word processing enables you to create a document, store it electronically on a disk, display it on a screen, modify it by entering commands and characters from the keyboard, and print it on a printer.

The great advantage of word processing over using a typewriter is that you can make changes without retying the entire document. If you make a typing mistake, you simply back up the cursor and correct your mistake. If you want to delete a paragraph, you simply remove it, without leaving a trace. It is equally easy to insert a word, sentence or paragraph in the middle of a document.

Word processors usually support these features:

- **Cut and paste:** allows you to remove (cut) a section of text and insert (paste) it somewhere else.
- **Find and replace:** allows you to direct the word processor to search for a particular word or phrase. You can also direct the word processor to replace one group of characters with another everywhere that the first group appears.
- **Word wrap:** the word processor automatically moves to the next line when you have filled one line with text, and it will readjust text if you change the margins.

- **Print:** allows you to send a document to a printer to get hard copy.

- **Font specifications:** allows you to change fonts within a document.

For example, you can specify bold, italics, and underlining. Most word processor also let you change the font size and the typeface.

- **Graphics:** allows you to include illustrations and graphs in a document. Some programs let you create the illustrations within the word processor; others let you insert a picture from a different program.

- **Headers, footers and page numbering:** allows you to specify customized headers and footers that the word processor will put at the top and bottom of every page. The word processor automatically keeps track of page numbers so that the correct number appears on each page.

- **Layout:** allows you to specify different margins within a single document and to specify various methods for indenting paragraphs – how much space you leave between the margins and the paragraphs.

- **Merge:** allows you to merge text from one file into another file. This is particularly useful for generating many files that have the same format but different data. Generating mailing labels is the classic example of using merges.

- **Spell checker:** a utility that allows you to check the spelling of words. It will highlight any words that it does not recognize.

- **Thesaurus:** allows you to search for synonyms without leaving the word processor.

The line dividing word processors from desktop publishing systems is constantly shifting. In general, though, DTP applications support finer control over layout and support for full-colour documents.

Ex. 6. Label these word processing icons with the correct function.

- a) cut and paste; b) graphics; c) align left; d) undo; e) insert hyperlinks



1



2



3



4



5

Ex. 7. Ask your partner about each feature that word processing support.

SPREADSHEET BASICS AND DATABASE

 **Ex. 1. a) Read the definition of a spreadsheet and its translation.**

Spreadsheet is a piece of paper or a computer program used for accounting and recording data using rows and columns which information can be entered. **Таблица** представляет собой лист бумаги или компьютерная программа, применяемая для учёта информации с помощью строк и столбцов, в которые вводится информация.

b) Can you answer the questions of your own?

1. What is a spreadsheet?
2. What do we use a spreadsheet for?
3. What does it help to do?

 **Ex. 2. Read the text. Try to answer the questions of ex. 1 now.**

Spreadsheet Basics

A **spreadsheet program** helps you manage personal and business finances. Spreadsheets, or worksheets, are mathematical tables which show figures in rows and columns.

A **cell** can hold three types of data: text, numbers and formulae.

Formulae are entries that have an equation which calculates the value to display; we can use them to calculate totals, percentage, discounts, etc.

Spreadsheets have many built-in functions, pre-written instructions that can be carried out by referring to the function by name. For example, =SUM(D2:D7) means add up all the values in the cell range D2 to D7.

The **format menu** lets you choose font, alignment, borders, etc.

Ex. 3. Look at the picture and find out what the following words mean.

Menu bar, currency, a column (a vertical line of boxes, labelled with a letter), a row (a horizontal line of boxes, labelled with a number), a cell (the intersection of a column and a row. You enter data into the active cell.), a cell which contains the result of the formula, address of the active cell.

Sales Team Review					
Salesperson	Region Covered	February 2017 Sales	Cost of Sales	January 2017 Sales	Percent Change
Jeffrey Burke	Oklahoma	\$ 28,000	\$ 2,460	\$ 21,238	32%
Amy Fernandez	North Carolina	\$ 23,138	\$ 1,521	\$ 23,212	0%
Mark Hayes	Massachusetts	\$ 25,092	\$ 1,530	\$ 20,454	23%
Judith Ray	California	\$ 21,839	\$ 1,923	\$ 24,619	-11%
Randy Graham	South Carolina	\$ 23,342	\$ 2,397	\$ 20,045	16%
Christina Foster	Delaware	\$ 23,368	\$ 1,500	\$ 17,537	33%
Judy Green	Texas	\$ 21,510	\$ 1,657	\$ 24,951	-14%
Paula Hall	Virginia	\$ 21,314	\$ 2,418	\$ 18,082	18%
Totals		\$ 187,603	\$ 15,406	\$ 170,138	

Ex. 4. Look through the text of ex. 2 and find the terms which correspond to the following definitions.

1. Software which allows data to be displayed and managed in a table format.
2. It goes up and down and has letter labels.
3. It goes across and has number labels.
4. An area in a spreadsheet which contains data.
5. The current cell where you enter information.
6. Mathematical equations that help you calculate and analyze data.
7. Ready-to-use formulas that help you perform specialized calculations, e.g. SUM, AVERAGE, etc.

Ex. 5. Study the information about a database.

Parts of Database

A database is essentially a computerized record-keeping system.

Each unit of information you create is called a record and each record is made up of a collection of fields. Typically, a single record consists of a set of field names like: Title, FirstName, Surname, JobTitle, TelNo and ID. You fill in a form with the relevant information for each field to add a new record to the database. There are different data types.

STID	First Name	Last Name	Course ID
301	John	Smith	20
302	Mark	Davis	30
303	Steve	William	40
304	James	Brown	20

- **Text** – hold letters and numbers not used in calculations.
- **Number** – can only hold numbers used in calculations and reports.
 - **Memo** – can store long texts.
 - **Date / Time** – a date or time or combination of both.
 - **AutoNumber** – assigns a number to each record.
 - **OLE Object** – (object linking and embedding) holds sounds and pictures.
 - **Yes / No** – for alternative values like true/false, yes/no, on/off, etc.
 - **Hyperlink** – adds a link to a website.

Once you have added data to a set of records, indexes must be created to help the database find specific records and sort (classify) records faster. An index performs the same function as in the back of a book or in a library. For example, if you regularly search your database by surname, the index should be defined on this field.

Relational Database

Two database files can be related or joined as long as they hold a piece of data in common. A file of employee names, for example, could include a field called DEPARTMENT NUMBER and another file, containing details of the department itself, could include the same field. This common field can then be used to link the two files together.

Extracting information from a database is known as performing a query. For example, if you want to know all customers that spend more than £9,000 per month, the program will search the name field and the money field simultaneously.

Ex. 6. Study the following tables and complete the text below with the words from the text in ex. 5.

The relation between these tables: the key field has the same value in both tables.

Students: Table				
ID	Name	Surname	Address	Teacher ID
1	Lucy	Reeve	3 Pond Road	106
2	Joe	Davey	7 Oxford Close	107
3	Adam	Moore	4 Quebec Street	108

Teachers: Table				
Teacher ID	Name	Surname	Address	Subject
106	James	Pullin	9 The Green	Math
107	Liz	White	5 London Road	English
108	Karen	Southwell	8 Granary street	ICT

A (1) ... program allows the user to store, change and retrieve information. A database file is a collection of records. Each (2) ... contains a set of fields. Each (3) ... holds a separate piece of information; for example, a student file address, birthday, etc.

In a (4) ... database, information is stored in tables that have a connection or link with one another (see tables above).

A database lets you create an (5) ..., a list of records ordered according to the content of certain fields; this helps you search and (6) ... records into numerical or alphabetical order very fast. It also has a (7) ... function which allows you to extract information that meets certain criteria.

Ex. 7. Translate the text of ex. 5.

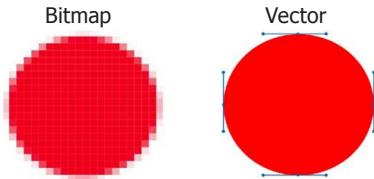
GRAPHICS AND DESIGN

Ex. 1. a) What is the Russian for...?

Graphics, software, bitmap, design, program, vector.

b) How can they be connected with each other?

Ex. 2. Look at the picture and answer the question *What is the difference between bitmap and vector images?*



Ex. 3. Read the following text and learn more information about types of graphics software.

Types of Graphics Software

Computer graphics are pictures created, changed or processed by computers. There are two categories:

1. Bitmapped graphics represent images as bitmaps; they are stored as pixels and can become a bit distorted when they are manipulated. The density of dots, known as the resolution and expressed in dots per inch, determines how sharp the image is.

2. Vector graphics represent images as mathematical formulae, so they can be changed or scaled without losing quality. They are ideal for high-resolution output.

There are different types of graphics software.

Image manipulation programs let you edit your favourite images. For example, you can scan a picture into your PC or transfer a photo from your camera and then add different effects or filters.

Painting and drawing programs, also called illustration packages, offer facilities for freehand drawing, with a wide choice of pens and brushes, colours and patterns. One example is *Windows Paint*.

Business graphics programs, also called presentation software, let you create pie charts, bar charts and line graphs of all kinds for slide shows and reports. You can import data from a database or spreadsheet to generate the graphs.

Computer-aided design (CAD) is used by engineers and architects to design everything from cars and planes to buildings and furniture. First they make a wireframe, a drawing with edges and contour lines. Then if they want to colour the objects and add texture, they create a sur-

face for the object; this is called *filling the surface*. Finally, the design is rendered to make the object look realistic. Rendering is a process that adds realism to graphics by using shading, light sources and reflections.

Desktop publishing (DTP) is based around a page layout program, which lets you import text from a word processor, clip-art (ready-made pictures) from graphics packages, and images from scanners or cameras, and arrange them all on a page. It is used to design and publish books, newspapers, posters, advertisement, etc.

Digital art, or computer art, is done with applets that use mathematical formulae to create beautiful bright shapes called fractals. A fractal is a geometrical figure with special properties. Fractals can also be used to model real objects like clouds, coastlines or landscapes.

Computer animation uses graphics programs (e.g. digital cartooning systems) to create or edit moving pictures. Each image in a sequence of images is called a *frame*.

Geographic information systems (GIS) allow cartographers to create detailed maps.

Ex. 4. Determine the types of graphics software for these users.

1. A person who wants to edit photos at home.
2. An economist who wants to present statistics in a form that can be easily understood.
3. Engineers who are creating a design of the interior and exterior of a new aeroplane.
4. A company that publishes magazines.
5. An artist who creates illustrations and free-hand drawings for books.
6. An organization that designs maps and 3D virtual Earth models.
7. Computer animators who make movies like *Toy Story* and *Shrek*.
8. A mathematician who wants to make fractal shapes of natural phenomena.

Ex. 5. Complete the sentences using the words from the box.

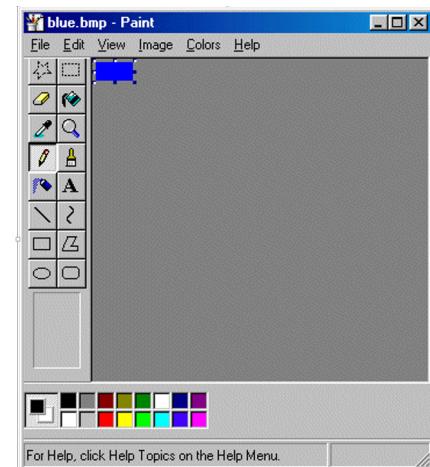
wireframe – каркасный, bitmap – раcтровый, точечный, rendering – изображение, отображение, filters – фильтры, fractals – фракталы, clip-art – иллюстрация, картинка

Painting programs work by giving a colour to each pixel in an image, creating a Unlike vector graphics, the image is a single layer, so once something is painted, it becomes part of the whole picture.

1. In painting programs and image editors, ... are special effects that can be applied to a picture, including drop shadows, textures, distortions, etc. 2. The ... model is the simplest interpretation of a true three-dimensional object. Here the object is represented by its edges and contours and is therefore similar in form to a normal engineering drawing or sketch. 3. ... adds textures to each surface and generates realistic reflections, shadows and highlights. 4. Most illustrations packages come with a bundle of resources that include ready-made ... images and a selection of fonts. 5. ... are geometrical patterns that are repeated at a small scale to generate irregular shapes, some of which are similar to objects in nature.

Ex. 6. Look at the picture Windows Paint Toolbox and make sure where these buttons are.

- a) Eraser
- b) Selection
- c) Curve
- d) Pencil
- e) Colour picker
- f) Text
- g) Zoom
- h) Shapes
- i) Line tool
- j) Airbrush
- k) Paintbrush
- l) Fill bucket



Ex. 7. Give English equivalents of the names of the buttons.

Карандаш, Ластик, Формы, Выбор цвета, Текст, Выбор, Заливка, Кривая, Зум, Линия, Кисть, Аэробраф.

Ex. 8. Look at the Windows Paint Toolbox in ex. 6 and find the tools that match these definitions.

1. This is like a magnifying glass which changes your view of a drawing.
2. This brush lets you paint in different shapes and patterns.
3. This is used to draw curves in different thicknesses.
4. This rubs out (стирает) the part of the picture you drag.
5. This tool lets you pick a colour from an area of an image, instead of choosing the colour from the colour palette.
6. This tool is used to fill a shape with a colour of your choice.
7. This tool makes straight lines.
8. This basic tool is used to draw free-hand, i.e. to draw free-form shapes.
9. This group of tools is used for drawing shapes: rectangles, ellipses and polygons.
10. This tool produces individual pixels of colour or free-hand selections around the things you want to select.
11. This tool is used to type text.

Ex. 9. You probably have a paint program at home. Describe how you can use it and what you can create with the help of this program.

Ex. 10. What is the advantage of using computer graphics in car industry?

COMPUTER PROGRAMMING

Ex. 1. What is programming? Discuss the question in pairs.

Ex. 2. Put the words into correct order to make the definition of programming.

Programming / program / the / computer / process / writing / a / is / using / a / language / of.

V Ex. 3. Learn new words and word combinations.

equation [ɪ'kweɪʒ(ə)n] – уравнение, приравнивание

list of instructions – перечень команд

guard ['ga:d] – защищать, предохранять; завершать, заканчивать

appropriate sequence [ə'prəʊpriət 'si:kw(ə)ns] – необходимая (требуемая) последовательность

program logic – логическая последовательность выполнения программы

flowchart ['fləʊfɑ:t] – блок-схема; составлять блок-схему

flowcharting – построение блок-схемы

pictorial representation – наглядное представление

predefined symbols [.pri:dɪ'faɪnd 'sɪmbəlz] – заранее заданные символы

specifcics [spə'sɪfɪks] – специальные черты, характерные особенности

template ['templeɪt] – шаблон, образец, эталон; маска

pseudocode [,sju:də(v)kəud] – псевдокод, псевдопрограмма

burden ['bə:d(ə)n] – издержки, затраты

programming rules – правила программирования

consume [kən'sju:m] – потреблять, расходовать

emphasize ['emfəsaɪz] – выделять, подчеркивать

top-down approach – принцип нисходящей разработки

looping logic – логическая схема выполнения (операций) в цикле

Ex. 4. Look through the following words. What parts of speech are they? Form new parts of speech as in the Model and translate them.

Model. *Instruct – instruction – instructor*

flowchart	consume	equate
program	mathematics	logic
emphasis	specification	define
code		

Ex. 5. Read the text and say what the essence of computer programming is.

Computer Programming

Programming is the process of preparing a set of coded instructions which enables the computer to solve specific problems or to perform specific functions. The essence of computer programming is the encoding of the program for the computer by means of algorithms. The thing is that any problem is expressed in mathematical terms, it contains formulae, equations and calculations. But the computer cannot manipulate formulae,

equations and calculations. Any problem must be specially processed for the computer to understand it, that is – coded or programmed.

The phase in which the system's computer programs are written is called the *development phase*. **The programs** are lists of instructions that will be followed by the control unit of the central processing unit (CPU). The instructions of the program must be complete and in the appropriate sequence, or else the wrong answers will result. To guard against these errors in logic and to document the program's logical approach, logic plans should be developed.

There are two common techniques for planning the logic of a program. The first technique is **flowcharting**. A **flowchart** is a plan in the form of a graphic or pictorial representation that uses predefined symbols to illustrate the program logic. It is, therefore, a *picture* of the logical steps to be performed by the computer. Each of the predefined symbol shapes stands for a general operation. The symbol shape communicates the nature of the general operation, and the specifics are written within the symbol. A plastic or metal guide called a *template* is used to make drawing the symbols easier.

The second technique for planning program logic is called pseudocode. **Pseudocode** is an imitation of actual program instructions. It allows a program-like structure without the burden of programming rules to follow. Pseudocode is less time-consuming for the professional programmer than is flowcharting. It also emphasizes a top-down approach to program structure.

Pseudocode has three basic structures: **sequence**, **decision**, and **looping logic**. With these three structures, any required logic can be expressed.

Ex. 6. Answer the questions using information of the text in ex. 4.

1. What is programming? 2. What is the essence of programming?
3. What should be done with the problem before processing by the computer? 4. What is a program? 5. What are instructions? 6. What are the main techniques for planning the program logic? 7. What is a flowchart?
8. What is a template and what is it used for? 9. What do you understand by *pseudocode*? 10. What are the basic structures of pseudocode?

Ex. 7. Find English equivalents of the following words and word-combinations in the text of ex. 4.

Совокупность закодированных команд, суть компьютерного программирования, кодирование посредством алгоритм, формулы, уравнения, вычисления, обработать особым образом, перечень команд, необходимая последовательность, защищать от ошибок, составлять план логической последовательности, общепринятая методика, логическая последовательность выполнения программы, построение блок-схемы, наглядное представление, заранее заданные символы, шаблон, псевдопрограмма, без издержек, выделять принцип нисходящей обработки, расходовать меньше времени, логическая схема выполнения операций в цикле, необходимая последовательность операций.

 **Ex. 8. Complete the text *Steps in Computer Programming* choosing appropriate words from the box. Do the task in written form.**

write the instructions, errors found, an updated version, understand the problem, a flowchart, test, a detailed description, bugs

Steps in Computer Programming

To write a program, software developers usually follow these steps:

1. First, they try to _____ and define the purpose of the program.
2. Secondly, they design _____, a diagram which shows the successive logical steps of the program.
3. Next, they _____ in a high-level language. This is called coding. The program is then compiled.
4. When the program is written, they _____ it: they run the program to see if it works and use special tools to detect _____, or errors. Any errors are corrected until it runs smoothly. This is called debugging.
5. Finally, software companies write _____ of how the program works, called program documentation. They also have a maintenance program. They get reports from users about any _____ in the program. After it has been improved, it is published as _____.



Ex. 9. Translate the sentences into Russian in written form. Pay attention to the Subjunctive Mood used in the sentences.

1. I should like to be a top specialist in computer technology. 2. It is necessary that the program should be debugged (отлажена) by a programmer. 3. It is required that the programmer should code the instructions of the program in the appropriate sequence. 4. The manager demanded that the work should be performed in time. 5. Write down the algorithm of computer operations lest you should make errors. 6. Our teacher speaks English as if he were a real Englishman. 7. Without the Sun there would be no light, no heat, no energy of any kind. 8. I wish it were summer now and we could go to the seaside. 9. American scientists suggested that the quantum generator should be called *laser*, which is the acronym for light amplification by stimulated emission of radiation. 10. I wished you had mentioned these facts while the subject was being discussed.

THE DEVELOPMENT OF PROGRAMMING LANGUAGES

Ex. 1. Read the blocks below and arrange them in their logical order. Give a suitable headline to each block.

The Development of Programming Languages

1. In the 1940s the first recognizably modern, electrically powered computers were created. Some military calculation needs were a driving force in early computer development. At that time, computers were extremely large, slow and expensive: advances in electronic technology in the post-war years led to the construction of more practical electronic computers. At that time only Konrad Zuse imagined the use of a programming language (developed eventually as Plankalkul) like those of today for solving problems.

2. A programming language is a stylized communication technique intended to be used for controlling the behaviour of a machine (often a computer). Like human languages programming languages have syntactic and semantic rules used to define meaning.

3. The development of programming languages follows closely the development of the physical and electronic processes used in today's

computers. At the beginning of the XIX century, Charles Babbage designed the first computer-like machines, which had several programs written for them (in the equivalent of assembly language) by Ada Lovelace.

4. Shortly after in 1958, Lisp was introduced. Lisp was based on lambda calculus, and is far more regular in its syntax than most non-Lisp derived languages. During the 1970s, Xerox PARC developed Smalltalk, an object oriented language. Based on the development of Smalltalk and other object oriented languages, it developed a programming language based on the syntax of C, called C++ in 1985. Sun Microsystems released Java in 1995 which became very popular as an introductory programming language taught in universities. Microsoft presented the C# programming language in 2001 which is very similar to C++ and Java. There are many, many other languages.

5. Subsequent breakthroughs in electronic technology (transistors, integrated circuits, and chips) drove the development of increasingly reliable and more usable computers. The first widely used high-level programming language was FORTRAN, developed during 1954–1957 by an IBM team led by John W. Backus. It is still widely used for numerical work, with the latest international standard released in 2004. A Computer Languages History graphic shows a timeline from FORTRAN in 1954.

6. Programming languages have been under development for years and will remain so for many years to come. They got their start with a list of steps to wire a computer to perform a task. These steps eventually found their way into software and began to acquire newer and better features. The first major languages were characterized by the simple fact that they were intended for one purpose and one purpose only, while the languages of today are differentiated by the way they are programmed in, as they can be used for almost any purpose. And perhaps the languages of tomorrow will be more natural with the invention of quantum and biological computers.

 **Ex. 2. Work in pairs. Make a list of terms from the text of ex. 1 and translate them. Compare your words with the partner's.**

Ex. 3. Give a short summary of the text *The Development of Programming Languages* in English (about 8–9 sentences).

Ex. 4. Work in groups. Devide the text of ex. 1 into parts and translate it.

PROGRAMMING LANGUAGES

Ex. 1. Look at the words in the boxes. Are they nouns, verbs or adjectives? Complete the sentences with these words.

program, programmers, programming, programmable

1. _____ is the process of writing a program using a computer language. 2. A computer _____ is a set of instructions that tells the computer how to do a specific task. 3. Most computer _____ make a plan of the program before they write it. 4. A _____ keyboard allows the user to configure the layout and meaning of the keys.

compile, compiler, compilation

5. Programs written in a high-level language require _____ – that is translation into machine code, the language understood by the processor. 6. A source program is converted into machine code by software called a _____. 7. Programmers usually _____ their programs to generate an object program and diagnose possible errors.

bug, debug, debugger, debugging

8. Any error or malfunction of a computer program is known as a _____. 9. A _____ is a program used to test and _____ other programs. 10. The process of going through the code to identify the cause of errors and fixing them is called _____.

 **Ex. 2. Read the text and answer the question *What high-level languages are described here?***

Computer Languages

Unfortunately for us, computers can't understand spoken English or any other natural language. The only language they can understand directly is **machine code**, which consists of 1s and 0s (binary code).

Machine code is too difficult to write. For this reason, we use symbolic languages to communicate instructions to the computer. For example, **assembly languages** use abbreviations such as ADD, SUB, MPY to represent instructions. The program is then translated into machine code by a piece of software called an **assembler**. Machine code and assembly languages are called **low-level languages** because they are closer to the hardware. They are quite complex and restricted to particular machines. To make the programs easier to write, and to overcome the problem of intercommunication between different types of computer, software developers designed **high-level languages**, which are closer to the English language. Here are some examples:

Fortran was developed by IBM in 1954 and is still used for scientific and engineering applications.

COBOL (Common Business Oriented Language) was developed in 1959 and is mainly used for business applications.

Basic was developed in the 1960s and was widely used in microcomputer programming because it was easy to learn. Visual BASIC is a modern version of the old BASIC language, used to build graphical elements such as buttons and windows in Windows programs.

Pascal was created in 1971. It is used in universities to teach the fundamentals of programming.

C was developed in the 1980s at AT&T. It is used to write system software, graphics and commercial applications. **C++** is a version of **C** which incorporates object-oriented programming: the programmer concentrates on particular things (a piece of text, a graphic or a table, etc.) and gives each object functions which can be altered without changing the entire program. For example, to add a new graphics format, the programmer needs to rework just the graphics object. This makes programs easier to modify.

Java was designed by Sun in 1995 to run on the Web. Java applets provide animation and interactive features on web pages.

Programs written in high-level languages must be translated into machine code by a **compiler** or an **interpreter**. A compiler translates the source code into **object code** – that is, it converts the entire program into machine code in one go. On the other hand, an interpreter translates the source code line by line as the program is running.

It is important not to confuse programming languages with **markup languages**, used to create web documents. Markup languages use instructions, known as **markup tags**, to format and link text files. Some examples include:

HTML, which allows us to describe how information will be displayed on web pages.

XML, which stands for Extensible Markup Language. While HTML uses pre-defined tags, XML enables us to define our own tags; it is not limited by a fixed set of tags.

VoiceXML, which makes Web content accessible via voice and phone. VoiceXML is used to create voice applications that run on the phone, whereas HTML is used to create visual applications (for example, web pages).

Ex. 3. Answer the following questions to the text of ex. 2.

1. Do computers understand human languages? Why? / Why not?
2. What is the function of an assembler? 3. Why did software developers design high-level languages? 4. Which language is used to teach programming techniques? 5. What is the difference between a compiler and an interpreter? 6. Why are HTML and VoiceXML called markup languages?

Ex. 4. Complete these sentences according to the text of ex. 2.

1. ...allows us to create our own tags to describe our data better. We aren't constrained by a pre-defined set of tags the way we are with HTML.
2. IBM developed ... in the 1950s. It was the first high-level language in data processing.
3. ...applets are small programs that run automatically on web pages and let you watch animated characters, play games, etc.
4. ...is the HTML of the voice web. Instead of using a web browser and a keyboard, you interact with a voice browser by listening to pre-recorded audio output and sending audio input through a telephone.
5. This language is widely used in the business community. For example, the statement ADD VAT to NET-PRICE could be used in a ... program.

Ex. 5. Work in pairs. Student A reads about Visual BASIC, Student B reads about VoiceXML. Try not to look at your partner's text. Then complete your part of the table below.

Student A	Student B
<p>Visual BASIC was developed by Microsoft in 1990. The name BASIC stands for Beginner's All-purpose Symbolic Instruction Code. The adjective Visual refers to the technique used to create a graphical user interface. Instead of writing a lot of instructions to describe interface elements, you just add pre-defined objects such as buttons, icons and dialog boxes. It enables programmers to create a variety of Windows applications.</p>	<p>VoiceXML (Extensible Markup Language) was created in 2000 to make web content accessible via the telephone. For input, it uses voice recognition. For output, it uses pre-recorded audio content and text-to-speech Applications:</p> <ul style="list-style-type: none"> • Voice portals, where you can hear information about sports, news, traffic, etc. • Voice-enabled intranets (private networks) • Voice e-commerce • Home appliances controlled by voice

Questions	Visual BASIC	VoiceXML
What does Visual BASIC / VoiceXML stand for?		
When was it developed?		
What are its main features?		
What is it used for?		

Ex. 6. Ask your partner about the other language and complete the table.

PROBLEM-ORIENTED LANGUAGES

- Ex. 1. Learn new words and word-combinations.**
- programming language – язык программирования
 coded form – кодированный вид, кодированное представление
 to convey – передавать, сообщать
 to improve – улучшать, совершенствовать
 machine-oriented language – машинно-ориентированный язык
 business-oriented language – язык для (программирования) экономических задач
 problem-oriented language – проблемно-ориентированный язык
 string of binary – строка двоичного представления
 data handling – обработка данных; работа с данными

field-name length – длина имени поля

incorporate features – включать свойства, особенности

versatile – многофункциональный, разносторонний, универсальный

generous – большой, значительный (о количестве)

mathematical relationship – математическая связь (соотношение)

Ex. 2. Read the text and explain what problem-oriented languages are.

The process of writing program instructions is called coding. The instructions will be written on a form called a coding form. The instructions we write will be recorded in a machine-readable form using a key-punch, key-to-tape, or key-to-disk, or entered directly into computer; memory through a terminal keyboard.

The computer cannot understand instructions written in just any old way. The instructions must be written according to a set of rules. These rules are the foundation of a programming language. A programming language must convey the logical steps of the program plan in such a way that the control unit of the CPU can interpret and follow the instructions. Programming languages have improved throughout the years, just as computer hardware has improved. They have progressed from machine-oriented languages that use strings of binary 1s and 0s to problem-oriented languages that use common mathematical and / or English terms.

There are over 200 problem-oriented languages. The most common of them are COBOL, Fortran, PL/I, RPG, Basic, Pascal.

1. COBOL

COBOL was the most widely used business-oriented programming language. COBOL was designed to solve problems that are oriented toward data handling and input-output operations. Of course, COBOL can perform arithmetic operations as well, but its greatest flexibility is in data handling. COBOL also was designed as a self-documenting language. Self-documenting languages are those that do not require a great deal of explanation in order to be understood by someone reading the program instructions. The self-documenting aspect of COBOL is made possible by its sentencelike structure and the very generous maximum symbolic field-name length of 30 characters. With a field-name length of

up to 30 characters, the name can clearly identify the field and its purpose.

2. Fortran IV

The Fortran IV language is oriented toward solving problems of a mathematical nature. The name Fortran comes from the combination of the words *formula translation*. The version of Fortran IV has been designed as algebra-based programming language. Any formula or those mathematical relationships that can be expressed algebraically can easily be expressed as a Fortran instruction. Fortran is the most commonly used language for scientific applications.

3. PL/I

PL/I stands for programming language I. It was designed as a general-purpose language incorporating features similar to COBOL for data handling instructions and features similar to Fortran for mathematical instructions. PL/I is much more than a combination of the good features of both COBOL and Fortran, as it has many capabilities that are unique. Yet, although PL/I is one of the most versatile and the most powerful of the programming languages, it is not the most commonly used. COBOL and Fortran have been available for a longer period of time than PL/I, and many more users work with those languages.

Ex. 3. Look through the text of ex. 2 again and answer the questions below.

1. What is coding?
2. What is a code?
3. How must instructions be written?
4. What is the foundation of any programming language?
5. How was the development of programming languages progressing throughout the years?
6. What are the most common problem-oriented languages?
7. What is COBOL?
8. What functions was COBOL designed for?
9. What does Fortran serve for?
10. What capabilities has PL/I?

Ex. 4. In the text of ex. 2, find English equivalents for the following word-combinations.

Языки программирования; блок-схема; кодированная форма; вид, удобочитаемый для компьютера; в соответствии с набором правил; представить логические шаги программы; таким образом; совершенствовать языки программирования; машинно-ориентированные языки; проблемно-ориентированные языки; обычный термин; язык

для программирования экономических задач; обработка информации; операции по вводу-выводу данных; гибкость; идентифицировать поле и его цели; решение проблем математического характера; сферы научного применения; универсальный язык; включать свойства; уникальные возможности; многофункциональный и самый мощный из языков программирования.

Ex. 5. Work in groups. Devide the text of ex. 2 into parts and translate them into Russian.

Ex. 6. Translate the following sentences into Russian. Pay attention to the form of Conditional sentences.

Condition I. 1. If you try very hard you can master any language. 2. If you want to master any language you must know at least three thousand words. 3. You will improve your pronunciation if you read aloud every day. 4. Time will be saved if one uses a computer. 5. If you learn all the words of the lesson you will write your test successfully. 6. If you or I add up two numbers of six figures without a calculator, it will take us a lot of time.

Condition II. 1. It would be a good thing if you didn't smoke. 2. If the earth didn't rotate it wouldn't have the shape of a ball. 3. If I had the time I should help you to solve the problem. But I must be off. 4. I should translate the article without difficulty if I knew English well. 5. If I were in your place I should learn to speak English fluently. 6. Were you asked to explain why addition is performed the way it is, you would probably have to think for a while before answering.

Condition III. 1. I decided to stay at home last night. I would have gone out if I hadn't been so tired. 2. Had he not been busy, he wouldn't have missed that conference. 3. Why didn't you phone me yesterday? I would have helped you. 4. If you had attended preliminary courses, you would have passed you examinations more successfully. 5. Had the manager had this information before, he would have acted differently. 6. The binary system is particularly appropriate to the nature of an electric machine; if it had not existed, computer designers would have had to invent it.

RPG II , BASIC, PASCAL

Ex. 1. Match the words from A column and their synonyms in B column.

A

- 1) to indicate
- 2) different
- 3) proficient
- 4) inexperienced
- 5) main
- 6) popular
- 7) simplicity
- 8) to require
- 9) practical
- 10) unusual
- 11) to use

B

- a) well-known
- b) to point out
- c) experienced
- d) to apply
- e) extraordinary
- f) various
- g) immature
- h) pragmatic
- i) simpliness
- j) basic
- k) demand

Ex. 2. Translate following the word-combinations into Russian.

Business-oriented language, considerably different from, prewritten program, master program, a ‘quick-and-dirty’ programming language, relatively inefficient, processing speed, the latest version, additional capabilities, proficient, an easy-to-learn language, a universal language, mathematically oriented, solve problems, large volumes, not practical, was named after, practical calculators, somewhat unusual, in logical modules, to implement.

 **Ex. 3. Work in groups. Read the following text and say what this text is about. What programming languages are mentioned in the text?**

RPG II is a business-oriented language. The name stands for report program generator. RPG is considerably different from other programming languages. RPG is, in effect, a large prewritten program. The programmer simply indicates the options within the master program that are to be used and, through a set of indicators, when they are to be used.

RPG was originally referred to as a ‘quick-and-dirty’ programming language. That is, it is quick for the programmer to write and relatively inefficient in its use of main storage and processing speed. The latest ver-

sion of RPG, called RPG II, greatly improved the language and gave it additional capabilities. RPG has an advantage over COBOL in that it requires less training for a programmer to become proficient in it. For this reason, RPG is commonly used on many smaller computers and in small business.

BASIC is the acronym for beginner's all-purpose symbolic instruction code. It was developed in Dartmouth College as an easy-to-learn programming language for students and inexperienced programmers. Its key design goal is simplicity. BASIC has become a very popular language in systems where many users share the use of a computer through terminals and it has become a universal language for personal computers.

The language BASIC is mathematically oriented, that is, its typical use is to solve problems of a mathematical nature. Because BASIC programs are usually executed from a terminal or microcomputer where input is entered through a keyboard and printed output is relatively slow, problems of a business nature requiring large volumes of input-output data are usually not practical.

PASCAL was invented in 1970 by Professor Niklaus Wirth of Zurich, Switzerland. It was named after the mathematician Blaise Pascal, who invented one of the earliest practical calculators. PASCAL is a mathematically oriented programming language and, as such, is most commonly used in mathematics, engineering, and computer science departments of colleges and universities. This language is somewhat unusual in that it was designed to be a structured language. This means that the program must be written in logical modules which are in turn called by a main controlling module. Much of PASCAL'S popularity is due to work done at the University of California at San Diego, where PASCAL has been implemented on several different computers including microcomputers.

Ex. 4. Complete the sentences according to the text of ex. 4.

1. RPG II is a....
2. RPG is, in effect....
3. The latest version of RPG....
4. BASIC has become a very popular language....
5. The language BASIC is mathematically....
6. PASCAL was named after the....

7. PASCAL is a mathematically oriented....
8. At the University of California PASCAL....

 **Ex. 5. Put questions of different types to the text of ex. 4. Ask your partner to answer them.**

THE CONVERSION OF SYMBOLIC LANGUAGES

Ex. 1. Fill in the blanks with suitable prepositions.

1. Most ___ the symbolic languages are oriented toward the particular application areas.
2. The only thing that means addition ___ a computer is its binary machine code.
3. Machine code can be understood ___ the computer, but it is difficult ___ humans.
4. A translator translates the symbolic program ___ machine code.
5. There are three types ___ language processors.

Ex. 2. Find in the text from ex. 4 the nouns that are formed with the suffix *-tion*.

Ex. 3. Find in the text from ex. 4 verbs that are used in the Passive Voice.

 **Ex. 4. Read the following text and answer the question *What is the disadvantage of symbolic language?***

The Conversion of Symbolic Languages

Most of the symbolic languages are oriented toward the particular application areas of business or science (math). The one problem with all symbolic languages is that none of them can be understood by a computer. The symbolic languages may say AP, ADD, or use a ‘plus’ sign to indicate an addition step, but the only thing that means addition to a computer is its binary machine code. We have symbolic programs that are relatively easy for humans to understand, but they cannot be understood by computers. On the other hand, we have machine code that is understood by the computer, but it is difficult for humans to use. The solution is a translator that translates the symbolic program into machine code. The translator allows the human to work with relatively easy-to-understand symbolic languages and it allows the computer to follow instructions in machine code. The translation of symbolic instructions to

machine code is accomplished through the use of a program called a *language processor*. There are three types of language processors. They are called **assemblers**, **compilers**, and **interpreters**. Each translates symbolic instructions to machine code, but each does it differently.

(The translator is a program itself. It is part of a group of programs, called the operating systems, that help us to use the computer.)

Ex. 5. Read the sentences and correct the mistakes according to the text of ex. 4 if there are any. Translate these sentences.

1. Most of the symbolic languages are not oriented toward the specific areas of business or science. 2. There are several problems with all symbolic languages. 3. The only thing that means addition to a computer is its binary machine code. 4. Machine code is understood by humans, but it is difficult for computers. 5. A *language processor* is a program that accomplish the translation of symbolic instructions to machine code. 6. There are two types of language processors: assemblers and compilers.

Ex. 6. Answer the questions according to the text of ex. 4.

1. What helps computers to understand commands? 2. Can symbolic programs that are relatively easy for humans be understood by computers? 3. Is it difficult for people to understand machine code? 4. What translates the symbolic program into machine code? 5. What does a translator help people to do? 6. What is a language processor? What types of it are there? 7. What is a translator?

Ex. 7. Make a summary of the text of ex. 4 in Russian and in English.

RUNNING THE COMPUTER PROGRAM

Ex. 1. Translate the words in brackets to complete the sentences.

1. The operating system is a (совокупность) ... of program.
2. The (программа управления) ... is a main-storage-resident program.
3. (Языковые процессоры) ... are programs that translate source programs into object programs.

4. The service programs are programs that are commonly used in all (центрах обработки данных)....

5. There are three types of language processors: assemblers, compilers, and (интерпретаторы)....

Ex. 2. Put the prepositions from the box in to the following word-combinations. Translate the sentences.

on, for, into, for, from, to, in, from, on, to

- 1) to schedule jobs ____ the computer
- 2) to translate source programs ____ object programs
- 3) to sort data stored ____ secondary storage devices
- 4) to copy data ____ any input device ____ any output device
- 5) to be used ____ data processing centers
- 6) to prepare object programs ____ execution
- 7) to transfer data ____ device ____ device
- 8) sorting data ____ magnetic tape or disk

 **Ex. 3. Read the following text and say what programs are called control programs?**

Running a Computer Program

The operating system is a collection of programs provided by the computer's manufacturer that allows us to schedule jobs for the computer, to translate source programs into object programs, to sort data stored on secondary storage devices, and to copy data from any input device to any output device. These programs are called **control programs, language programs** and **utility programs**. The control program (often called the supervisor, monitor, or executive) is a main-storage-resident program. Its functions are to schedule jobs, shedule input and output for our programs, and to monitor the execution of our programs. The language processors are programs that translate source programs into object programs. There are three types of language processors: assemblers, compilers, and interpreters. Each language has its own language processor. The service programs are programs that are commonly used in all data processing centers. They have functions that are required by everyone using a computer. Examples of service programs include linkage editors to prepare object programs for execution, a librarian to catalog programs into a li-

brary area on magnetic disc, utility programs to transfer data from device to device, and sort-merge programs for sorting data on magnetic tape or disk.

Ex. 4. Translate the text *Running a Computer Program*.

Ex. 5. Make a short summary of the text *Running a Computer Program*. Retell it to your partner.

 **Ex. 6. Define the non-finite forms of the verbs in the following sentences. Translate them in written form.**

1. The problems to be studied are of great importance. 2. The problem studied helped us understand many things. 3. To study the problem we must make some experiments. 4. To study the problem means to give answers to many questions. 5. Having studied the problem we could answer many questions. 6. The problem studied is unlikely to be of great interest. 7. Scientists studying the problem made a lot of experiments to get answers to the required questions. 8. The problem to have been studied last year will not help us to solve our task now. 9. Having been well prepared for the examination the pupils could answer all the questions the teacher asked them. 10. The problem to be discussed at the meeting requires careful consideration.

TESTING THE COMPUTER PROGRAM

 **Ex. 1. Learn the new words.**

bugs – ошибки

to deal with – иметь дело с

coding error – ошибка кодирования

logic error – логическая ошибка

successfully – успешно

to identify – определять

location – расположение

relatively – относительно

to avoid – избегать

responsibility – ответственность

thoroughly – тщательно

in order to – для того чтобы

to verify – проверять, сверять
debug packages – отладочный пакет программ
tracing routines – программа трассировки
to assist – помогать, оказывать помощь
decisions – решения
memory dump – дамп памяти
a printout – распечатка

 **Ex. 2.** Read the following text and say how many types of errors are there.

Testing a Computer Program

There are two kinds of errors or bugs with which programmers must deal.

The first type is the **coding error**. Such errors are syntax errors that prevent the language processor from successfully translating the source program to object program code. The language processor identifies the nature and the location of the error on the source program listing, so these errors are relatively easy to find and correct.

The second type of bug is the **logic error**. The computer program can be successfully translated, but the program does not produce the desired results. These errors are generally much more difficult to find and to correct than are coding errors. Logic errors can be avoided through careful planning of the program logic, but it is the programmer's responsibility to test thoroughly all of the program's functions, in order to verify that the program performs according to specifications.

There are many tools provided to the programmer to help in debugging the program logic. These tools are called **debug packages** or **tracing routines**. They assist the programmer in following the logic by printing out calculation results and field values used in making logic decisions in the program. In a few cases it may be necessary to use a memory dump – a printout of the instructions and date held in the computer's memory – in order to find the cause of logic errors.

Ex. 3. In the text *Testing a Computer Program*, find the sentences where new vocabulary is used. Read them aloud and translate.

 **Ex. 4.** Put different types of questions to the text *Testing a Computer Program*. Ask your partner to answer them.

Ex. 5. Make a short summary of the text *Testing a Computer Program*. Use the scheme given below and the words in the box for help.

The title of the text is....

The text is about (deals with, describes, points out)...

the problem of....

the question of....

different aspects of....

The aim of the text is...

to study....

to explain the difference between....

to give the general idea of....

to analyze....

The key words of the text are....

The text is informative (dry, boring, interesting)....

The language of the text is ... (quite manageable, there are practically no unknown words, quite easy to read and understand).

Summing up, it should be stressed that the text...

provides the systematic study of...

considers the main characteristics of...

firstly, to begin with, secondly, however, on the one hand / on the other hand, of course, thus, therefore, also, in addition, as described, for example, for instance, in fact, to sum up, in conclusion

 **Ex. 6.** Translate the following sentences. Pay attention to the different grammatical constructions in it.

1. Accuracy is one of the major items in judging a control system. The higher the accuracy of the system, the less errors the system makes.
2. The digital computer employs the principle of counting units, digits, and hence, if properly guided, gives answers which have a high degree of accuracy.
3. Electronic computers can choose which of several different operations are the right ones to make in given circumstances. Never before has mankind had such a powerful tool available.
4. In many cases a man has proved to be but an imperfect controller of the machines

he has created. Thus, it is natural, that wherever necessary, we should try to replace the human controller by some form of automatic controller. 5. It is necessary to draw a distinction between calculating machines and computers, the former requiring manual control for each arithmetic step and the latter having the power to solve a complete problem automatically. 6. Many servomechanisms and regulators are known to be composed of a number of control elements connected in series, the output of one being used as the input to the next. 7. Digital programming implies the preparation of a problem for a digital computer by putting it in a form which the computer can understand and then entering this program into the computer storage unit. A problem to be solved by a digital computer must be expressed in mathematical terms that the computer can work with. 8. Among all forms of magnetic storage, magnetic tapes were the first to be proposed in connection with digital computers. 9. Programming a computer involves analyzing the problem to be solved and a plan to solve it.



TEST YOURSELF

Test 1

1. Match the words and the punctuation marks and symbols.

- | | |
|---------------------|------------|
| 1) full stop | a) ! |
| 2) comma | b) @ |
| 3) exclamation mark | c) , |
| 4) question mark | d) & |
| 5) single quotes | e) . |
| 6) double quotes | f) = |
| 7) dollar sign | g) 'Hello' |
| 8) percentage sign | h) → |
| 9) ampersand | i) * |
| 10) asterisk | j) "Hello" |
| 11) hash | k) _ |
| 12) brackets | l) - |
| 13) left bracket | m) ? |
| 14) square brackets | n) / |

-
- | | |
|--------------------|--------|
| 15) underscore | o) () |
| 16) hyphen | p) \$ |
| 17) plus sign | q) \ |
| 18) equals sign | r) [] |
| 19) colon | s) % |
| 20) semicolon | t) (|
| 21) “at” sign | u) # |
| 22) forward slash | v) : |
| 23) backward slash | w) + |
| 24) arrow | x) ; |

2. Choose the best words.

1. Making changes to a text is called
a) altering; b) renewing; c) editing
2. To change normal text to italic, first you must ... the text you want to format.
a) choose; b) take; c) select
3. A very pale image behind the text is called
a) an ink mark; b) a watermark; c) a grey mark
4. To divide the text into two pages, insert a
a) page break; b) page stop; c) page change
5. The numbers at the bottom of the page are
a) page numbers; b) sheet numbers; c) paper numbers
6. An extra note at the bottom of the page (usually in a smaller font size) is called a
a) bottom note; b) foot; c) footnote
7. In word processing, to put things into alphabetical order is to
a) sort; b) organise; c) order
8. A list of contacts, addresses etc. is called
a) an archive; b) a list; c) a database
9. Producing a document on your computer and sending it direct to a printing press is
a) computer publishing; b) desktop publishing; c) electronic publishing
10. Cut or copied text is temporarily stored in the
a) clipboard; b) clip; c) clipart

3. Answer the questions.

1. Why is word processing important?
2. What is the main advantage of word processing?
3. What is a spreadsheet?
4. How does a spreadsheet program help you?
5. What is a database?

4. Answer the questions.

1. What features does a word processor usually support?
2. What does word processing enable you to do?
3. What do we use database for?
4. What does a spreadsheet program help you to do?
5. What is computer graphics?
6. What are the categories of graphics?
7. What is computer programming?
8. What is the essence of computer programming?
9. What are low-level languages?
10. Why did software developers design high-level languages?
11. What is coding?
12. What is a language processor?
13. How many types of language processors do you know?
14. Why do we use a translator that translates the symbolic program into machine code?
15. What is the problem with all symbolic languages?
16. What is controlling programs and their functions?
17. What types of errors can programmers face testing a computer program?

5. Complete the tasks.

1. Name different data types.
2. Give the examples of field names in database.
3. Give the definition of spreadsheet.
4. Name different types of graphics software.
5. Name two common techniques for planning the logic of a program.
6. Name several high-level languages.

7. Translate into Russian: *control programs, language programs, utility programs.*

6. Give English equivalents for the words given below.

Языки программирования, блок-схема, набор правил, кодированная форма, проблемно-ориентированные языки, машинно-ориентированные языки, многофункциональный язык программирования, язык для программирования экономических задач, обработка информации.

7. Fill the table with the appropriate information.

Programming language	When was it designed?	Where is it used?
FortraN		
COBOL		
Basic		
Pascal		
C		
Java		

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Учебное издание

Кочик Елена Ивановна

Английский язык для профессионального общения.

Вычислительная техника

English for Professional Communication.

Computer Engineering

Учебное пособие

2-е издание, исправленное

Редактор и корректор *Л.Л. Мухарская*

Технический редактор *Е.Е. Соколова*

Дизайн обложки *С.Л. Прокопцовой*

Подписано в печать 22.04.2020. Формат 60×84/16.

Бумага офсетная. Ризография.

Усл. печ. л. 13,52. Уч.-изд. л. 10,52. Тираж 500 экз. Заказ 49.

Республиканский институт профессионального образования.
Свидетельство о государственной регистрации издателя, изготовителя,
распространителя печатных изданий № 1/245 от 27.03.2014.
Ул. К. Либкнехта, 32, 220004, Минск. Тел.: 374 41 00, 272 43 88.

Отпечатано в Республиканском институте
профессионального образования. Тел. 373 69 45.

NOTES

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Партнеры ООО «Директ-Медиа» в Беларуси: Национальная библиотека Беларуси и Республиканский институт профессионального образования.

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- около 48 тысяч учебников и учебных пособий издательств Российской Федерации;
- собрание учебных изданий Республиканского института профессионального образования.

Преимущества подключения к ЭБС:

- чтение из любого места, где есть доступ к сети Интернет;
- удобная система поиска и классификатор книг;
- возможность использования учебных материалов обучающимся и преподавателями;
- подключение учреждений образования по низкой стоимости с бесплатным обновлением для подписанных пользователей.

Для подключения к коллекции ЭБС «Профессиональное образование» УО РИПО приглашает заключить договор на оказание информационных услуг. Для ознакомления с ресурсом вам будет предоставлен бесплатный доступ сроком на 1 месяц и оказана консалтинговая поддержка.

Вопросы и заявки присылайте на e-mail: knigaripo@gmail.com.

Все подробности вы можете узнать
в Центре учебной книги и средств обучения УО РИПО:
г. Минск, ул. К. Либкнехта, 32, каб. 214
и по телефону 8(017) 374 41 00.

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