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ENGLISH FOR STUDENTS OF ENGINEERING FACULTIES (BASIC LEVEL)

Учебное пособие (часть 2)

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Данное учебно-методическое пособие предназначено для студентов 1 курса ТУСУРа направлений бакалавриата ФЭТ, ФСУ, ФВС, РТФ, РКФ очной формы обучения. Пособие составлено в соответствии с целями и задачами дисциплины «Английский язык». Учебное пособие предназначено для обучения во втором семестре (36 часов аудиторных занятий и 36 часов самостоятельной работы) для студентов с уровнем английского языка Elementary.

Каждый урок состоит из следующих разделов:

- Vocabulary (Wordbank)
- Reading
- Grammar
- Check yourself
- Technical reading

После каждых двух уроков предлагается раздел «Revision» для повторения пройденного материала и подготовки к контрольным работам.

Учебное пособие «English for students of engineering faculties (basic level)» размещено в электронном виде на образовательном портале ТУСУРа

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Lesson 6. Integrated circuits. Part 1. The invention of the integrated circuit

Starter

- Do you know what an IC is? - Where are ICs used? - Who created the IC?

Word bank

1. assembly – монтаж, сборка	8. effective – эффективный
2. automated – автоматизированный	9. to have to – должен, приходится
3. a component – деталь, компонент	10. a layer – слой
4. to connect – соединять	11. manually – вручную
5. to construct – строить, создавать	12. to process – обрабатывать
6. to depend on – зависеть от ч.-л.	13. a solution to a problem – решение проблемы
7. different – отличный, другой	14. a wire – провод

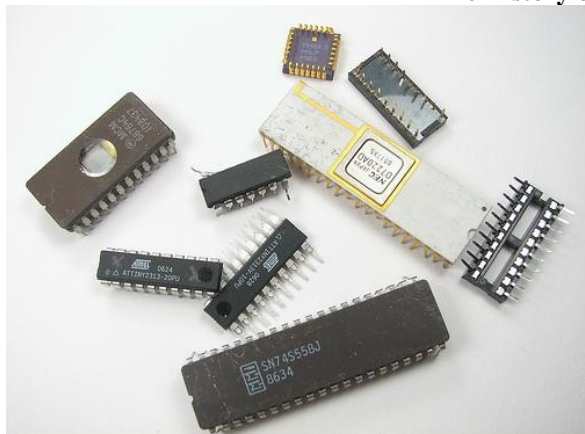
Task 1. Translate the related words into Russian, pay attention to the stress.

1. a computer, to compute, a computation;
2. a process, to process, a processor;
3. a connection, to connect, a connector, connectable;
4. to depend, a dependence, depended, depending, independent ;
5. to construct, a constructor, a construction;
6. an assembly, to assemble, an assembler;
7. automated, to automate, automation.

Task 2. Read the text quickly and match the headings (1-7) to the paragraphs (A - G)

- A. Assembly
- B. Electric Circuit
- C. Invention
- D. Size
- E. Structure of an IC
- F. Two Inventors
- G. Use of ICs

The History of the Integrated Circuit



Different integrated circuits

<http://www.flickr.com/photos/oskay/1365044600/>

5 **1.** Our world is full of integrated circuits. You find several of them in computers. For example, most people have probably heard about the microprocessor. The microprocessor is an integrated circuit that **processes** all information in the computer. Integrated circuits are also found in almost every modern electrical device such as cars, television sets, CD players, cell phones, etc.

15 **2.** The integrated circuit is a very advanced electric circuit. An electric circuit is made from **different** electrical **components** such as transistors, resistors, capacitors and diodes that are **connected** to each other in different ways. **Depending on** how the components are put together when the circuit is built, everything from a burglar alarm to a computer microprocessor can be **constructed**.

20 **3.** Before the integrated circuit, **assembly** workers **had to construct** circuits by hand, but engineers soon

realized that manually assembling the vast number of tiny components needed in, for example, a computer would be impossible, especially without generating a single faulty connection.

4. Another problem was the size of the circuits. If the components of the computer were too large or the wires interconnecting them too long, the electric signals couldn't travel fast enough through the circuit, thus making the computer too slow to be **effective**.

5. In the summer of 1958 Jack Kilby at Texas Instruments found a **solution** to these problems. Kilby's idea was to make all the components and the chip out of the same block (monolith) of semiconductor material. In September 1958, his first integrated circuit was ready.

6. Although the first integrated circuit was pretty crude and had some problems, the idea was groundbreaking. While all the parts were made out of the same block of material and the metal needed to connect them was added as a layer on top of it, there was no more need for individual discrete components. No more wires and components had to be assembled manually. The circuits could be made smaller and the manufacturing process could be **automated**.

7. In 1959 Jack Kilby and Texas Instruments received U.S. patent for miniaturized electronic circuits. But Kilby was not the only one. Around the same time in California, another man had similar ideas. He also realized a whole circuit could be made on a single chip. Today, both men are acknowledged as having independently conceived of the idea.

Adapted from:

55 http://www.nobelprize.org/educational/physics/integrated_circuit/history/

Useful words and phrases

1. acknowledged – признанный
2. advanced – сложный, продвинутый
3. although – но, хотя
4. a burglar alarm – сигнализация
5. by hand – вручную, руками
6. to conceive – задумать, дать начало
7. crude – незрелый, непродуманный
8. discrete – отдельный, дискретный
9. enough – достаточно
10. especially – особенно
11. faulty – неисправный
12. ground-breaking – новаторский, революционный
13. impossible – невозможно
14. large – большой
15. miniaturized – уменьшенный
16. needed – нужный
17. pretty – довольно
18. similar – похожий
19. size – размер
20. through – сквозь, через
21. thus – таким образом
22. tiny – очень маленький
23. a top – верх
24. vast number of – большое количество
25. whole – весь, целый
26. without – без

Task 3. Read the text again and define if the following sentences are true or false.

1. A microprocessor processes the information in a television set.
2. An electric circuit is an advanced integrated circuit.
3. An electric circuit is made of only transistors and resistors.
4. You can build different devices from the same parts.
5. Integrated circuits were constructed by hand.
6. You can't construct a computer manually because some of the connections would be faulty.
7. The manually constructed computer would not be effective because of the length of wires.
8. Kilby constructed an integrated circuit out of the single block of semiconductor material.
9. His idea was good but device didn't work right.
10. There are no wires in an integrated circuit.
11. A layer of metal works as a conductor between components of an integrated circuit.
12. There were two scientists who developed an IC independently.

Task 4. Answer the questions.

1. Where can you find an IC?
2. What does a microprocessor do?
3. What does electric circuit consist of?
4. Why can't you build a computer manually?
5. Why the size of a circuit was a problem?
6. When was this problem solved?
7. When was the first IC created?
8. What did an IC consist of?
9. When did Kilby receive the patent for IC?
10. Who was another man with a similar idea?

Task 5. Choose the right translation.

1. advanced electric circuit
 - a. схема сложной электрики
 - b. сложная электрическая схема
 - c. сложная электроника схем
2. different electrical components
 - a. различие электрических компонентов
 - b. компоненты различной электрики
 - c. различные электрические компоненты
3. burglar alarm
 - a. сигнал о грабителе
 - b. охранная сигнализация
 - c. тревога от грабителей

4. a computer microprocessor
 - a. микропроцессор компьютера
 - b. компьютер с микропроцессором
 - c. компьютер микропроцессора
5. assembly workers
 - a. сбор рабочих
 - b. рабочие в сборе
 - c. рабочие-сборщики
6. manually assembling components
 - a. ручная сборка компонентов
 - b. компоненты, собранные вручну
 - c. этапы ручной сборки
7. miniaturized electronic circuits
 - a. уменьшенные электронные схемы
 - b. электроника уменьшенных схем
 - c. уменьшение электронных схем

Task 6. Match the two columns to make sentences, consult the text.

1. Most people have probably...	a. everything can be constructed.
2. The microprocessor is an integrated circuit...	b. the idea was groundbreaking.
3. Depending on how the components are put together ...	c. that processes all information in the computer.
4. Kilby's idea was to make all the components and the chip ...	d. that a whole circuit could be made on a single chip.
5. With the invention of ICs no more wires ...	e. heard about the microprocessor.
6. Although the first IC had some problems, ...	f. and components had to be assembled manually.
7. Except Jack Kilby one more person realized ...	g. out of the same block of semiconductor material.

Task 7. Match the antonyms.

1. possible	a. automatically
2. effective	b. group
3. ready	c. impossible
4. individual	d. ineffective
5. dependent	e. solution
6. manually	f. unready
7. problem	g. independent

Task 8. Fill in the table.

verb	translation	noun	translation
to solve			
		connection	
		construction	
to add			
		manufacture	
to process			
		dependence	

Task 9. Fill in the sentences with the right part of speech. Use words from the previous exercise.

- He is a very practical person. He can always find the ... to any problem.
It was not easy to ... this problem but they did it.
- ... of these devices requires much energy and many skilful specialists.
At that laboratory scientists ... and test new medicines.
- The ... of this building took 2 years and cost much money.
The ... of oil and gas production takes a lot of time.
- Microprocessors ... information in your computer.
- Students often ... diagrams to their course works.
... is one of common arithmetic operations.
- Hello, Nick! Oh! The ... is bad! I can't hear you well!
- Wires ... components in a circuit.

- Every year builders ... lots of buildings of different architecture styles.
- Our plans for weekends ... on the weather.
- His ... on computer games brings him many problems in the studying process.

Task 10. Match the two columns to make phrases. Translate the phrases.

1. integrated	a. material
2. connected	b. idea
3. manual	c. circuits
4. solution	d. assembly
5. semiconductor	e. to each other
6. manufacturing	f. to the problem
7. groundbreaking	g. process

Task 11. Fill in the sentences with phrases from the previous exercise.

- ... are used in all modern electronic devices.
- Before the appearance of ICs all circuits were constructed by ...
- In electric circuit all components are ...
- John spent much time thinking and found the ...
- In ICs all the components and the chip are made of ...
- To improve the ... new equipment was bought.
- The discovery of integrated circuits was a ...

Grammar: Future Simple

Task 12. Read the dialog paying attention to the verb tenses.



Sarah: Hi, Alex! Do you know that tomorrow is Ruslan's birthday?

Alex: Really! Great! I'll buy a present for him!

Sarah: Will you come for his birthday party? It will be fun!

Alex: But he didn't invite me.

Sarah: Don't worry! I'll call him and say that you'll come; he won't mind.

Future Simple

+	I will buy him a present. (I'll buy) You will come. (You'll come) It will be fun! (It'll be)
?	Will you come for his birthday party?
-	He will not mind. (He won't mind)
Short answers	
Yes, I will.	
No, I won't.	

Task 13. Answer the questions about yourself.

- How old are you? How old will you be next year?
- What will you do at weekends?
- When will you finish the university?
- Will you help your group mate with the homework?
- Where will you travel next summer?
- When will you wake up tomorrow morning?
- Who will you be in the future?
- Will you go to the university tomorrow?
- Will you go to the cinema on Friday evening?
- Will you listen to the music before you go to bed?
- What will the weather be like tomorrow?
- Where will you go after the lessons?

Task 14. Fill in the sentences with the verb "to be" in the Future Simple form.

- He ... an engineer next year.
- He ... a scientist when he grows up.
- I ... at home tomorrow morning.
- I ... at the library after the lessons.
- ... they ... in the cinema?
- ... you ... at work on Sunday?
- It ... a great idea.
- She ... (not) in the office on Monday.
- She ... (not) an economist, she ... a physicist.
- We ... (not) at home; we'll go for a walk.
- Where ... you ... in half an hour?
- Sam ... here in five minutes.

Task 15. Complete the sentences. Use will, 'll or won't.

1. ... he ... (to get) his new bike from the shop?
2. ... you ... (to have) a tea with us?
3. Do you think it ... (to rain)?
4. Don't worry! I ... (to be) OK.
5. I ... (not / to do) your housework for you.
6. I'm sure he ... (to do) well the test.
7. My brother ... (to be) 10 next Sunday.
8. She ... (not / to drink) coffee in the evening.
9. There's no bread. I ... (to go) to the grocery.
10. They want to speak with Sam. I ... (to call) him.
11. We're hungry. I ... (to bring) sandwiches.

Task 16. Read the sentences in the first column and decide what you will do.

Example: I'm hungry. I think I will make a sandwich.

I'm hungry.	clean it
My room is in a mess.	close the window
My phone is broken.	go to the shop
There's a good film on TV.	go to the supermarket
I've just missed my bus.	make a sandwich
I haven't got any bread.	put on a sweater
It's cold in this room.	repair it
I'm cold.	take a taxi home
I want some new jeans.	watch it

Check yourself

Task 17. Put the verbs in brackets into the Future Simple Form.

1. I ... (to be able) to go with you tomorrow to the cinema because I'm busy.
2. I ... (to send) you the task on e-mail in five minutes.
3. I think I ... (to go) to bed early tonight; I'm so tired.

4. I think I ... (to see) Sally tomorrow.
5. I'm afraid ... I (to have) time to help you with your presentation.
6. The ice-cream is melting; I ... (to put) it in the freezer.
7. Tomorrow Sam ... (to start) looking for a new job.
8. We haven't got any vegetables, so I ... (to buy) some.

Reference on grammar

Future Simple: <http://www.englishnotes.ru/future-simple/>
<http://begin-english.ru/study/future-simple/>

Technical reading: cause and effect

Task 18. Match the words and their meaning.

dissolve	растворенное вещество
solute	растворитель
solution	растворять
solvent	раствор

How to grow a crystal

Do you want to **grow** great crystals? These are general instructions for growing crystals.

Crystals are structures that are formed from a regular repeated **pattern** of connected atoms or molecules.

It's best to start your crystals with a **saturated solution**. You will get your crystals more quickly if the solution is saturated. If your solution is not saturated, then it will **undo** your work and actually **dissolve** your crystals! Make a saturated solution by adding your crystal **solute** (e.g., sugar, salt) to the **solvent** (usually water). **Stirring** the mix will help to dissolve the solute.

If you just want to grow a **mass** of crystals or a crystal garden, you can **pour** your saturated solution over a **rock** or **brick**, **cover** it with a paper towel to keep out **dust**, and allow the **liquid** to slowly **evaporate**.

If you want to grow a larger single crystal, you will need to get a **seed** crystal. You need to pour saturated solution into a glass **jar** and put a piece of **string** into the liquid. Small crystals will start to grow on the string, which can be used as seed crystals.

Task 19. Find the English equivalents to the words below.

1. растить	2. структура	3. насыщенный
4. уничтожать	5. масса	6. помешивание
7. лить	8. камень	9. кирпич
10. накрывать	11. пыль	12. жидкость
13. испаряться	14. ядро	15. банка
16. нитка		

Task 20. Read the sentences and define the cause and effect.

Example: You will get your crystals more quickly (effect) if the solution is saturated (cause).

1. If your solution is not saturated, then it will undo your work and actually dissolve your crystals!
2. If you just want to grow a mass of crystals or a crystal garden, you can pour your saturated solution over a rock or brick
3. If you want to grow a larger single crystal, you will need to get a seed crystal.
4. If you put more solute into the solution, the solution will be saturated.
5. If you stir the mix, the solute will dissolve faster.

Task 21. Look at the sentences above and define the tenses in both parts of a sentence. Use the phrases below to make sentences about cause and effect.

put sugar in coffee – sugar dissolves
 liquid evaporates – solution gets saturated
 put a string in the solution – crystals grow on it
 get a seed crystal – bigger crystal grows on it

Lesson 6. Integrated circuits. Part 2. Electronic Components

Starter

- What electronic components do you know? - What do they look like?
- What do they do?

Word bank

1. an anode – анод (положительный электрод)	6. to measure – измерять
2. a capacitor – конденсатор	7. to put – класть
3. a cathode – катод (отрицательный электрод)	8. a resistor – резистор
4. a diode – диод	9. to resist – сопротивляться
5. an electric charge – электрический заряд	10. a value – значение, номинал

Task 1. Try to translate the following phrases into Russian.

- most basic components
- a variety of resistance values
- the amount of capacitance
- the second most commonly used component
- positive voltage
- a three-terminal device
- one of the most important devices

Task 2. Look at the words and place them into the correct column. Use the dictionary if necessary.

Noun	Verb	Adjective


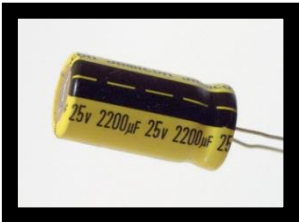
Electronic, electron, resistor, resist, resistance, vary, variety, capacitor, capacitance, complete, complete, power, power, powerful, store, storage, different, differ, common, ceramic, application, apply, content, contain, container, flow, flow, measure, measure, emit, emission.

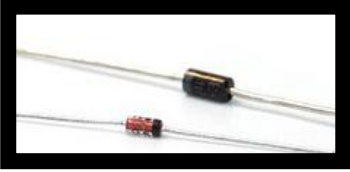

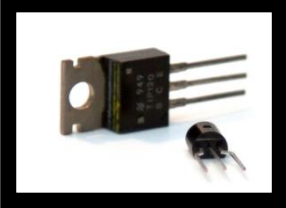

Task 3. Match two columns to make true sentences. Read the text and check your answers.

1. A resistor is a component	a. lets current flow in only one direction.
2. A capacitor is a device	b. complete with transistors, diodes, and other elements.
3. A diode is a device that	c. that resists the flow of current.
4. A transistor is a three-terminal device in which	d. that can temporarily store an electric charge.
5. An integrated circuit contains an entire electronic circuit,	e. a voltage applied to one of the terminals can control current that flows across the other two terminals.

Basic Electronic Components and What They Do

You will work with a number of basic electronic components when building electronic circuits, including resistors, capacitors, diodes, transistors, and integrated circuits. Here is a brief overview of the functions of each of these basic electronic components.

	<p>Resistors</p> <p>A resistor is a component that resists the flow of current. It's one of the most basic components used in electronic circuits.</p> <p>Resistors come in a variety of resistance values (how much they resist current, measured in units called ohms and designated by the symbol Ω and power ratings (how much power they can handle without burning up, measured in watts).</p>
	<p>Capacitors</p> <p>Next to resistors, capacitors are probably the second most commonly used component in electronic circuits. A capacitor is a device that can temporarily store an electric charge.</p> <p>Capacitors come in several different varieties, the two most common are ceramic disk and electrolytic. The amount of capacitance of a capacitor is usually measured in microfarads, μF.</p>

	<p>Diodes</p> <p>A diode is a device that lets current flow in only one direction. A diode has two terminals, called the anode and the cathode. Current will flow through the diode only when positive voltage is applied to the anode and negative voltage to the cathode. If these voltages are reversed, current will not flow.</p>
	<p>Light-Emitting Diodes</p> <p>A light-emitting diode (or LED) is a special type of diode that emits light when current passes through it.</p>
	<p>Transistors</p> <p>A transistor is a three-terminal device in which a voltage applied to one of the terminals (called the base) can control current that flows across the other two terminals (called the collector and the emitter). The transistor is one of the most important devices in electronics.</p>
	<p>Integrated Circuits</p> <p>An integrated circuit is a special component that contains an entire electronic circuit, complete with transistors, diodes, and other elements, all photographically etched onto a tiny piece of silicon. Integrated circuits are the building blocks of modern electronic devices such as computers and cell phones.</p>

By Doug Lowe <http://www.dummies.com/how-to/content/look-inside-electronic-devices.html>

Photos: <http://www.flickr.com/>

Useful words and phrases

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. across – через 2. to apply – применять, направлять 3. a base – база 4. a brief overview – краткий обзор 5. to burn up – перегорать 6. capacitance – электрическая ёмкость конденсатора 7. ceramic – керамический 8. collector – собирающий электрод 9. to designate – предназначать 10. a direction – направление 11. electrolytic – электролитический 12. emitter – эмиттер, излучатель | <ol style="list-style-type: none"> 13. entire – весь, целый 14. etched – вытравленный 15. to handle – справиться 16. a light-emitting diode – светодиод, светоизлучающий диод 17. power rating – номинальная мощность 18. reversed – противоположный; обратный 19. several – несколько 20. temporarily – временно 21. terminal – клемма; ввод / вывод 22. tiny – крошечный 23. variety – многообразие, разнообразие |
|--|--|

Task 4. Define if the following sentences are true or false.

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Resistor don't have many resistance values. 2. The value in ohms shows how much a resistor can resist current. 3. Power rating shows how much power a resistor can handle. 4. Capacitors are used in ICs most often. 5. The amount of capacitance of a capacitor is usually measured in microfarads. 6. The current can flow in both directions in a diode. | <ol style="list-style-type: none"> 7. If you apply positive voltage to the anode, electricity will not flow. 8. A transistor has three terminals. 9. A transistor is the most important device in electronics. 10. In an integrated circuit, all components are built in a piece of silicon. |
|---|--|

Task 5. Answer the questions.

1. What does a resistor do?
2. What does the number of ohms show?
3. What can a capacitor do?
4. What are two main types of a capacitor?
5. How is the amount of capacitance measured?
6. How does electricity flow in a diode?
7. What does LED stand for?
8. What does the base of a transistor control?
9. What is an IC?

Task 6. Complete the sentences with the correct word or phrase.

- a. common b. handle c. resists
 d. light-emitting diode e. flows f. current
 g. building blocks h. variety i. terminals
 j. device

1. A resistor is a component that ... the flow of current.
2. A capacitor is a ... that can temporarily store an electric charge.
3. If the voltages in a diode are reversed, ... will not flow.
4. Capacitors can be different, the two most ... are ceramic disk and electrolytic.
5. One of the terminals of a transistor (called the base) can control current that ... across the other two terminals.
6. Integrated circuits are the ... of modern electronic devices such as computers and cell phones.
7. A ... (or LED) is a special type of diode that emits light when current passes through it.
8. Resistors come in a ... of resistance values.

9. A diode has two ... , called the anode and the cathode.
10. Power ratings of a resistor show how much power they can ... without burning up.

Task 7. Match the two columns to make phrases. Translate the phrases.

1. the flow	a. values
2. basic	b. used
3. resistance	c. diode
4. power	d. blocks
5. commonly	e. of current
6. electric	f. circuit
7. a light-emitting	g. ratings
8. an integrated	h. of silicon
9. a piece	i. components
10. building	j. charge

Task 8. Put the words into the correct order to make sentences.

1. a component / resists / a resistor / that / is / of current / the flow.
2. light / emits / of diode / that / a light-emitting diode / special / a special type / is.
3. electronics / important / the transistor / devices / one of / is / the most / in.
4. devices / electronic / circuits / integrated / the building / are / blocks / of modern.
5. a device / a diode / is / direction / that / current / lets / in only one / flow.

Grammar: Ways of expressing future.

1. The Future Simple

I (we, you, they, he, she, it)	will ('ll) will not (won't)	come buy be help tell prepare
--------------------------------	--	--

Will Will Will	I (we, you, they, he, she, it)	come? buy? be? help? tell? prepare?
---	--------------------------------	--

We use Future Simple when we decide to do something at the moment of speaking or tell about a fact in future

Examples:

1. I **will tell** the group about the conference.
2. It's Jack's birthday next Saturday. He **will be** 23.
3. I'm sorry I'm late. It **won't happen** again.
4. – **Will** you **be** at home this evening? – I'm too tired today. **I'll be** at home this evening. **I won't go out**.
5. It's late already and you drink too much coffee. **You won't sleep**.

2. The Present Continuous.

I	am (not)	going	home.
He (she, it)	is (not)	doing	homework.
We (you, they)	are (not)	preparing	for test.

Am	I	going	home.
Is	he (she, it)	doing	homework.
Are	we (you, they)	preparing	for test.

It is used when you are sure to do something. You have arranged to do it.

Examples:

1. Jane **is coming** tomorrow! Let's go and meet her together.
2. Alice **is visiting** her dentist next Friday.
3. – What **are** you **doing** this evening? – I'm **watching** a hockey match on TV.
4. I'm **not going** to the cinema with you. Today I'm **staying** at home.
5. We **are having** a party next Saturday.

3. to be going to ...

I	am	going to	come ...
He (she, it)	is		tell ...
We (you, they)	are		prepare ...

Am	I	going to	come ...?
Is	he (she, it)		tell ...?
Are	we (you, they)		prepare ...?

It is used when you have decided to do something and to tell about your plans.

Examples:

1. I'm **going to** buy a new bag tomorrow.
2. I'm **going to** sell my car. I can't afford it.
3. **Are** you **going to** watch that film?
4. What **are** you **going to** wear to the Saturday party?
5. I'm **not going to** have dinner. I'm not hungry.

4. The Present Simple

I (we, you, they)	have	Physics tomorrow.
He (she, it)	has	

I (we, you, they)	don't	have	Physics.
He (she, it)	doesn't		

Do	I (we, you, they)	have	Physics tomorrow
Does	he (she, it)		

It is used for timetables, schedules, programmes, trains, buses etc.

Examples:

1. The lecture **finishes** at 11.30.
2. The train **arrives** at 8.45.
3. What time **does** the play **start**?
4. The concert **finishes** at 9 p.m.

Task 9. Tell about your plans for the future as in the example. Use these adverbs of time:

tomorrow, next week, in future, next weekends, in 5 years, next year, next summer, next month.

Example: In 5 years I will be a programmer. Next year I will be 19 years old.

- visit my grandparents
- be a specialist
- have a big family
- help my parents in the garden
- work for a big prestigious company
- drive a good car
- have a picnic with friends
- travel abroad
- have a date with my girlfriend
- attend a conference
- take part in sport competitions

Task 10. Open the brackets and complete the sentences. For arranged actions use Present Continuous, when you decide to do something at the moment of speaking use Future Simple.

1. -Are you ready to go? – I ... (to be) ready in 2 minutes.
2. - Oh! My favourite chair is broken! – Don't worry! I ... (to repair) it in a minute.
3. They ... (to drive) to Novosibirsk next weekends. They told me yesterday.
4. I'm sorry I was late for the lesson. It ... (not happen) again.
5. Her parents ... (to fly) to Greece next summer. They bought tickets.
6. Tom and Jane ... (to get married) next month. They invited us.
7. - It's Kate's birthday next week. She ... (to be) 18. – I ... (to buy) her a present.
8. Carl ... (not play) football on Saturday. His leg hurts.
9. I think John ... (to pass) the exam. He studied hard all the semester.
10. - Let's go to the cinema tonight? – I'm afraid I can't. I ... (to prepare) for an important exam.
11. ... you ... (to be) at home tomorrow evening?
12. Don't drink too much coffee before you go to bed. You ... (not sleep).

Task 11. Open the brackets and complete the sentences. For arranged actions use Present Continuous, for timetables, schedules, programs, buses, trains use Present Simple.

1. I ... (to go) to the concert this evening! I can't wait!
2. What time ... the film ... (to begin)?
3. I ... (not go) anywhere tonight. I ... (to stay) at home.
4. Lucy and James ... (to go) to the theatre this evening. The play ... (to begin) at 8.00.
5. Excuse me. What time ... this train ... (to get) to Krasnoyarsk?
6. Lily is doing an Italian course at the moment. The course ... (to finish) on Wednesday.
7. Do you know about Alex and Jane? They ... (to get married)!
8. -My friends ... (to go) on holiday next Friday. – That's nice! Where ... they ...?
9. I'm bored with this soap opera. When ... it ... (to finish)?
10. Hurry up! Our train ... (to leave) in 5 minutes.

Task 12. Complete the sentences. Use to be going to and one of the following verbs.

buy, walk, enter, watch, do, eat, wash, sleep, build

1. I don't want to go by bus today. I
2. Ben is so tired. He for an hour.
3. -Your hands are so dirty. – I them.
4. I'm so hungry. I a hamburger.
5. There is a good film on TV tonight. ... you it?
6. What university ... you?
7. Sally is ill. She ... not anything for a while.
8. They a new car. They told me about it.
9. My father a new house for our family.

5. Future in adverbial clauses of Time and Condition (First Conditional)

After **when** or **if** and other conjunctions (see the examples) we use the Present Simple form. In the main clause we use the Future Simple form or **to be going to**.

Examples:

1. When I meet him I **will tell** him about the conference.
I **will tell** him about the conference when I meet him.
2. As soon as I finish my homework I **will go** for a walk.
I **will go** for a walk as soon as I finish my homework.
3. While I am on holiday I'm **going to read** a lot.
I'm **going to read** a lot while I am on holiday.
4. After I have a shower I **will go** to bed.
I **will go** to bed after I have a shower.
5. Until I watch the film I'm **not going to turn** the TV off.
I'm **not going to turn** the TV off until I watch the film.
6. If you don't hurry you **will be** late.
You **will be** late if you don't hurry.
7. If the weather is fine we **will go** for a picnic.
We **will go** for a picnic if the weather is fine.
8. If I have time I **will help** you with your homework.
I **will help** you with your homework if I have time.

Check yourself

Task 15. Put the verbs in brackets into the Future Simple, the Present Simple or the Present Continuous form.

1. – I ... (to see) Peter at eight o'clock tomorrow. – Really? I thought he is in the country with his mother.
2. – What ... you ... (to do) on Sunday morning? – Nothing, I have no plans.

Task 13. Translate the following sentences into English.

1. Если ты поедешь на автобусе, это будет дешево.
2. Майк пойдет на концерт, если достанет билет.
3. Когда я пойду на учебу, я закрою окно.
4. Я куплю молоко и хлеб после того как схожу в библиотеку.
5. Прежде чем я вернусь домой из Франции, я хочу посетить все интересные музеи.
6. Прежде чем сдать работу учителю, я проверю все еще раз.
7. После того как ты достаточно поспишь, ты почувствуешь себя лучше.
8. Как только я найду эту статью, я дам тебе ее прочитать.
9. Пока я буду на отдыхе, я буду ходить по магазинам.

Task 14. Match two columns to make sentences.

1. If you pass the exam	a. I will help you with your homework.
2. If we meet tomorrow	b. you may oversleep tomorrow.
3. If Sam has money	c. we will go for a picnic.
4. If I have time	d. I will have a taxi.
5. If the weather is fine	e. you will get monthly grant.
6. If you go to bed late today	f. he will buy a car.
7. If it is late after party	g. I will give you this book.

Reference on grammar

Ways of expressing future: <http://audiorazgovornik.ru/anglijskaya-morfologiya/anglijskij-glagol/formy-vremeni-v-anglijskom-yazyke/1206-future-in-english>

<http://www.slovariky.ru/242-sposoby-vyrazheniya-buduschego-vremeni-v-angliyskom-yazyke-present-continuous-i-present-simple.html>

First Conditional: <http://www.grammar.sourceword.com/unit20.php>

Technical reading: Giving definitions

Task 16. Read the text. Fill in the gaps with the proper phrase below.

There are many different kinds of transistors. The most basic kind is called a bipolar transistor.

A diode is the simplest kind of semiconductor, made from a single p-n junction, ... (1) one that's missing a few electrons and thus has a positive charge (p-type semiconductor) and the other with a few extra electrons, ... (2)

By itself, a p-n junction works as a one-way gate for current. In other words, a p-n junction allows current to flow in one direction but not the other. A diode is simply a p-n junction ... (3)

A transistor is like a diode with a third layer of either p-type or n-type semiconductors on one end. Thus, a transistor has three regions. The interface between each of the regions forms a p-n junction. So, a transistor is as a semiconductor ... (4)

Each of the three regions of semiconductor material in a transistor has a lead attached to it, and each of these leads has a name.

1. which has a lead attached to both ends
2. which has two p-n junctions
3. which is simply a junction of two different types of semiconductors
4. which has a negative charge (n-type semiconductor)

Task 17. Find equivalents to the Russian words.

1. вид	2. течь
3. биполярный	4. направление
5. переход	6. слой
7. не хватать	8. или ... или
9. заряд	10. таким образом
11. односторонний	12. стык
13. проход	14. подводящий провод
15. позволять	16. прикреплённый

Task 18. Study the example and rewrite the pairs if sentences.

Example:

- a. Collector is a lead.
 - b. Collector is attached to the largest of the semiconductor regions.
- a+b: Collector is a lead which is attached to the largest of the semiconductor regions.

1. Emitter is a lead.
Emitter is attached to the second largest of the semiconductor regions.
2. Base is attached to the middle semiconductor region.
This region serves as the gatekeeper.
This gatekeeper determines how much current is allowed to flow through the collector-emitter circuit.

Lesson 7. Computers. Part 1. Configuration

Starter

- What parts of a computer can you name?
- What are their functions?
- What types of computers do you know?

Task 1. Make a list of parts of a computer you know, use pictures to help.

1. Monitor
2. Keyboard
3. Mouse
4. (Loud)speakers
5. Cable
6. Screen
7. ...
8. ...



Task 2. What does each of the following parts of a desktop computer do? Match the columns to make sentences.

A monitor	is used to connects convert can is	-different parts of a computer together.
A mouse		- control the cursor and show a location on a computer screen.
A keyboard		- observe, check and work with data.
A cable		- electrical impulses into sound.
Speakers		- an input device like a typewriter for entering characters.

Word bank

1. to act – действовать, работать	14. a plate – пластина, плата
2. built-in – встроенный	15. power – энергия; мощь, сила
3. a capability – способность, возможность	16. removable – съёмный, сменный; заменяемый
4. a computer case – корпус компьютера	17. to save – 1) охранять, защищать; 2) беречь, экономить
5. to convert – преобразовывать; превращать	18. short-term – краткосрочный
6. to cover – покрывать, накрывать	19. to start up – запускать, начинать
7. directly – непосредственно, напрямую	20. to store – хранить, сохранять
8. hardware – аппаратное обеспечение, "железо"	21. a socket – гнездо, разъем
9. indirectly – косвенно, опосредованно	22. software – программное обеспечение (ПО)
10. inside – внутри	23. performance – исполнение, выполнение
11. to install – устанавливать	24. through the cable – через кабель
12. long-term – долгосрочный	25. to unplug – выдернуть вилку из розетки; отключить
13. memory – память	

Task 3. Do you know these parts of a computer? Translate them into Russian.

1. Central Processing Unit (CPU)
2. a motherboard
3. a power supply
4. a hard drive
5. an optical drive
6. an expansion card
7. RAM (Random Access Memory)
8. expansion slots
9. expansion cards
10. a heat sink

Task 4. What actions can you do on your computer? Match two columns to make phrases. Read the text and check.

to press	an application
to click	commands
to start	a program
to perform	a key
to carry out	calculations
run	the mouse
open	a file

Inside a Desktop Computer

Have you ever looked **inside a computer case** before? Or have you seen pictures of the inside of one? The small parts may look complicated, but the inside of a computer case really isn't all that mysterious. This lesson will help you master some of the basic terminology and understand a little about what goes on inside the computer casing. Let's explore the inside of a computer case.

The **Central Processing Unit (CPU)**, also called a processor, is located inside the computer case on the **motherboard**. It is sometimes called the brain of the computer, and its job is to carry out commands. Whenever you press a key, click the mouse, or start an application, you're sending instructions to the CPU. The CPU fits into the motherboard's CPU **socket**, which is **covered by the heat sink**, an object that absorbs heat from the CPU. (1)...There are many processor manufacturers for personal computers, but the most well-known ones are Intel and AMD.

The **motherboard** is the computer's main circuit board. It's a thin **plate** that holds the CPU, **memory**, connectors for the **hard drive** and **optical drives**, **expansion cards** to control the video and audio, as well as connections to your computer's ports (such as the USB ports). The motherboard connects **directly** or **indirectly** to every part of the computer.

The **power supply** unit in a computer **converts the power** from the wall outlet to the type of power needed by the computer. It sends power **through the cables** to the motherboard and other components. If you decide to open the computer case and take a look, make sure **to unplug** the computer first. (2)...

RAM (Random Access Memory) is your system's **short-term memory**. Whenever your computer performs calculations, it temporarily **stores** the data in the RAM until it is needed. This short-term memory

disappears when the computer is turned off. If you're working on a document, spreadsheet, or other type of file, you'll need **to save** it to avoid losing it. When you **save** a file, the data is written to the hard drive, which **acts as long-term storage**. (3)...

The **hard drive** is the data center of the computer. This is where the **software** is **installed**, and it's also where your documents and other files are stored. The hard drive is long-term storage, which means the data is still saved even if you turn the computer off or unplug it. (4)... The faster the hard drive is, the faster your computer can **start up** and load programs. (5)...

A **USB flash drive** is basically a small, **removable** flash hard drive that plugs into a USB port. A USB flash drive is a convenient way to bring your files with you and open them on a different computer.

Expansion Cards

Most computers have **expansion slots** on the motherboard that allow you to add various types of **expansion cards**. (6)... If you want to boost **the performance** of your computer or update **the capabilities** of an older computer, you can always add one or more cards. Below are some of the most common types of expansion cards:

The **video card** is responsible for what you see on the monitor. (7)...

The **sound card**, also called an audio card, is responsible for what you hear in the speakers or headphones. (8)...

The **network card** allows your computer to communicate over a network and access the Internet. (9)...

Adapted and abridged from:

<http://www.gcflernfree.org/computerbasics/7/>

Useful words and phrases

1. to absorb – поглощать
2. to access – иметь доступ, получить доступ
3. to add – добавлять
4. to allow – позволять
5. to avoid – избегать
6. below – ниже
7. a brain – мозг
8. to boost – зд. повышать
9. a circuit board – печатная плата
10. common – обычный
11. convenient – удобный
12. to connect – соединять
13. a connector – соединитель; соединительное звено
14. to copy – копировать
15. a data centre – центр данных
16. to decide – решать
17. to disappear – исчезать
18. easily – легко
19. to explore – исследовать
20. to fit – подходить (к чему-л.), зд. уместаться, помещаться, входить
21. heat – тепло
22. to hold – держать, зд. содержать в себе, вмещать
23. however – однако
24. to load – загружать (программу)
25. to look complicated – выглядеть сложно
26. main – основной, главный
27. to master – зд. овладевать, усваивать
28. mysterious – таинственный; загадочный
29. a plate – пластина, плата
30. a spreadsheet – электронная таблица
31. a storage – хранилище
32. temporarily – временно
33. terminology – терминология
34. thin – тонкий
35. to update – обновлять
36. various – разнообразный
37. a wall outlet – розетка в стене
38. well-known – хорошо известный
39. whenever – когда бы ни

Task 5. Read the following statements and decide if the following statements are True or False.

1. Every computer has a Central Processing Unit.
2. A CPU isn't located inside the computer case on the motherboard.
3. The motherboard is the computer's main circuit board.
4. The power supply sends power wirelessly to the motherboard and other components.
5. Random Access Memory is long-term memory.
6. The software is installed in the hard drive.
7. The hard drive is long-term storage.
8. The video card is responsible for what you hear in the speakers.
9. The sound card is responsible for what you see on the monitor.

Task 6. Answer the questions to the text.

1. What parts of a computer are mentioned in the text?
2. What is the CPU? Where is it located?
3. What are the most well-known processor manufacturers?
4. What is the motherboard? What does it hold?
5. What does the power supply do?
6. What should you do before open the computer case?
7. Why do you need to save your documents before you turn the computer off?
8. What types of expansion cards do you know? What are they responsible for?

Task 7. Match the words with the opposite meaning.

1. inside	a. separate
2. install	b. hardware
3. plug in	c. outside
4. built-in	d. delete
5. directly	e. remove
6. start up	f. long-term
7. software	g. indirectly
8. short-term	h. unplug
9. store	i. finish

Task 8. Match the words with the similar meaning.

1. CPU	j. perform
2. save	k. difficult
3. manufacturer	l. microprocessor
4. power	m. producer
5. carry out	n. energy
6. manufacture	o. store
7. pictures	p. produce
8. complicated	q. images

Task 9. Put the words into the right order.

1. located / CPU / inside / is / case / the computer /
2. called / the brain / CPU / sometimes / is / of the computer /
3. sink / the heat / heat / from the / absorbs / CPU /
4. the computer's / the motherboard / main / is / circuit board /
5. to every / the motherboard / part / of the computer / connects /

6. the power supply / power / through the cables / sends / of the computer / to other components /
7. memory / RAM / short-term / is / a /
8. memory / disappears / the short-term / turned off / when / the computer / is /
9. the data / the hard drive / centre / is / of the computer /
10. card / allows / the network / you / the Internet / to access

Task 10. Decode the words from the word bank and match them with the explanations.

bilyciapa	rtevnoc
ovamlreb	uilbt-ni
cenamforrep	

1. It's when you change one type of energy into other types.
2. When a device is inside other device.
3. When you can take a device out of your computer, the device is ...
4. When your computer is fast, the programs work well. So your computer has good ...
5. Something that your computer can do.

Task 11. Read more information about computer insides. Fill in the gaps in the text with the proper paragraph.

Did you know that...

1. A processor's speed is measured in megahertz (MHz), or millions of instructions per second, and gigahertz (GHz), or billions of instructions per second. A faster processor can execute instructions more quickly. However, the actual speed of the computer depends on the speed of many different components—not just the processor.

2. RAM is measured in megabytes (MB) or gigabytes (GB). The more RAM you have, the more things your computer can do at the same time. If you don't have enough RAM, you may notice that your computer is sluggish when you have several programs open. Because of this, many people add extra RAM to their computers to improve performance. A bit is the smallest unit of data in computer processing. A byte is a group of eight bits. A megabyte contains about one million bytes, and a gigabyte is about one billion bytes.

3. Most motherboards have integrated sound, but you can upgrade to a dedicated sound card for higher-quality sound.

4. Before touching the inside of the computer, you should touch a grounded metal object (or a metal part of the computer casing) to discharge any static buildup. Static electricity can be transmitted through the computer circuits and ruin them.

5. Most hard drives are hard disk drives, which store data on a magnetic platter. Some computers now use solid-state drives (also called flash hard drives). These are faster and more durable than hard disk drives, but they are also more expensive.

6. The network card can either connect with an Ethernet cable or through a wireless connection (often

called Wi-Fi). Many motherboards have built-in network connections, and a network card can also be added to an expansion slot.

7. When you run a program or open a file, the computer copies some of the data from the hard drive onto the RAM so that it can access the data more easily. When you save a file, the data is copied back to the hard drive.

8. Expansion cards are sometimes called PCI (Peripheral Component Interconnect) cards. You may never have to add any PCI cards, as most motherboards have built-in video, sound, network, and other capabilities.

9. Most computers have a GPU (Graphics Processing Unit) built into the motherboard, instead of having a separate video card. If you like playing graphics-intensive games on the computer, you can add a faster video card to one of the expansion slots to get better performance.

10.

Task 12. Fill in the table.

Verb	Translation	Noun	Translation
		storage	
connect			
		performance	
		power	
process			
access			
act			
		copy	

Task 13. Fill in the sentences with words from the table.

- The motherboard ... directly or indirectly to every part of the computer.
- You can't make telephone calls when the ... is bad.
- In your computer you can ... different types of files: pictures, text documents, music.
- The hard drive is a long-term ... for your files.
- You can make different operations with your files.
- You can create files, ... and delete them.
- I keep ... of important files on CDs.
- The Central Processing Unit (CPU) is also called ...
- A computer ... information very quickly.
- A desktop computer is ... from the wall outlet through the cables.
- A laptop can get ... from the battery.
- Whenever your computer ... calculations, it temporarily stores the data in the RAM until it is needed.
- If you want to boost ... of your computer, you can add one or more expansion cards.
- At this café there is free Wi-Fi, so you can ... the Internet if you need.
- The network card allows your computer to communicate over a network and ... the Internet.
- ... to the Internet is very helpful when you prepare a course work.
- This new model of a mobile phone can also ... as a GPS navigator.
- When you save a file, the data is written to the hard drive, which ... as a long-term storage.
- The firefighter risked his life but saved the child. It was a really heroic ... !

Grammar: The Present Perfect Tense

1. Formation

We build Present Perfect with **have/has + Participle II**

Participle II				
regular verbs		irregular verbs		
look	looked	go	went	gone
cook	cooked	come	came	come
open	opened	do	did	done
produce	produced	eat	ate	eaten
play	played	see	saw	seen

Positive

I	have	finished	my course work.
We		seen	this film before.
Students		prepared	their presentations.
Anna	has	seen	this film before.
Sam		prepared	his presentation.

Questions

Have	you	been	to Paris before?	-Yes, I have . - No, I haven't .
Have	they	told	you this story?	-Yes, he has . - No, he hasn't .
Has	Pol	made	his project?	-Yes, they have . -No, they haven't .

Negatives

I	have not (haven't)	finished	my course work yet .
We	have not (haven't)	seen	this film before.
Peter	has not	finished	his project yet .
Joe	has not	prepared	his presentation.

2. Usage

a. The Present Perfect Tense denotes a completed action with the result now.

Examples:

- I spent much time learning this poem. I **have learnt** it!
- **Have** you **read** this book? May I take it?
- I can't go for a walk. I **haven't** prepared for the seminar.

Task 14. Rewrite the following sentences into the Present Perfect form.

- The students are writing a dictation.
- I am learning a new grammar rule.
- Jane is telling them an interesting story.
- I am writing my course work.
- Pete is not translating an article from a foreign language.
- The teacher is explaining the new material.
- Are you watching the news?
- I am eating my breakfast.
- Kate is cleaning her room.
- Is Susan making a new dress for the graduation ceremony?
- We are buying the new equipment for our laboratory.
- The student is preparing a presentation for the conference.

b. The Present Perfect is often used with the following adverbs of time:

just – только что	never – никогда
already – уже (+)	lately – недавно, за последнее время
yet – еще(-), уже(?)	recently – недавно, на днях
ever – когда-либо	

Examples:

- The professor *has just entered* the room. – Профессор только что вошел в аудиторию.
- We *have already had* lunch. – Мы уже пообедали.
- Have you prepared* your presentation **yet**? – Ты уже подготовил свою презентацию?
- John *hasn't finished* his course work **yet**. – Джон еще не закончил свою курсовую работу.
- I *haven't seen* him **lately (recently)**. – Я не видел его последнее время.
- Have you ever been* to America? – No, I *have never been* there. – Ты когда-либо бывал в Америке?
- Нет, я там **никогда** не бывал.

Task 15. Fill in the following sentences with the right adverb of time “just”, “already” or “yet”.

- Are Karl and Sam here? - Yes, they have ... come. (= a short time ago)
- What time is Jake coming? - He has ... come. (=before you expected)
- Have you read this book ...? - No, I'm still reading it.
- Where is Richard? - I've ... seen him in the corridor.
- Are Karl and Sam here? - No, they haven't come ...
- Jake, this is Mary. - Yes, I know. We have ... met.
- Do you know when Justin is going away? - He has ... gone.
- Have you finished your project? - No, I haven't. I haven't even started it ...

Task 16. Ask and answer the questions as in the example. Use the phrases below.

Example:

Have you ever ridden a horse?

- Yes, I *have ridden* a horse twice this year.
- No, I *have never ridden* a horse.

- ridden a horse - jumped with parachute
- driven a car - flown by plane
- missed lessons - been late for classes
- grown a plant - cooked dinner
- won the first prize - flown by a balloon
- met a famous person -

c. The Present Perfect also denotes an action which began in the past and is still going on. In this case the preposition *for* is used to denote the whole period of duration. *Since* is used to indicate the starting point of the action.

Examples:

I have known Mary **for 7 years**.

They have been married **for 10 years**.

We have lived in Tomsk **for many years**.

I haven't seen Kate **since Monday**.

Jane *has worked* at a bank **since 2011**.

Where *have you been* **since January**?

Task 17. Put the following words and phrases into the sentences below.

3 month	all his life
the beginning of February	I first took the ball into my hands
a long time	the first of September
more than 3 years	half a year
2010	New Year
he left school	this morning
4 o'clock yesterday	I left school

- Jack has studied at TUSUR **since** ...
- Tom has lived in Tomsk **for** ...
- I have played basketball **since** ...
- John has studied at TUSUR **for** ...
- I have worked here **since** ...

d. We also use the Present Perfect with *today*, *this morning*, *this year*, *this semester* etc. when these periods are not finished at the time of speaking.

Examples:

- I *have seen* him twice **today**.

- Jake *hasn't studied* very hard **this semester**.

- *Have you visited* your parents **this month**?

- We *haven't seen* Lucy **this morning**. *Have you seen* her?

Task 18. Complete the sentences using the Present Perfect (negative) + today, this morning, this year, this semester etc. as in the example.

Example:

- I saw Kate yesterday but I **haven't seen** her **today**.

1. Cary studied hard last semester but
2. It rained a lot last autumn but
3. The company earned much money last year but
4. Our college basketball team won many games last season but
5. I read all the e-mail messages yesterday but
6. We won the competition last year but
7. Sarah watched a film last week but
8. George cooked dinner for his family yesterday morning but
9. We prepared two course projects last term but

Task 19. Translate the following sentences into English. Use the verbs in brackets.

1. Джек потерял ключи. Он не может их найти. (to lose)
2. Я уже видел свое расписание. А ты уже видел свое? (to see)
3. Мой компьютер перестал работать. Возможно, он сломался. (to stop working)
4. Ты уже дочитал эту книгу? (to read)
5. Я только что закончил свою работу. Теперь я могу пойти в кино с друзьями. (to finish)
6. В этом семестре Кейт усердно училась. (to study hard)
7. Я еще не смотрел этот фильм. (to watch)
8. Я еще не сказал Сэму о собрании. (to tell)
9. Студент только что вошел в аудиторию. Он опоздал. (to enter)
10. Ты уже подготовил свою презентацию? (to prepare)
11. Последнее время я его не видел. (to see)
12. Я не был дома с сентября. (to be)

Check yourself

Task 20. Put the verb into the Present Perfect form.

1. ... James ... (to read) the book?
2. ... Mary ever ... (to be) abroad?
3. ... you ... (to find) your glasses?
4. I ... (to be) here since 9 pm.

5. My dog (not / to drink) any milk lately.
6. Peter and Jane ... (not / to come) to the party.
7. Sue ... (to make) all her clothes.
8. They ... (not / to arrive) yet.
9. Why ... you ... (to lose) your key?

Reference on grammar

Present Perfect: http://www.alleng.ru/mybook/3gram/6verb_10.htm
<http://www.native-english.ru/grammar/present-perfect>

Technical reading: Prefixes

Task 21. Study the prefixes and their meaning.

Prefix	Meaning	Example
anti	против	anti-virus
auto	направленность действия на себя	automation autorun
cyber	отношение к машинному управлению	cyberattack cybershop
hyper	сверх-	hypertext
infra	ниже; под	infrared
intra	внутри, в пределах	intranet
macro	большой	macromemory
micro	маленький	microprocessor
tele	действующий на далеком расстоянии	teleconference
uni	один, одинарный	unicode
milli	10 ⁻³	millisecond
kilo	10 ³	kilobyte
mega	10 ⁶	megaohm
giga	10 ⁹	gigabyte
tera	10 ¹²	terabyte

Task 22. Convert the numbers as in the example.

Example: 1000 gram equals 1 kilogram.

1. 1000 g = ... kg
2. 1024 bit = ... Byte
3. 128 byte = ... Bit
4. 1024 KB = ... MB
5. 1024 MB = ... GB
6. 1024 GB = ... TB
7. 1 mm = ... m
8. 1 km = ... metre
9. 12*10⁹ m = 12 Gm

Task 23. Match the prefixes with words and translate them.

anti-	sport
auto-	social
uni-	structure
super-	directional
infra-	core
tele-	correct
multi-	vision
cyber-	rich

Lesson 7. Computers. Part 2. Types of computers.

Starter

- What types of computers can you name?
- What do they do?
- What parts can't a computer work without?

Word bank

1. an adapter – переходник, переходное устройство	12. to increase – повышать(ся)
2. capable of – способный	13. to offer – предлагать
3. capacity – 1. способность; 2. емкость	14. performance – производительность
4. to compose – составлять	15. to provide – предоставлять
5. to control – управлять	16. to run – 1) запускать, выполнять 2) работать
6. to cost – стоить	17. to serve – обслуживать
7. a desktop – десктоп, настольный компьютер	18. size – размер
8. external – внешний	19. through – через, с помощью
9. a feature – функция, характеристика	20. versatility – универсальность
10. in comparison to – по сравнению с ч.-л.	21. weight – вес
11. inbuilt – встроенный	

Task 1. What do you know about the following types of a computer?

- Desktop
- Laptop
- Netbook
- Smartphone
- Supercomputer
- Server
- Tablet
- Wearable Computer



Task 2. Look through the text quickly and match the function and the computer type.

- provision of services to other computers over a network
- use in the workplace and households
- function of a phone and network connection
- function of a smartphone with a hand free feature
- mobile use
- scientific work

Task 3. Read the text again and define if the following sentences are True or False.

- Desktops have more power, storage and versatility than notebooks.
- Desktops are more popular for use at home than at workplaces.
- Notebooks can't work without a charged battery.
- Laptops are cheaper than notebooks but they have higher performance.
- Most of the computers are single computer systems.
- Servers can control the entire Internet.
- The number of different tablet models appeared after the first iPad appeared.
- You can't run more than one program on a smartphone.
- Google glass is the only example of wearable computers.
- Google glass is controlled with a keyboard.

Task 4. Answer the following questions.

1. What is the most common type of a computer?
2. How are notebooks powered?
3. What features do laptops have?
4. Why are netbooks cheaper than laptops?
5. Where are supercomputers used?
6. What programs are run on servers?
7. What do these programs do?
8. What is used on tablets instead of a mouse?
9. What is an example of wearable computers? What others examples can you name?
10. In your opinion, what other types of computers can appear in the future?

Task 5. Read the following sentences and correct one wrong word.

1. So, it is widely popular for weekly use in the workplace and households.
2. They have an inbuilt keyboard, touchpad in place of the convenient mouse and a liquid crystal display (LCD).
3. However, they had a smaller feature set and lesser capacitors in comparison to regular laptops.
4. A supercomputer usually costs hundreds of thousands or even billions of dollars.
5. Tablets are equipped with a screen keyboard or use a stylus or a digital pen.
6. They are similar to a computer but are small enough to fit in someone's pocket.
7. It is operated through voice commands.

Different Types Of Computers

A computer is one of the best inventions of mankind. There are several types of computers depending upon the fact that how it can be used and what it is **capable** of.

1. **Desktop** computer is the most common and widely used type of computer. A desktop is used on a single location. It is readily available at relatively lower costs. So, it is widely popular for daily use in the workplace and households. Most desktops are able to handle more power, storage and **versatility** for less cost than laptops and notebooks.

2. Laptop

Laptops or notebooks are miniaturized and optimized for mobile use. Laptops **run** on a charged battery or an **external** powered **adapter** used to charge the batteries. They have an **inbuilt** keyboard, touchpad in place of the conventional mouse and a liquid crystal display (LCD). Their portability and **capacity** to operate on battery power are great help to mobile users.

3. Netbook

Netbooks are ultra-portable computers. They are even smaller in **size** than the traditional laptops. They are cheaper than almost any brand-new laptop you'll find in the market. However, they had a smaller **feature** set and lesser capacities **in comparison to** regular laptops. Their best feature is easy mobility with low **weight**.

4. Supercomputer

Huge in size, these computers can occupy all the space in a room. A supercomputer usually costs hundreds of thousands or even millions of dollars. Some supercomputers are single computer systems but most are **composed** of multiple high **performance** computers working in parallel as a single system. Mechanics, quantum physics, weather forecasting and molecular theory are best studied by means of supercomputers.

5. Server

A server **provides** services to other computers over a network. Programs that **serve** client requests and allocate resources like memory and time to client machines are run on these computers. Servers usually have powerful processors, a lot of memory and huge hard drives. Such computers control the entire computer network of organization.

6. Tablet

Tablets are mobile computers that are very handy to use. They use the latest touch-screen technology. Tablets are equipped with an onscreen keyboard or use a stylus or a digital pen. Ever since the first iPad appeared, the choices for buying tablet have **increased** dramatically and now every other computer manufacturer company is **offering** tablets.

7. Smartphone

A smartphone is a mobile phone that can do more than other phones. They are similar to a computer but are small enough to fit in someone's hand. Today, most smartphones are able to **run** more than one program at the same time which helps the user complete tasks quicker and easier. Users are also able to get more programs from the manufacturer.

8. Wearable Computer

The latest trend in computing is wearable computers. Google glass is one of the fascinating examples of wearable computers. It is worn on a person's head, with a screen placed in front of the eyes that displays information like a smartphone. It is **controlled through** voice commands.

Still, it's not the end of computer technology. It's still under progress.

Adapted from: <http://www.eproguidе.com/top-9-types-of-computers/#sthash.tLGBuBmk.dpuf>

Useful words and phrases

1. to allocate – распределять
2. to appear – появиться
3. available – доступный
4. brand-new – новый
5. a choice – выбор
6. common – распространенный
7. conventional – обычный
8. to depend – зависеть
9. digital pen – цифровое перо
10. dramatically – значительно
11. entire – весь, целый
12. fascinating – захватывающий
13. futuristic – футуристический
14. to handle – справляться
15. handy – удобный
16. household – домашнее хозяйство
17. however – но, однако
18. huge – огромный
19. liquid – жидкий
20. occupy – занимать
21. onscreen – экранный
22. powerful – мощный
23. relatively – относительно
24. a request – запрос
25. scale – уровень, шкала
26. set – набор
27. still – все еще
28. storage – хранение
29. trend – тенденция, направление
30. wearable – носимый
31. a weather forecast – прогноз погоды
32. widely – широко
33. yet – еще

Task 6. Fill in the table according to the text.

Type of a computer	Size	Weight	Cost	Features
Desktop	relatively big	–		
Laptop			more than desktops	
Netbook				
Tablet	–	–	not cheaper than a netbook	
Smartphone	–	–	not very high	
Supercomputer				high capacity
Wearable Computer			–	
Server			–	

Task 7. Answer the questions using examples below.

1. What type of computer do you prefer and why?

Example: I prefer desktop computer because it is convenient.

I prefer	desktop laptop netbook tablet smartphone	because it is	-convenient. -high-performance -portable -lightweight -cheap -mobile -handy -small
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2. What are the most important features for you?

Example: I think, the most important features of a computer are portability and size.

- | | |
|--------------------------|--|
| - cost | - size |
| - popularity | - portability |
| - a lot of storage space | - touchpad |
| - versatility | - touchscreen |
| - mobility | - capacity to operate on battery power |
| - performance | |

Grammar: Present Perfect vs Past Simple

Task 8. Study the dialogue paying attention to the verb tenses.

Sarah: Have you ever been to Kazakhstan?

Alex: Yes, I went to Almaty last year.

Sarah: Did you like it?

Alex: Yes, I enjoyed the trip a lot.

Sarah: What did you do there?

Alex: I visited my friends and I went to Kok-Tobe Mountain. It was really beautiful there. Have you been to Kazakhstan, Sarah?

Sarah: No, but recently I've been on holiday near Altay Mountains. It was a month ago.

Adverbs of time

Past Simple	Present Perfect
last month/week/Sunday	ever – когда-нибудь
ago	just – только что
in 2001	already – уже
yesterday	not...yet – еще не
on Sunday	lately – в последнее время
the other day	recently – недавно
the day before yesterday	never – никогда
	since May – с мая
	for two days – в течении двух дней

The use of Present Perfect vs Past Simple

Past Simple	Present Perfect
Когда речь идет о факте в прошлом: It rained yesterday.	Действие происходило в прошлом и имеет связь с настоящим: The grass is wet and the road is dirty because it has rained .
Указано время в прошлом: I went to Almaty last year .	Время в прошлом не указано: I 've been to London; this is a beautiful city.
Когда речь идет о законченном периоде времени в прошлом: I read this book a month ago .	Речь идет о периоде времени, который еще не закончен: I 've called Peter two times today and I'll try again in the evening.
Когда речь идет об опыте в определенный период времени в прошлом: I was to London when I was 18 .	Когда речь идет об опыте до настоящего момента: Have you ever been to London? Yes, I 've been there two times.

Task 9. Put the verb in brackets into the Past Simple form.

- ... a lot people at the party? (you, to meet)
- ... them about the exam? (you, to tell)
- ... to university yesterday? (you, to go)
- I ... it was your birthday. (not/ to know)
- I ... my keys two hours ago. (to lose)

- I ... your bag in your bedroom. (to bring)
- Mary ... the bus this morning. (not/ to catch)
- Peter ... an interesting discovery last night. (to do)
- Tom ... anything in the morning. (not/ to eat)
- We ... it was a good idea. (to think)

Task 10. Put the verb in brackets into the Present Perfect form.

1. - What's on TV?
- I don't know. It ... just ... (to start).
2. - I ... just ... back from my holiday. (to come)
- Did you have a good time?
3. - Could I have a "Sports Magazine", please?
- Sorry, I ... just ... my last copy. (to sell)
4. - How is Lora?
- She's very well. She ... a new research on physics. (to start)
5. ... Peter ever ... to Berlin? (to be)
6. ... Sam ever ... in the theatre? (to work)
7. ... you ... that new film by Peter Jackson? (to see)
8. ... you ever ... my parents? (to meet)
9. I ... never ... abroad. (to be)
10. I ... never ... by plane. (to fly)
11. I ... this book two times; I like it very much. (to read)
12. Julia ... a lot of films lately. (to see)
13. Sally ... already ... all lectures. (to write)
14. She ... never ... in this part of the town. (to be)
15. Susan ... all the capital cities of Europe. (to visit)

Task 11. Answer these questions.

1. Bill says: "I studied at Tomsk State University"
Does he study at University now?
2. Maria worked for the same company for five years.
Does she still work there?
3. My father has been to Ukraine three times. Is he in Ukraine now?
4. My friend lived in a hostel for four years. Does he live there now?
5. My sister has been married to Sam since 2002. Are they still married?
6. Sarah says: "I've lived in Tomsk for two years". Is Sarah still living in Tomsk?
7. Tom and Julia have gone on holiday. Are they at work now?

Task 14. Put the verb into the Past Simple or Present Perfect form.

1. I (to visit) Moscow in 2009 but I (not/ to be) there since that time.
2. - You (ever/ to write) a book? - No, I (never/ to write) any books.
3. - You (to see) my keys? I (to look) everywhere.

Task 12. Choose the correct variant.

1. **Did you meet/Have you met** our new teacher yesterday?
2. Helen **didn't write/ hasn't written** to us since last month.
3. I **broke/have broken** my leg last summer when I **fell/have fallen** down the roof.
4. I can see Peter. He just **parked/has just parked** in front of the house.
5. Maggie **gave/ has given** me a nice birthday present yesterday.
6. My brother **was born/ has been born** in 1998.
7. Pamela **wrote/ has written** a couple of letters yesterday morning.
8. Sam just **went/ has just gone** to the shop.
9. The author just **published/ has just published** his new novel.
10. **Were you ever / Have you ever been** to Italy?

Task 13. Read the letter and put the verb in brackets into the proper form.

Dear Alex!

I (1) ... (not/ to have) a holiday for a very long time, but this summer I have four weeks holiday, so I want to go to a really nice place. I like travelling very much and I (2) ... (to visit) lots of exotic countries in the past. So, I need to decide where I want to go. I (3) ... (already/ to be) to Singapore and India but I (4) ... (never/ to be) to Africa. May be I'll go there.

Sally (5) ... (recently/ to travel) to South Africa and she (6) ... (to take) a lot of fantastic photographs of the animals and flowers. She (7) ... (to tell) me about her journey last Sunday and (8) ... (to say) that it (9) ... (to be) quite expensive and dangerous. She (10) ... (to see) ants in size of her hand and even bigger cockroaches.

Can you give me any advice about a good place to go? I know that you (11) ... (to travel) to many countries last years and I need your advice. (12) ... you (ever/ to be) to Africa?

With regards,
Samantha.

Check yourself

4. - You (to buy) a new cell phone recently? - Yeah I (to buy) one last month.
5. He is a great friend. I (to meet) him in school when I was 14.
6. You (to see) last Harry Potter film? Yes, I (to watch) it last week.

Reference on grammar

1. Past Simple: <http://enjoy-eng.ru/grammatika/prostoe-proshedshee-vremia-v-angliiskom-iazyke>
<http://www.native-english.ru/grammar/past-simple>
2. Present Perfect: <http://www.anglais.ru/2009/10/present-perfect/>
http://denglish.ru/the_present_perfect_tense
3. Past Simple vs Present Perfect: <http://www.learnathome.ru/grammar/present-perfect-tense.html>
<http://engblog.ru/present-perfect-vs-past-simple>

Technical reading: how to read specification of a computer

Task 15. Look at the table and answer the questions.

1. Is it a modern computer? Is its performance high?
2. Would you buy it?
3. What is the long term memory capacity?
4. Can you watch DVD disks with this computer?

Feature	Characteristics
Processor type	Intel Core i7
Processor speed	2300.0 MHz
Display size	17.3 inches
Drive size	1500.0 GB
Ethernet Type	1000 Mbps
Video Interfaces	HDMI; VGA
Slots	Memory Stick; SD/MMC Card; SDHC Card
Memory size	12 GB
Memory type	DDR3
Memory speed	1600.0 MHz
Graphics Coprocessor	NVIDIA GeForce GTX 660M/670M
Optical Drive Type	DL DVD±RW/CD-RW

Task 16. Study the features of a computer and match them to the Russian equivalents.

1. быстрое действие памяти
2. видео выходы
3. графический адаптер
4. максимальная скорость адаптера LAN
5. объем оперативной памяти
6. размер жесткого диска
7. размер экрана
8. слоты карт памяти
9. тип оперативной памяти
10. тип оптического привода
11. тип процессора
12. частота процессора

Task 17. Match the abbreviations and the phrase.

Compact Disc Read-Write	MHz
Double Data Rate 3	DDR3
double-layer digital versatile disk	MMC
gigabyte	SDHC
High Definition Multimedia Interface	RW/CD-RW
megabits per second	HDMI
megahertz	VGA
Multimedia Card	SD
Secure Digital	DL DVD
Secure Digital High Capacity	GB
video graphics array	Mbps

Task 18. Find in the Internet what mean the abbreviations above and what they are related to. Tell the group.

Example: MHz is an abbreviation of megahertz and is related to a unit of frequency.

DDR3 is an abbreviation of Double Data Rate 3 and is related to a type of memory.

Revision Lessons 6-7

Task 1. Match two columns to make phrases. Make up 5 – 7 sentences with these phrases.

1. a solution	a. manually
2. manufacturing	b. the flow of current
3. to be assembled	c. slots
4. an electric	d. process
5. to resist	e. the performance
6. a light-emitting	f. charge
7. expansion	g. components
8. a computer	h. to a problem
9. to boost	i. case
10. long-term	j. diode
11. to control smth	k. material
12. tiny	l. through voice commands
13. semiconductor	m. data
14. to store	n. memory (storage)

Task 2. Find 15 words in this letter cube. Make up 5 – 7 sentences with these words.

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

Task 3. Put the words into the right order to make sentences.

- an / from / different / is made / electric / electrical / components / circuit / .
- a / is / a / resistor / component / the flow / that / of current / resists / .
- ever / inside / case / looked / before / a / have / computer / you / ?
- the / the / is / drive / hard / of the computer / center / data / .
- the / card / what / on the monitor / video / see / you / is responsible for / .
- motherboard / the / the / is / circuit board / main / computer's / .
- connects / the / directly / motherboard / or indirectly / of the computer / part / to every / .
- is / the / trend / computers / latest / wearable / in computing / .
- provides / computers / server / a / to other / services / over a network / .

Task 4. Translate the following phrases into Russian.

- an advanced electric circuit
- a computer microprocessor
- assembly workers
- central data center
- motherboard's CPU socket
- computer's main circuit board
- system's short-term memory
- multiple high performance computers

Task 5. Translate the following sentences into English.

- Микропроцессор – это интегральная схема, которая обрабатывает всю информацию в компьютере.
- Ты можешь найти интегральную схему почти в каждом современном электронном устройстве, таком как телевизор, сотовый телефон, автомобиль.
- До интегральных схем рабочим-сборщикам приходилось собирать (строить - construct) схемы руками.
- Конденсатор – это прибор, который может временно хранить электрический заряд.
- Транзистор – это один из самых важных устройств в электронике.
- Ток будет течь через диод, только когда положительное напряжение подается (is applied to) на анод и отрицательное напряжение подается на катод.
- Центральный процессор иногда называют мозгом компьютера, его работа – выполнять команды.
- Если ты хочешь повысить производительность своего компьютера, ты можешь добавить больше карт расширения.

Task 6. Read the sentences and say if the verb in bold refers to the action now, in future or to a habit:

- I'll send this letter in an hour when I finish my dinner.
- My brother's birthday is next month. I am giving him a PSP.
- I am taking three exams next semester.
- I am taking an exam now.
- Students usually take three exams every semester.
- Shhh. The teacher is explaining the new theorem. I want to hear what she's saying.
- When I graduate, I'm going to have my own business.
- When students graduate, they receive diplomas.
- I'm tired. I am going to bed in a minute.
- When I am in Moscow, I'm going to visit the Red Square.
- When I am home alone in the evening, I like to sing songs very loud.
- Are you ready? The bus arrives at 5 o'clock.

Task 7. Fill in the gaps with “will”, “am/is/are going to”.

1. – Why do you need a dictionary? – I (to write) ... a letter to my friends in Texas.
2. – I want to sleep so much. I need to wake up! – I (to get) ... you a cup of coffee. That will wake you up.
3. – I can't hear the video! – I (to turn) ... it up so you can hear it.
4. – I am so excited about our trip to France next month. We (to visit) ... visit Paris and Grenoble.
5. – Sarah (to come) ... to the party. – Oh! Then I (to go) too!
6. – It is so hot in here! – I ... (to open) the window!
7. I think he (to be) ... the next President of Russia.
8. After I graduate, I ... (to be) a programmer. I wanted to be a programmer all my life.
9. – Your mother called. She asked you to buy some bread on your way home. – OK. I ... (to go) to the supermarket.
10. – I ... (to visit) Nick this evening. – Great! Say him hello for me! – OK. I ... (to tell) him you're well.

Task 8. With a partner, ask and answer questions about your plans.

Example: – What are you doing tomorrow morning? – I'm going to university.

- | | |
|--------------------|---------------------|
| - tomorrow morning | - in a month |
| - in two hours | - in Summer |
| - next weekend | - after exams |
| - today evening | - after the lessons |
| - next Friday | - in 10 years |

Task 9. Fill in the gaps with “will”, “am/is/are going to” or Present Continuous form of the verb.

1. ... he ... (to go) to the basketball match?
2. I ... (to go) to the theatre tomorrow.
3. I ... (to invite) 10 people to the party and I hope everyone ... (to come).
4. I promise I ... (to not tell) anyone your secret.
5. I think the weather ... (to be) nice.
6. Next week they ... (to drive) to New York.
7. Take your umbrella with you. It ... (to rain).
8. That exercise looks difficult. I ... (to help) you.
9. They ... (to fly) to Turkey next summer holidays.
10. What ... you ... (to do) this evening?

Task 10. Look at Alex's diary. In pairs, ask and answer questions about his plans.

Monday 21	Thursday 24
write report call mom	course work deadline buy food for cat visit grandma at 18.30
Tuesday 22	Friday 25
dinner with Sarah buy a gift for Sam	meet mom at the station at 14.00
Wednesday 23	Saturday 26
dentist at 14.00 meet Sam at 19.00	party at Sam's house at 19.00

Task 11. Open the brackets and put the verbs into the Present Perfect tense.

1. I ... (see) this film twice, I don't want to see it again. Let's watch another film.
2. Pete ... (lose) his keys. He is not able to come into his flat.
3. I'm looking for Sam. ... you ... (see) him?
4. – ... you ... (hear) about the new album of this rock band? – I ... (hear) it's very popular.
5. Who is that lady? I ... (never/see) her before.
6. - Excuse me. ... someone ... (leave) this bag here? - I don't know. I ... (not/notice) it until now.
7. ... you ... (phone) your mother yet? She asked me to remind you.
8. How much of your course work ... you ... (do) yet? Do you have any results?
9. John ... (write) three reports on Physics since Monday. He works really hard.
10. – What can you say about Jake? Do you know him? – No, I don't. I ... never ... (meet) him.

Task 12. Put the verb in brackets into the correct form - Past Simple or Present Perfect.

1. Where ... you... (go) on holiday last year?
2. David ... (work) in a bar before going abroad.
3. We ... (be) to Paris three times. Next week we are going there again.
4. Jane ... (live) in New York since she was 12.
5. What time ... you ... (get) home?
6. When I was young I always ... (play) jokes on my parents and friends on April 1.
7. ... you ever ... (work) in a big company?
8. Emma ... (have) three different jobs since she ... (graduate) from the university and now she works in a bank.
9. Our town is very different now. It ... (change) a lot.

Task 13. Translate the following sentences into English.

1. Здоровье Гарри очень улучшилось, с тех пор как я его последний раз видел.
2. Ник никогда не бывал в этом городе раньше.
3. - Ты уже сдал тест по вождению? – Да. Я сдал на прошлой неделе, но машину я еще не купил.
4. - Ты уже закончил свою курсовую работу? – Да, почти. Я собираюсь отдать ее моему научному руководителю на проверку.
5. - Ты слышала что-нибудь о Джейн в последнее время, Нина? – Да. Знаешь, она недавно переехала. Они с мужем купили квартиру в центре.
6. - Ты уже видел новый фильм про Джеймса Бонда? - Нет. Я собираюсь посмотреть его на следующей неделе.

Lesson 8. Computer protection. Part 1. Information security

Starter

- What kind of information do you keep in your computer?
- How do you protect your information?
- What may cause problems with your information?

Word bank

1. an attachment – вложение к письму	11. to protect – защищать
2. a botnet – бот-сеть, сеть инфицированных компьютеров, рассылающих спам	12. to provide with smth. – предоставлять, обеспечивать чем-либо
3. to delete information – стирать информацию	13. reliable – надежный
4. to ensure – удостовериться	14. spyware – шпионское ПО
5. firewall – брандмауэр (аппаратные или программные средства межсетевой защиты)	15. to steal passwords – красть пароли
6. to forward – пересылать	16. to update – обновлять
7. to get access – получить доступ	17. a web browser – веб-браузер, средство для просмотра веб-страниц
8. to let – позволить	18. a worm – червь, вид вредоносного ПО, распространяющего свои копии по сети
9. malicious software – вредоносные программы	
10. to prevent – предотвращать	

Task 1. Match the words and their definitions.

firewall; software; hardware; antivirus; spyware; up-to-date; malicious software; pop-up ads; e-mail attachment; botnet;

1. A computer system or program that doesn't allow an unauthorized person to get access to your computer through the Internet.
2. A file that you send in an e-mail.
3. A network of private computers infected with malicious software to send spam messages.
4. A program that detects and destroys computer viruses.
5. An unrequested browser window for the purpose of advertising.
6. Computer software that secretly records information about which websites you visit.
7. Software that is intended to damage or disable computers and computer systems.
8. Something that includes the latest developments and trends.
9. The machines, wires, and other physical components of a computer.
10. The programs and other operating information used by a computer.

Task 2. Translate the following words and define the part of speech.

attach	access	package
attachment	accessible	pre-packaged
attached	prevent	route
sure	preventive	router
ensure	protection	virus
forward	protect	antivirus
forwarded	update	infect
detect	up-to-date	infection
detector	want	infected
collect	unwanted	spyware
collection	expensive	antispayware
collector	inexpensive	

Task 3. Read the text quickly and match the headings (1-6) and the paragraphs (A-E).

1. Be Careful What You Download:
2. Install or Update Your Antispyware Technology:
3. Install or Update Your Antivirus Software:
4. Keep Your Firewall Turned On:
5. Keep Your Operating System Up to Date:
6. Turn Off Your Computer:

Task 4. Read the text again and define if the following sentences are True or False.

1. There are two types of firewalls.
2. Hardware routers have embedded firewalls.
3. Antiviruses always delete malicious software.
4. Software antiviruses update automatically.
5. Spyware can record information about your private life.
6. Antispyware programs that you can download on the Internet can contain malicious code.
7. Operating system updates help keep your antivirus software up-to-date.
8. Your friends and colleagues don't send you infected e-mails.
9. If you keep your computer turned on, you help prevent spyware attacks.
10. Hackers create special networks to reach out to your computer.

Task 5. Answer the questions.

1. What can a virus do?
2. What does an antivirus do?
3. What is spyware?
4. Why should you beware of e-mail attachments?
5. Why is it better to turn your computer off?
6. What antivirus program do you use?
7. Do you follow safety rules mentioned in the text?
8. What else do you do to protect your computer and your information?
9. What do you do to protect information in your mobile device?

How to Protect Your Computer

Below are some key steps helping to protect your computer from intrusion:

A. A **firewall** helps **protect** your computer from hackers trying to **get access** to crash it, **delete information**, or even **steal passwords** or other sensitive information. Software firewalls are widely recommended for single computers. The software is pre-packaged on some operating systems or you can purchase it if you have an individual computer. For multiple networked computers, hardware routers typically **provide** firewall protection.

B. Antivirus software is designed to **prevent malicious software** programs from embedding on your computer. If it detects malicious code, like a virus or a **worm**, it works to disarm or remove it. Viruses can infect computers without users' knowledge. Most types of antivirus software are programmes updating automatically.

C. **Spyware** is just what it sounds like – software secretly installing on your computer to **let** others peer into your activities on the computer. Some spyware collects information about you without your consent. Also it can produce unwanted pop-up ads on your **web browser**. Some operating systems offer free spyware protection, and inexpensive software is readily available for download on the Internet or at your local

computer store. Be wary of ads on the Internet offering downloadable antispyware – in some cases these are fake products and products containing spyware or other malicious code. It's like buying groceries – shop where you trust.

D. Computer operating systems are periodically **updated** to stay in tune with technology requirements and to fix security holes. Be sure that you install the updates to **ensure** that your computer has the latest protection.

E. Don't download e-mail attachments carelessly; it can trick even the most **reliable** anti-virus software. Never open an e-mail **attachment** from someone you don't know, and beware of **forwarded** attachments from people you know. They may have automatically attached malicious code.

F. With the growth of high-speed Internet connections, many people leave their computers working or ready for action. The downside is that if a computer is "always on", it makes the computer more susceptible. If you turn your computer off, it severs an attacker's connection. There are types of spyware or **botnets** using your computer's resources to reach out to other users.

Adapted from: http://www.fbi.gov/scams-safety/computer_protect

Useful words and phrases

1. available – доступный
2. carelessly – беспечно
3. consent – согласие
4. to crash – разрушать
5. to disarm – обезвредить
6. downside – недостаток
7. to embed – встраивать
8. fake – фальшивый
9. groceries – продукты питания
10. growth – рост
11. in some cases – в некоторых случаях
12. inexpensive – недорогой
13. intrusion – вторжение, взлом
14. knowledge – знание
15. multiple – многочисленный
16. to offer – предлагать
17. peer – смотреть, просматривать
18. pop-up ads – всплывающая реклама
19. pre-packaged – предварительно укомплектованный
20. to purchase – приобретать
21. to reach out – держать связь
22. readily – легко
23. requirement – требование
24. router – роутер
25. security hole – дыра в защите
26. sensitive – зд. секретный
27. to sever – усложнять
28. sounds like – похоже на ...
29. to stay in tune with – быть приспособленным к
30. sure – уверенный
31. susceptible – уязвимый
32. to trick – обмануть
33. to trust – доверять
34. unwanted – нежелательный
35. to beware of – остерегаться
36. widely – широко
37. without – без

Task 6. Put the necessary words into short summaries of the paragraphs, and retell the text using them.

1. There are two types of ...: software and
Firewalls protect your computer from attempts to ... or steal information, and to ... your computer.
2. Antivirus programs ... or delete malicious software when they ... it. Most of such programs ... automatically.
3. Spyware can ... information about you, produce pop-up ads. There are fake ... programs that contain ... code.

4. Updates of the ... system fix ... holes and help protect the
5. E-mail attachments can contain ... attached malicious
6. Spyware or ... can use resources of a ... computer to send out ... to other users.

Task 7. Translate the sentences into English.

1. Друг может случайно переслать тебе письмо с вложением, которое содержит вредоносный код.
2. Брандмауэр предотвращает заражение компьютера вирусами.
3. Производители операционных систем предоставляют пользователям надежную защиту брандмауэром.
4. Тебе следует регулярно обновлять антивирус.
5. Червь – это вид вредоносного программного обеспечения.
6. Пользователи должны защищать свои данные паролем.
7. Удостоверьтесь, что ваш антивирус автоматически обновляется.

Task 8. Match two columns to make phrases.

1. e-mail	a. with software
2. to forward	b. passwords
3. to get access	c. an e-mail
4. malicious	d. browser
5. to prevent	e. code
6. to provide	f. attachment
7. reliable	g. antivirus
8. to steal	h. to your computer
9. web	i. from embedding

Task 9. Read the dialogue, replay it with the partner.

Anna: Ruslan, can you check my laptop? Nothing is working.

Ruslan: OK, let's take a look. Oh, you have a lot of documents on your desktop!

Anna: Sometime I'll sort them into folders...

Ruslan: Have you updated your antivirus software recently?

Anna: Yes, I have. I did it last week.

Ruslan: Well, that's good.

Anna: I can't find my course project. And Microsoft Office doesn't work.

Ruslan: You might have a virus on your computer. It hides documents. You should install a virus scanner because your antivirus doesn't remove all malicious programs.

Anna: Can you recommend me a virus scanner?

Ruslan: I usually use Dr. Web. You can download it from the official website.

Anna: Fine, I'll do that. And what about Microsoft Word? Can you repair it?

Ruslan: I can reinstall it. It will take some time.

Anna: Thank you very much!

Grammar: Participle I

Form:	
verb+ing	reading, helping
Use:	
1. To form the Continuous tenses:	I am reading an interesting book. Я читаю интересную книгу.
2. As an attribute:	Key steps helping to protect your computer. Ключевые шаги, помогающие защитить ваш компьютер.
3. To replace a relative clause:	Key steps that help to protect your computer. = Key steps helping to protect your computer. Основные шаги, которые помогают ... = Основные шаги, помогающие ...
4. As an adverbial modifier (answers the questions "how?" or "when?")	He has written an article using a dictionary. (How?) Он написал статью, используя словарь. He used a dictionary while translating an article. (When?) Он использовал словарь при переводе (когда переводил) статью.

Note: Participle I переводится на русский язык действительным причастием настоящего или прошедшего времени. В качестве обстоятельства Participle I переводится деепричастием.

Task 10. Translate the following sentences, point out the function of the –ing form.

1. A firewall helps protect your computer from hackers trying to get access to it.
2. Most types of antivirus software are programmes updating automatically.
3. Spyware is software secretly installing on your computer.
4. Don't turn off your computer if it is updating the anti-virus software.
5. You can infect your computer while browsing suspicious sites.
6. Some people can send you a malicious code without knowing it.
7. Some types of malicious software use your computer's resources when it is working and the user won't notice anything.

Task 11. Replace the relative clause with a Participle I.

1. Peter carelessly downloaded a program that can embed in his system and crashed it.
2. Sonya has a problem. She installed a fake anti-virus program that steals all the passwords.
3. Even free anti-virus can protect your computer from viruses that crash your operating system.
4. Now operating systems are pre-packaged with software that protects your computer.
5. Hackers found a security hole in the server that keeps all the financial information.
6. Don't trust ads that promise to check your system right now.
7. Be wary of e-mails from strangers that contain executable files.

Task 12. Choose the wrong translation. There can be more than one correct answer.

1. Sam clicked on the wrong icon when attaching the file to the e-mail.
 - a. когда прикреплял файл к письму.
 - b. прикрепляя файл к письму.
 - c. иконка, прикрепленного файла к письму.
2. I accidentally deleted a useful file when formatting my flash drive.
 - a. при форматировании флешки.
 - b. на отформатированной флешке.
 - c. форматируя флешку.
3. Anti-virus scanned your files preventing contamination.
 - a. предотвращение заражения
 - b. предотвращая заражение
 - c. предотвратив заражение
4. A worm infects a computer spreading its copies through the web.
 - a. распространяющий
 - b. распространяя
 - c. при распространении
5. Many companies suffer from cyber-attacks without knowing about it.
 - a. не зная об этом
 - b. без знания о нем
 - c. и не знают этого
6. Some viruses can infect your computer tricking its anti-virus.
 - a. обманывая его антивирус.
 - b. когда обманывают его антивирус.
 - c. обманывающие этот антивирус.

Task 13. Translate the following sentences into English.

1. Большинство антивирусов – это программы, обновляющиеся автоматически.
2. Шпионское ПО – это программа, скрыто устанавливаемая на компьютер.
3. Некоторые вирусы могут сломать операционную систему, удаляя системные файлы.
4. Удостоверься, что антивирус работает, когдаходишь в интернет.
5. Вредоносные программы не могут получить доступ к информации на компьютере, не включая его.
6. Брандмауэр, защищающий компьютер от сетевых атак, обычно встроен в систему.
7. Антивирус защищает информацию на компьютере, не позволяя вредоносным программам получить доступ к ней.
8. Воры могут получить доступ к твоей кредитной карте, украв пароль с помощью вируса.

Check yourself

Task 14. Translate the following sentences.

1. I am downloading a new program allowing me to check my e-mail without a browser.
2. In some cases even the working firewall can't protect your computer from intrusion.

3. When purchasing a new computer with an operating system check the anti-virus software.
4. Be wary of sites that you don't know.
5. When checking e-mail be careful with attachments.

Reference on grammar

1. Participle I: <http://en-grammar.ru/participle-1-v-funkcii-opredeleniya.html>
<http://www.study.ru/lessons/intermediate7-1.html>

Technical reading: how to give advice

Task 15. Read the text and answer the questions below.

Security Tips to Avoid Identity Theft

If you lose your phone or tablet, the person who finds it can access your contacts and email them to themselves. If you allow your browser to save your login information, the person could access your bank account, PayPal account or other important online account. Here are some security tips you can use to prevent identity theft:

- Avoid saving your login information. You can disable this feature in your device's browser options.
- Don't loan your tablet or phone. Even people you trust may log in to your personal accounts.
- Always add a password to your phone and tablet so that only you can use them. Make sure that the password isn't like your first name, ABCD or 1234.
- You should call your service provider and report that your device is lost as soon as you realize it is missing. In most cases, the provider can disable the phone so that anyone who finds it won't be able to use it.
- Never store your contacts online. There have been examples when provider's websites have been hacked and users' contact information has been stolen.

1. What is identity theft?
2. Do you follow this advice?
3. Who may need your contact information?
4. Can your provider disable your phone if it is stolen?
5. How many characters does your password have?

Task 16. Read the information about three people. Give them some advice on information security; use the phrases below.

- | | |
|-----------------------|--------------------------|
| You should + verb ... | You shouldn't + verb ... |
| Always + verb ... | Never + verb ... |
| Make sure that ... | Avoid + verb+ing ... |
| | Don't + verb ... |

Sarah likes buying things on-line. She pays by her credit card or using her Pay Pal account. She even has a mobile application to choose and order pizza and sushi on-line.

Sam likes communicating in social networks. He has hundreds of friends and he receives a lot of messages. Sam has many accounts but he doesn't like remembering passwords.

Sam's mother has recently bought a smart phone. She has started to learn how to use it but she doesn't know about many functions. She is afraid that someone can steal her personal data.

Lesson 8. Computer protection. Part 2. Problems with computers.

Starter

- Do you or your friends and relatives often have problems with a computer?
- What are the most frequent problems?
- How do you solve these problems?

Task 1. Here are some common computer problems and their solutions. Try to match each problem with the right solution.

Problems:	Solutions:
1. The mouse doesn't move the cursor on the screen.	a. It may be full or damaged. Free some memory or try another one.
2. I can't save anything onto my flash drive.	b. Check that the keyboard is connected properly to your computer.
3. I've deleted a file by mistake.	c. Double-click the Recycle Bin icon, select a file, click on the File menu, and then click Restore.
4. Typing produces nothing on the screen.	d. It can be a system problem. Try to turn the computer off and on again. If the error message still appears, you will have to install the program or get expert help.
5. A message 'System error' has appeared on the monitor screen.	e. Check that it's connected properly. If it's disconnected, plug it in and restart your computer.

Word bank

1. adware – ПО с размещённой в нём рекламой	11. to get rid of – избавиться
2. anti-spyware programs – антишпионские программы	12. to launch a program – запускать программу
3. to be infected – быть зараженным	13. to look up – искать что-либо в справочнике
4. to cause – вызывать, быть причиной	14. the most recent version – самая последняя версия
5. to change rapidly – меняться быстро	15. to plug in – вставить в розетку, подключить
6. a common error – распространённая ошибка	16. to replace – заменить
7. a crash – авария, крушение; зд. выход компьютера из строя	17. to surf the Web – бродить по сети
8. faulty hardware – неисправное «железо»	18. to take care of – заботиться о ч.-л.
9. a fix – зд. разрешение проблемы	19. to update the driver – обновить драйвер
10. a freeze – заморозка; комп. зависание	20. to wear down – изнашиваться

Task 2. Before you read the text try to build phrases from these words, then find the phrases in the text and check if you were right.

- | | |
|----------------------------|-------------------------|
| 1. the blue screen | a. some cash |
| 2. what is causing | b. the problem |
| 3. detailed | c. out of the ordinary |
| 4. to save | d. to replace |
| 5. the sound | e. than a new computer |
| 6. easy | f. information |
| 7. the fix is much cheaper | g. of death |
| 8. computer | h. of the fan |
| 9. every time you launch | i. a particular program |
| 10. anything | j. is moving slowly |



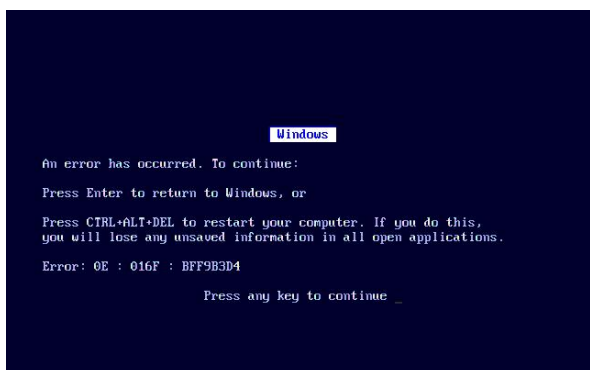
Task 3. Read the text and decide if the following statements are True or False.

1. When you have the blue screen of death on your PC there is nothing you can do with it.
2. There is no chance to find information about the error when you've got the blue screen of death on your computer.
3. Sometime when you surf the Internet scary messages saying "you've got a virus" may appear on your monitor screen.
4. If you pay for the advertised program in the Internet you won't have any problems with your computer.
5. If your computer doesn't work at all it may be a problem with a power supply.
6. It's not easy to replace a power supply on a desktop computer.
7. If your computer is moving slowly – just wait a bit, it will work right soon.
8. Fixing a computer is always a very hard and complicated process.

4 common computer problems solved

Though the computer world **changes rapidly**, there are a handful of problems that seem to never go away. Here are four of them and the **fixes** to each one.

1. The blue screen of death



5 - My computer has given me that blue screen of death four different times. Any time I try to watch a video - it blue screens on me. Do you know what's **causing** the problem? Will I have to buy a new computer?

10 - There's plenty you can do before junking your computer! Once you get the **error**, **look for** the error number (It will look like 0X#####). In Windows 8, the blue screen gives you more detailed information about what **caused** the error. Either way, **look up** the code or message online. Microsoft has a list of what a few **common errors** mean, too. The problem is often **faulty hardware** or a **bad driver**. Instead of junking the whole computer, you can buy a new part or **update the driver** yourself to save some cash.

20 2. The spyware attack



- You're **surfing the Web** when a scary message appears saying you have a virus! Fortunately, for a "low" fee, the advertised "state-of-the-art" program will **take care of it** for you. You should shell out that cash immediately, right? Wrong. If you pay for the program, your problems will never stop.

35 Your computer is likely **infected** with a type of malicious program called **spyware**, or sometimes **adware**. You don't need to pay for any special program to **get rid of** it. Most **anti-spyware programs** will **take care of it**.

1. to advertise – рекламировать
2. appear – появляться
3. a bad driver – неисправный драйвер
4. to become the norm – стать нормой
5. before junking – прежде чем выкинуть
6. to blue screen – показывать голубой экран
7. cash – наличные

40 3. Dead computer



- You turn your computer on and nothing happens. No noise, no lights, not even the sound of the fan. Time to shop for a new one, right? Don't count your old friend out yet. First, make sure it's **plugged in**. If everything is as it should be, your problem could still be a power issue. Computer power supplies can die, but they're relatively easy to **replace** on desktops. On a laptop, it could just be a **dead battery**. In the case of a dead power supply, the **fix** is much cheaper than a new computer.

4. Random freezes



55 - If your computer is moving slowly, it's only a matter of time until **freezes** and **crashes** become the norm. These make you want to junk your whole computer, but fixing them might be simple.

60 If the freeze happens every time you **launch** a particular **program**, the program itself is probably causing the problem. Uninstall the program, and then try reinstalling **the most recent version**.

65 If the freezes are happening randomly, it's probably something taxing your memory. Find the culprit with a program like Process Explorer or Speccy. All of these will search for what's **wearing** your computer **down** and using up resources.

If these don't find anything out of the ordinary, it might be time to **replace** your RAM.

70 Adapted from: <http://www.komando.com/tips/12152/5-common-computer-problems-solved/all>

Useful words and phrases

8. count out – исключить, не принимать во внимание
9. a culprit – преступник; виновный
10. a dead battery – неисправная батарея
11. die – умереть; зд. сломаться
12. either way – зд. или
13. fortunately – к счастью

14. a handful – пригоршня, горсть; зд. некоторое количество
15. to happen – происходить, случаться
16. immediately – сразу же, немедленно
17. in the case of – в случае
18. instead of – вместо
19. issue – зд. проблема
20. to junk – выкинуть
21. a list - список
22. likely – зд. вероятно
23. a "low" fee – небольшая плата
24. make sure - удостоверьтесь
25. make you want – заставит вас хотеть
26. malicious – вредоносный
27. a matter of time – вопрос времени
28. to mean – значить, означать

Task 4. Match the words from two columns to make phrasal verbs and translate them.

to wear	rid of
to take	for
to get	care of
to plug	down
to look	in

Task 5. Fill in the sentences with the verbs from the table above. Put the verbs into the right form if necessary.

1. After many years of everyday use some parts of electronic devices
2. To turn on an electric device you need to ... it ... first.
3. I'm a new mobile phone! Can you help me please?
4. I can't a feeling that I've got something else to do.
5. A good technician will your computer if you have problems with it.

Task 6. Match the words with similar meanings.

to fix	unusual
to look for	to throw away
special	a broken battery
a dead battery	to repair
to junk	to search

Task 7. Fill in the sentences with the words from the table above. Put the verbs into the right form if necessary. Sometimes two variants are possible.

1. -Can you help me, please? I've got a problem with my computer.
- No problem, I can ... it.
2. Hello! I'm a new battery for my laptop. Have you got them?
3. - What are you going to do with this broken computer?
- I'm going to ... it
4. Today is a ... day for our family. Ten years ago our parents got married on this day.
5. There is nothing ... in this situation. Thing like that happen every day.

29. once – зд. когда
30. particular – определенный
31. plenty – много
32. power issue – проблема питания
33. relatively – относительно, сравнительно
34. to seem – казаться
35. scary – пугающий
36. shell out – разг. раскошелиться, выложить денежки
37. "state-of-the-art" – новейший; соответствующий последнему слову техники
38. to tax – облагать налогом; зд. чрезмерно напрягать, утомлять, истощать;
39. though – хотя
40. whole – весь, целый

Task 8. Match the words with opposite meanings.

common	state-of-the-art
right	software
low price	to unplug
old	wrong
to plug in	to save money
hardware	out of the ordinary
to pay money	high price

Task 9. Fill in the sentences with the words from the table above. Put the words into the right form if necessary.

1. I want to buy a new laptop, so I'm ... money.
2. This is the ... price I've ever seen for such a computer.
3. – Something is ... with my computer. It doesn't work. – Did you ... it in?
4. When you buy something – you for it.
5. This new computer was created using technology.
6. When you leave your house for a long period of time it's better to ... the electric devices.
7. A good computer technician should know well computer's ... and

Task 10. Do you know these words and phrases? Read the dialogue below and check.

- to be turned on
- to check
- to be switched on
- brightness
- to turn smth. up
- Don't mention it – не стоит (благодарности)
- to delete by mistake
- a double-click
- Recycle Bin
- an icon
- to select
- necessary
- to click
- to restore
- a software problem
- to end task
- to move
- to turn off / to turn on
- You are welcome - пожалуйста

Task 11. Read the dialogue with a technical support engineer. Replay the dialogue with your partner.

Tech. support. Hello, Pete is speaking. How can I help you?

Jane: Hi, I'm Jane. I've got some problems with my computer!

Tech. support: Ok, Jane, what's wrong with your computer?

Jane: First of all my computer is **turned on** but the screen is dark!

Tech. support: I see. **Check** that the monitor is **switched on**.

Jane: It is.

Tech. support: Ok, now **check** the **brightness** control and **turn it up**.

Jane: Oh, it works! Thanks a lot!

Tech. support: **Don't mention it!** Do you have any other problems?

Jane: Actually, there are a couple of other problems.

Tech. support: So, what's wrong?

Jane: I've **deleted** a file **by mistake**.

Tech. support: Oh, that's not a problem at all.

Double-click the **Recycle Bin icon**...

Jane: I did.

Tech. support: Now **select** the **necessary** file. **Click** on the File menu.

Jane: I did.

Tech. support: Now **click Restore**.

Jane: Oh, thanks! And one more little problem.

Tech. support: I'm listening.

Jane: The cursor suddenly stops moving when I work on my computer.

Tech. support: It can be a **software problem**. Press Ctrl+Alt+Delete, then **End task** to close the program and try to **move** your cursor. If it doesn't work, **turn** the computer **off** and wait 10 seconds before **turning it on** again.

Jane: Thank you! It was very kind of you!

Tech. support: **You are welcome**. Call if necessary. Good bye.

Grammar: Participle II

1. Formation

Participle II of regular verbs has the ending “- ed”, Participle II of irregular verbs is **the 3rd form**. Remember that Participle II has PASSIVE meaning.

Regular verbs -ed	Irregular verbs - the 3 rd form
to like – liked	to be – was/were – been
to play – played	to go – went – gone
to use – used	to speak – spoke – spoken
to live – lived	to take – took – taken
to study – studied	to give – gave – given
to plan – planned	to know – knew – known

2. Functions. Participle II is used:

a. to form Passive

- This room **is cleaned** every day. – Эту комнату убирают каждый день.
- Computers **are used** for work every day. – Компьютеры используются для работы каждый день.
- The book **was written** long ago. – Книга была написана очень давно.
- These facts **were known** yesterday. – Эти факты были известны вчера.

b. to form Perfect

- We **have studied** new grammar rules. – Мы изучили новые правила по грамматике.
- I **have just finished** my report. – Я только что закончил свой доклад.
- Jane **has flown** to Greece. – Джейн улетела в Грецию.

3. as an attribute

- The boys looked at the **broken** window with **frightened** eyes. – Мальчишки смотрели на **разбитое** окно с **испуганными** глазами.
- Here is a letter **addressed** to your sister. – Вот письмо, **адресованное** твоей сестре.
- The girl **named** Jane lives in the same street with me. – Девочка, **которую зовут** Джейн, живет на одной улице со мной.

Task 12. Define the function of Participle II in the following sentences. Translate the sentences.

1. This house was built many years ago.
2. This well-known actor is my favourite film star.
3. I've done a lot of work this week.
4. Have you seen George recently?
5. These words written on the wall say: “Happy Birthday!”
6. Home-grown vegetables are much better for your health.
7. This story is known by everyone.
8. The telephone was invented by A.G. Bell.
9. I gave my mother the finished homework and she corrected my mistakes.
10. We have never played golf.

Task 13. Decide if the following sentences contain Participle II or Past Simple. Translate the sentences.

1. We finished our homework two hours ago.
The finished homework was on the table.
2. Spoken English is more difficult for me.
I spoke to him an hour ago.
3. Last year my family and I visited that museum.
This museum visited by millions of people is world famous.
4. Someone stole my suitcase in the airport yesterday.
Police found the stolen suitcase.
5. Students used new technologies in their work.
The used technologies helped to do the work easier and quicker.
The technologies used in that project were new.
6. The teacher gave us a big home task.
The task given by our teacher was difficult.
The given home task was not easy to do.
7. My grandfather built this house many years ago.
The built house was beautiful and comfortable.
We still live in the house built by my grandfather.

Task 14. Translate the following sentences into Russian. Pay attention to the translation of Participle II.

1. The problem realized by everyone required much time.
2. The manually constructed computer would not be effective because of the length of wires.
3. Resistors come in a variety of resistance values, measured in units called 'ohms'.
4. Next to resistors, capacitors are probably the second most commonly used component in electronic circuits.
5. All the information connected with this task you can find on the Internet.
6. The questions asked by the teacher were not easy.
7. Tomsk was one of the first cities in Russia that got access to the Internet. It happened because of grants received by university students and scientific cooperation.
8. Her books, read by people in many countries, are very popular nowadays.
9. The actor arrived, surrounded by bodyguards.
10. Business incubator of TUSUR gave rise to 15 hi-tech start-ups created by university students.
11. In Tomsk there are museums dedicated to various subjects: art, local history, wood carving.
12. Text messages can get through overloaded networks that do not allow phone calls.

Task 16. Translate the following sentences.

1. Your computer is infected with adware.
2. I deleted the file infected with adware.
3. Yesterday Sam brought fixed computer home.
4. Look! Your TV-set is working, I fixed it.

Task 15. Translate the following sentences into English.

1. Компьютеры, используемые в этом проекте, не новые.
2. Девушка, которую зовут Нина, является моей одногруппницей.
3. Новые английские слова, услышанные на уроке, остались в моей памяти.
4. Я нашел пару ошибок в законченной работе.
5. Разработанные в этой лаборатории технологии получили награду на международной конференции.
6. Интернет сайт, созданный студентом нашей группы, очень удобен для пользователей.
7. Скопированные файлы были отправлены по электронной почте.
8. Распечатанный лист бумаги содержал задания для повторения.
9. Выключенный компьютер не шумит.
10. Ник нашел потерянный телефон в кармане куртки.

Check yourself

5. We have replaced all the monitors in the computer class.
6. The replaced sound card doesn't work well.
7. I have just checked e-mail. There is a corrected article from the professor.

Reference on grammar

1. Participle II: <http://study-english.info/participle-2.php>
<http://en-grammar.ru/participle-2-v-funkcii-opredeleniya.html>

Technical reading: how to describe a process

Task 17. Read the text.

W32.Nimda.A Worm

The worm uses three main methods of propagation: email, web, and network. Email messages are sent with an attachment called README.EXE. When README.EXE runs, the following occurs (steps are summarized from the F-Secure Analysis of the Nimda Worm):

First, worm copies itself to a temp folder with a random name with the format "MEP.TMP".

Then, worm loads itself as a .DLL library.

Next, worm gets current time and generates random number.

After that, worm performs arithmetic operations with number and checks result. If result is bigger than worm's counter, README*.EXE is deleted from temp folder

Next, worm looks for and opens EXPLORER process and assigns its process as a remote Explorer thread.

Then, worm gets infected host info and sleeps for some time. When it wakes up, it checks what OS system is running: if OS is NT, worm compacts its memory blocks.

After that, worm copies itself as LOAD.EXE to Windows directory.

Next, worm looks for .DOC and .EML files on remote systems.

Finally, if worm finds document and web files, it creates .EML and .NWS files with the same name as the files found.

Adapted from: <http://www.sans.org/security-resources/malwarefaq/32-nimda-exploit.php>

Task 18. Find Russian equivalents to the following words:

1. propagation	2. load	3. assign
4. occur	5. DLL library	6. remote
7. summarized	8. perform	9. thread
10. temp folder	11. counter	12. host info

Task 19. Read the descriptions below. Use the text in task 17 as an example and rewrite the descriptions.

Wireless mouse

Wireless mice usually work via radio frequencies commonly referred to as RF. RF wireless mice require two components to work properly – a radio transmitter and a radio receiver.

1. The mouse records its movements and buttons that are clicked.
2. The mouse sends this this information via radio signals to the receiver.
3. The RF receiver receives RF signals.
4. The signals are decoded and sent directly to the computer.

Computer keyboard

A keyboard processor has several complex parts, such as the key matrix. A key matrix is a series of circuits beneath the keys. Each circuit is broken at a certain point under the key.

1. A user presses a key.
 2. Circuit connects.
 3. Electric current flows through it.
 4. When the processor finds that a circuit is closed, it refers to its character map and finds the location of the circuit.
 5. The processor sends its information to the computer.
 6. A character map is a chart that tells the processor what each key in the key matrix symbolizes.
- For example, when you press the "a" key, it closes a circuit. The processor finds that the circuit closed is the "a" key by referring to its character map. Then, it sends the "a" to the computer.

Lesson 9. Information technology. Part 1. Programming languages

Starter

- What programming languages do you study?
- Do you think it is necessary to study BASIC or PASCAL at university?
- Is studying a programming language similar to studying a foreign language? In what way?

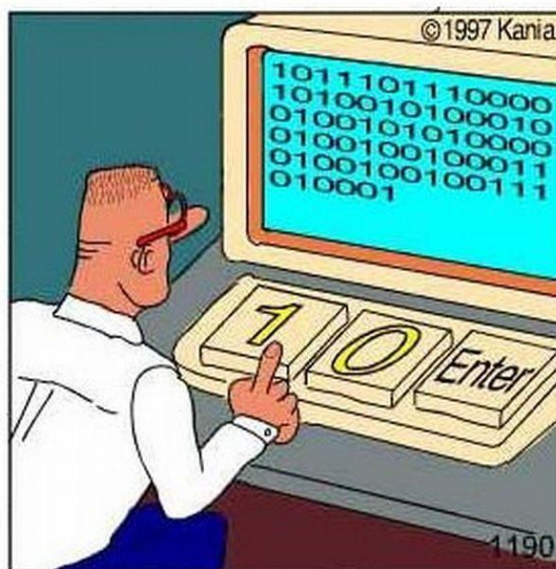
Word bank

1. to be in wide use – широко использоваться	14. open-source – открытый, с открытыми исходниками
2. class-based – основанный на классах	15. possible – возможный, вероятный
3. command – 1) команда; 2) управлять	16. procedure – процедура, оформленный специальным образом обособленный именованный набор команд, выполняющий некоторые действия
4. to compile – компилировать	17. procedural – процедурный
5. to enable – делать возможным, наделять способностью	18. routine – подпрограмма (одно из базовых понятий, означающих функциональный блок кода)
6. execution – выполнение (программы)	19. run-time environment – среда исполнения (программы)
7. functional – функциональный, относящийся к функциональному программированию	20. scripting language – язык написания сценариев
8. to gain – получать	21. sequence – последовательность
9. imperative – императивный	22. source code – исходный код
10. inheritance – наследование, наследство	23. syntax – синтаксис
11. in terms of – в терминах, говоря языком	24. template – шаблон
12. to modify – изменять, модифицировать	
13. object-oriented – объектно-ориентированный	

Task 1. Match the style of programming and its definition. Use the dictionary if necessary. One definition is extra.

class-based; functional; imperative; object-oriented; procedural, scripting

1. a style of programming that treats computer programs as mathematical functions.
2. a style of object-oriented programming (OOP) that gains inheritance by processing classes as objects.
3. describes computation in terms of statements that change a program state. It defines sequences of commands for the computer to perform
4. is based upon the concept of the “procedure call”. Procedures, also known as routines, subroutines, methods, or functions simply contain a series of computational steps that must be carried out.
5. original source code is made freely available and may be redistributed and modified
6. supports scripts, programs written for a special run-time environment that can interpret (rather than compile) and automate the execution of tasks that could alternatively be executed one-by-one by a human operator.
7. uses a methodology which enables a system to be modelled as a set of objects which can be controlled and manipulated in a modular manner



Real programmers code in binary.

<http://tinypic.com/view.php?pic=28jwnki&s=6#.VTDqE9ysVA0>

Task 2. Match English phrases with Russian translation, and then use them to translate the text.

1. который ты решишь выучить первым	a. that has followed it
2. и какой результат ты хочешь получить в итоге	b. for that reason
3. в ядре приложений по всей сети	c. for its part
4. поэтому	d. where you want to eventually go from there
5. его можно использовать бесплатно	e. on which the web is based
6. чтобы начать	f. at the core of applications on and off the web
7. со своей стороны	g. that you decide to pick up first
8. который последовал за ним	h. to get started
9. на котором основана сеть	i. free to use

Five Best Programming Languages for First-Time Learners

If you're thinking of learning to code, the choice of language that you decide to pick up first depends on what you're trying to learn, what you want to do with the skill, and where you want to eventually go from there.

Java



Oracle's Java is one of the web's longest standing, persistent, and influential programming languages. You'll find Java at the core of applications on

and off the web, on all platforms, operating systems, and devices. It's a popular **class-based, object-oriented** programming language that's designed to be portable and workable on as many platforms as **possible**. For that reason, it's also one of the world's most popular programming languages.

Ruby



Ruby is a dynamic, **open-source**, object-oriented programming language developed by computer scientist Yukihiro Matsumoto in the 90s,

which makes it one of the youngest languages in broad use. It was designed to have **syntax** that was easy to read and to write by mere humans. You don't necessarily need to learn a massive base of **commands** and specialized "vocabulary" to get started. It also supports **procedural, functional**, and **imperative programming**.

Python



It was developed in the 80s by Guido van Rossum, who then handed the language over to the non-profit

Python Software Foundation, which **serves** as the language's administrator. The language is open source and free to use, even for commercial applications. Python is a **scripting** language, allowing programmers to churn out large quantities of easily readable and functional code in short periods of time, but it's also dynamic, and supports object-oriented, procedural, and functional programming styles.

C/C++



Both languages existed since the 1970s and early 80s, respectively. C, for its part, is an extremely widely-used, general purpose, imperative programming language that has heavily influenced almost every language that has followed it. C++ on the other hand took things step further, added object-oriented features like classes to the language, along with virtual functions and **templates**. C++ is also one of the world's most popular programming languages. It is **still in wide use** today in everything from video games to productivity software.

JavaScript



JavaScript is a scripting language that was developed in the 90s by Brendan Eich, who formerly worked at Netscape Communications and now at the Mozilla Foundation. JavaScript is one of the fundamental technologies on which the web is based. Though, JavaScript exists outside of the browser as well, but largely in the context of connected applications and services. The language is dynamic and object-oriented as well as functional and imperative.

Adapted from: <http://lifelhacker.com/five-best-programming-languages-for-first-time-learners-1494256243>

Useful words and phrases

1. along with – наряду с
2. as well as – и, так же
3. broad – широкий
4. a choice – выбор
5. churn out – производить большое количество ч.-л., штамповать
6. conventions – условные обозначения
7. to depend on – зависеть
8. even – даже
9. eventually – в итоге
10. to exist – существовать
11. to follow – следовать за ч.-л.
12. formerly – прежде, раньше
13. give insight – давать понимание чего-то
14. to hand smth. over – передать
15. heavily – очень, в большой степени
16. to influence – влиять, оказывать влияние
17. influential – влиятельный
18. indentation – структурированное расположение текста, введение отступов
19. largely – в значительной степени
20. mere humans – простые смертные
21. modularity – модульность, модульный принцип (организации)
22. necessarily – обязательно
23. non-profit – некоммерческий
24. on and off – время от времени зд. везде
25. outside – вне, в отдельности
26. persistent – устойчивый
27. to pick up – научиться ч.-л. быстро
28. productivity software – ПО для обработки информации, такой как документы, базы данных, таблицы
29. a purpose – цель
30. quantity – количество
31. respectively – соответственно
32. to serve – служить
33. still – все еще
34. though – но, хотя
35. to take things step further – пойти дальше
36. widely-used – широко используемый
37. workable – возможный, выполнимый

Task 3. Read the text and match the author's recommendation and the programming languages.

Java; Ruby; Python; C/C++; JavaScript

1. It teaches some useful things like indentation, modularity, and the importance of naming conventions that will help you as you learn and work with other languages. There is also a lot of learning tools and documentation available to help first-time coders. You can use it and learn for free.
2. This language is one of the most basic languages in computer science and programming. If you learn it, they benefit you greatly. It will give you insight into the beginnings and roots of computer science and computer programming. With it you can design any program you need.
3. This language gets a lot of its syntax from C or C++ and it teaches you to think like a programmer – logically and analytically. Also you can use it for different platforms.

4. You can start using it right away to build things for the web. And it's in-built in your browser and used mostly for web applications.
5. This language is easy to understand and easy to learn, easy to read because there aren't a lot of specialized commands. There are also a lot of similarities to Perl and Python.

Task 4. Answer the questions.

1. What programming languages listed in the text have you heard of?
2. Have you worked with them?
3. What company owns Java?
4. Who developed Python?
5. Does Python Software Foundation receive any money for administrating Python?
6. What is the difference between C and C++?
7. Where does Brendan Eich work?
8. How is JavaScript connected with Java?
9. What language would you choose to program a flash game? To work with a data base?

Task 5. Fill in the table. Use the web search if necessary.

Programming language	Features	Application	Developer	Year
Java				-
	open-source, object oriented			
		personal and commercial application		
			Dennis Ritchie Bjarne Stroustrup	
				1990s

Task 6. Tell about a programming language. Use the information from the table above and the following phrases to help.

1. ... is a ... programming language.
2. ... is designed for ... application.
3. ... was developed by ... in ...
4. You can find it in ...

Example: Java is a class-based, object-oriented programming language. It is designed for multiplatform application. It was developed by Oracle. You can find it in many programs in the Web and in all operating systems.

Task 7. Make a report about a programming language which is not mentioned in the text.

Task 8. Match two columns to make phrases.

1. to be in	a. oriented
2. source	b. a program
3. execution	c. language
4. object	d. wide use
5. class	e. of commands
6. run-time	f. of tasks
7. open	g. code
8. to compile	h. based
9. scripting	i. source
10. sequence	j. environment

Task 9. Put the phrases from the previous exercise into the following sentences.



1. Linus Torvalds said that ... model allowed the creation of the best technology.
2. Java is a ... object-oriented programming language.
3. C++ is the most popular programming language. It ... in everything from games to productivity software.
4. OOP stands for ... programming.
5. PHP is a popular open source ...
6. Scripting language can automate the ... This helps to process large amounts of data.
7. Some developers hide the ... of their program from users.
8. The computer sends the following ... to automate the testing of product.
9. When there is a problem in the code, the compiler will not ...
10. When software developers write programs, they need to test them in the ...

Task 10. Complete the table.

verb	translation	noun	translation
to execute	осуществлять, выполнять, реализовать;		
		compiler	компилятор
to inherit	наследовать; унаследовать		
		program	программа
		modification	изменение; модификация
		interpretation	интерпретация, истолкование, трактовка
to code	кодировать, зашифровывать		

Task 11. Complete the sentences with the words from the table above. Put the words into the right form.

- Computer is a clever machine which ... tasks given by a programmer.
- ... of this project should be done to the end of the year.
- Writing a ... a programmer uses special syntax.
- If you don't want anybody read your mail you may ... your writing.
- After his grandfather's death Pete ... a big house in America.
- A millionaire left big ... for his children and grandchildren in 2012.

- Class-based style of programming is object-oriented programming style that gains ... by processing classes as objects.
- 4. - In this article the author gave his ... of a famous novel.
- I had to ... the speech to them.
- Scripts are programs written for a special run-time environment that can ... and automate the execution of tasks.
- 5. - This new application to your cell phone can help you ... your hairstyle.
- At the international exhibition I saw many different ... of this device.
- With open-source programming the original source code may be redistributed and

Task 12. Complete the table.

noun	translation	adjective	translation
		different	другой, отличный от
procedure	процедура		
possibility	возможность		
		functional	функциональный
		reasonable	разумный; справедливый

Task 13. Complete the sentences with the words from the table above. Put the words into the right form.

- What is the ... between these two programming languages?
- This place has changed greatly. Last year it was
- This style of programming is ... from that one.
- Is there any ... that we finish our work in time?
- There's a strong ... that the concert will be cancelled.
- This new application helps to avoid all ... mistakes in calculations.
- I don't see any ... for you to go there. It's just waste of time.
- What was the ... of his actions?
- Your question at the conference was
- Who will buy this new device? It's absolutely non-... .
- Ruby programming language supports procedural, ..., and imperative programming.
- The main ... of a cell-phone are making calls and texting.
- You can't just do it however you like - you must follow stated
- ... , also known as routines, subroutines, methods, or functions simply contain a series of computational steps that must be carried out.
- Ruby programming language supports ... , functional, and imperative programming.

Task 14. Match the words with their meanings.

1. syntax	a. something that serves as a model for others to copy
2. feature	b. a sequence of instructions for performing a task that forms a program or a distinct part of one
3. template	c. to obtain, to benefit
4. routine	d. an instruction or signal causing a computer to perform one of its basic functions
5. sequence	e. a distinctive attribute or aspect of something
6. command	f. a sequence of actions regularly followed
7. to gain	g. the grammatical rules and structural patterns for issuing commands, writing code, etc., in a particular programming language.

Grammar: Participle I vs Participle II

Participle I (переводится действительным причастием с суффиксом -ущ/ющ или придаточным предложением)	Participle II (переводится страдательным причастием с суффиксом -нн/н или -ем или придаточным предложением)
A writing boy. - Пишущий мальчик.	A written book. - Написанная книга.
A student listening to a lecture. - Студент, слушающий лекцию. Студент, который слушает лекцию.	A lecture held by a teacher. - Лекция, читаемая преподавателем. Лекция, которую читает преподаватель.
A programmer designing a data base used Python. - Программист, разрабатывающий базу данных, использовал Python.	A data base designed by this programmer contained data on weather. - База данных, разработанная этим программистом, содержала данные о погоде.

Task 15. Translate the following phrases.

1. developing industry / developed industry
2. a controlling device / a controlled device
3. a moving object / a moved object
4. using algorithm / used algorithm
5. enabling program / enabled program
6. gaining script / gained script
7. inheriting class / inherited class
8. modifying parameter / modified parameter

Task 16. Translate the following sentences. Pay attention to the participles.

1. Ruby is a programming language developed by Yukihiro Matsumoto.
2. You don't need to learn specialized "vocabulary" to start.
3. Python is a scripting language, allowing programmers to write a lot of code.
4. When modifying data he always made a backup copy.
5. The engineers invited to our lecture are well-known specialists.
6. The lecture followed by an experiment was interesting.
7. When writing the course work, Jake designed a gaining script.
8. The city is characterized by developed industry.

Task 17. Choose the correct participle.

1. The developers **discussing** / **discussed** this part of code asked for advice.
2. The part of code **discussing** / **discussed** at the lecture contained an error.
3. The programming languages **studying** / **studied** in the first year at university are Pascal and C++.
4. Students **studying** / **studied** programming languages should design some programs during the course.
5. Specialists **training** / **trained** at our university work in different fields.
6. The coach **training** / **trained** our volleyball team is a good sportsman.
7. A template **using** / **used** in this document contains a lot of fonts.
8. The font **using** / **used** in this document can't be printed.
9. The chip **programming** / **programmed** by Tim didn't work right.
10. The teacher **programming** / **programmed** the chip showed us an example.

Task 18. Put the verb in brackets into the form of Participle I or Participle II. Translate the sentences.

1. The (to test) method needed improvement.
2. When (to execute) the command, the computer writes data on the hard drive.
3. The sequence (to read) by the computer had a missing number.
4. Scientists (to gain) the results began to work.
5. The error (to identify) by the student was corrected.
6. Scripts (to enable) you to execute a lot of tasks in a short period of time are very helpful.
7. Templates (to allow) you to format documents are located on the disk C.
8. Students (to allow) working independently show good performance.

Task 19. Rewrite the sentences using Participle I or Participle II.

*Example: A programmer who designed a data base used Python. - A programmer **designing** a data base used Python.*

*A data base **that was designed by this programmer** contained data on weather. - A data base **designed by this programmer** contained data on weather.*

1. Mary who is doing the homework thought about going shopping.
2. My father repaired the lamp that was broken long ago.
3. Jane saw a boy who was smoking in the park.
4. I saw the TV program that was telling about sharks.
5. Tom painted the chair that was standing in the kitchen.
6. The robber who was caught yesterday was sent to prison.
7. Our team broke a record that was very important.
8. I have eaten the last piece of the cake that my mother baked.
9. This building that was designed by the best architect in city was very beautiful.

Check yourself

Task 20. Choose the correct participle.

1. We met a boy **carrying** / **carried** a heavy bag.
2. The Christmas tree **decorating** / **decorated** with lights looked beautiful.
3. Children saw the big boat **floating** / **floated** down the river.
4. Friendships **making** / **made** in childhood last forever.

5. When we went home we saw the **rising** / **risen** sun.
6. In the zoo I saw the snake **eating** / **eaten** a mouse.
7. I helped my brother to solve the riddle **writing** / **written** in his textbook.
8. We listened to the **speaking** / **spoken** lecturer very carefully.

Reference on grammar

1. Participle I vs Participle II:

<http://engood.ru/grammar/participle-level-1>

<http://study-english.info/participle.php>

Technical reading: how to find grammar links in a text

Task 21. Read the text and find Russian equivalents to the following words:

1. низкоуровневый	2. соответствует
3. родной	4. строки
5. непосредственно	6. ассемблер
7. обозначение	8. ячейка памяти
9. регистр	10. цифра
11. объектная программа	12. равнозначный
13. компилятор	14. отдельно

Levels of Programming Languages

A low-level language corresponds closely to machine code; **it** means that a single low-level language instruction translates to a single machine-language **one**. A high-level language instruction typically translates into a series of machine-language instructions.

Absolute Machine Code

The very lowest possible level at which you can program a computer is in **its** own native machine code, consisting of strings of 1's and 0's. **This** code is stored as binary numbers. The main problems with using machine code directly are that **it** is very easy to make a mistake, and very hard to find **it** when you realize the mistake has been made.

Assembly Language

Assembly language is nothing more than a symbolic representation of machine code. **It** also allows symbolic designation of memory locations. As a result, an instruction to add the contents of a memory location to an internal CPU register might correspond to **one** that means to add a number instead of a string of binary digits (bits).

If an assembly-language program needs to be changed or corrected, it is necessary to make the changes to the source code and then re-assemble **it** to create a new object program.

Compiler Language

Compiler languages are the high-level equivalent of assembly language. Each instruction in the compiler language can correspond to many machine instructions. Once the program has been written, it is translated to the equivalent machine code by a program called a compiler. Once **it** has been compiled, the resulting machine code is saved separately, and can be run on **its** own at any time.

Task 22. To hold the sentences in a text together we use pronouns. The pronouns can refer to one word or to the whole sentence. Study the following examples:

1. I've lost my key. I couldn't find **it** (the key) anywhere.
2. This book is very useful because of **its** (of the book) manual for programming.
3. The most delicious cake was the **one** (the cake) brought by my mother.
4. If you can't find the answers, I can help you to find **them** (the answers).
5. We had an interesting method of solving the problem. **This** method (the method we have) consists in using a diode instead of transistor.
6. You can learn Java programming language. **This** (the fact that you have learnt it) will benefit you greatly.

Task 23. Read the text one more time and explain what the pronouns in bold mean.

Task 24. Replace the repeating words in the following sentences by pronouns.

1. Read this book. **This** book is very interesting.
2. I can't find my notebook. **The** black notebook with blue flowers.
3. **The** secretary asked for help with a printer. **Secretary's** printer doesn't work right.
4. We bought some additional memory cards. We have already installed the memory cards into the computers.
5. **The** capacity of a supercomputer is very high. We use this capacity to solve scientific problems.
6. **The** effect of light radiation changed during the experiment. We will research the fact that the effect of light radiation changed after we receive grant.
7. We have a problem with our hard drive. I think our technician can help us with the problem of our hard drive.
8. **The** teacher asked me about the papers on my project. I have already given the papers to his assistant.
9. **The** scanner reads the barcode and sends the barcode into the computer.

Lesson 9. Information technology. Part 2. The Internet

Starter

- What is the Internet? - How does the Internet help you to study?
- How often do you use it?

Task 1. Make up sentences as in the example using the following words and phrases:

Example: *On the Internet I often buy clothes.*

On the Internet I... can
often (sometimes, rarely, never) buy
read

- clothes
- prepare for seminars
- listen to music
- get necessary information
- watch films online
- books
- plane tickets
- presents to my friends
- news on information websites
- chat with friends in social networks

Word bank

1. to access – иметь (получить) доступ (к чему-л.)	16. to interact – взаимодействовать; влиять друг на друга
2. to act – действовать	17. to process – обрабатывать
3. available – доступный	18. to provide – давать, предоставлять; обеспечивать
4. certain – некий, некоторый	19. to require – требовать
5. a concept – понятие, идея; концепция	20. to run – 1) обеспечить работу; 2) управлять
6. common – общий; обыкновенный	21. a request – требование; запрос
7. to connect – соединять; связывать; объединять	22. to search – искать
8. to consist of – состоять из	23. to serve – служить
9. to contain – содержать	24. to share – делить; делиться
10. content – содержание; содержимое	25. to store – хранить
11. data – данные	26. a type – тип, вид
12. experience – опыт	27. to type – печатать, набирать (на клавиатуре)
13. to follow – следовать	28. a variety – разнообразие, многообразие,
14. to include – включать в себя, содержать	29. a way – 1) путь, дорога; 2) способ, метод
15. a network – сеть	

Task 2. Do you know these terms related to the Internet? Translate them into Russian:

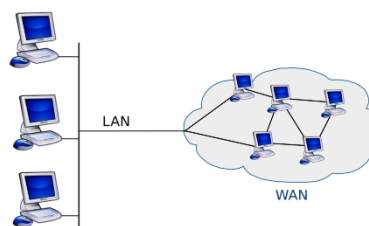
browser	virtual
resources	hyperlinks
location	specialized websites
fundamental	technologies
specialized software	online
a server	a client
a webpage	

Task 3. Decide if the following sentences are True (T) or False (F).

1. In the Internet you can only find information but can't do anything else.
2. The Internet is not the largest computer network.
3. LANs usually include home networks and office networks.
4. A WAN usually consists of two or more LANs.
5. A server is a computer that "serves" only one computer in a network.
6. A client doesn't communicate with the server.
7. The Internet is absolutely the same as the WWW.
8. All web browsers can read HTML files.
9. The WWW was created in 2000.

Task 4. Answer the questions to the text.

1. What for did people use the Internet in the early days?
2. What does the Internet connect?
3. What is the network?
4. What are the two main types of networks?



5. How does a server "serve"?
6. What does your browser need to display a webpage?
7. How does a computer act in peer-to-peer networks?
8. What is the difference between the Internet and the WWW?
9. What are the HTML files?
10. Why did the foundation of the Internet begin?
11. How many Blu-ray discs would we need to store all of the information that's available on the Internet?

Task 5. Read the text:

The Internet

The Internet is an integral part of our everyday lives. But if you are new to the online **experience**, it may be a bit overwhelming. You may ask yourself: "What exactly is the Internet, and how does it work?"

In this lesson, we will give a brief overview of the Internet, and we will talk about some fundamental **concepts** such as networks, servers, and clients.

The Internet today

In the early days, most people just used the Internet **to search** for information. Today's Internet is a constantly evolving tool that not only **contains** an amazing **variety** of information but that also **provides** new ways of accessing, interacting, and connecting with people and content. As a result, new terms are constantly appearing.

What is the Internet?

The Internet is the largest computer network in the world, **connecting** millions of computers. A network is a group of two or more computer systems linked together.

There are two main types of computer networks:

Local Area Network (LAN): A LAN is two or more connected computers **sharing certain** resources in a relatively small geographic location, often in the same building. Examples **include** home networks and office networks.

Wide Area Network (WAN): A WAN typically **consists of** two or more LANs. The computers are farther apart and are linked by telephone lines, dedicated telephone lines, or radio waves. The Internet is the largest Wide Area Network (WAN) in existence.

Servers and clients

You may have heard someone say something like "The server is down" or "We're having problems with the e-mail server." A server is a computer that "**serves**" many different computers in a network by running specialized software and storing information. For example, webpages are **stored** on servers.

When you **access** a webpage, your computer is **acting** as a client. A client **runs** familiar software such as web browsers or email software, and it communicates with the server to get the information it **requires**.

In order for your browser to display a webpage, it requests **data** from the server where the page is **stored**. The server **processes** the **request**, and then sends the **data** to your browser, where it is displayed.

In peer-to-peer (P2P) networks, each computer acts as both a server and a client. Examples of P2P software **include** Skype and Bit Torrent.

The World Wide Web

When most people think of the Internet, the first thing they think about is the World Wide Web. Nowadays, the terms "Internet" and "World Wide Web" are often used interchangeably – but they're actually not the same thing.

The Internet is the physical network of computers all over the world.

The World Wide Web is a virtual network of websites connected by hyperlinks (or "links"). Websites are **stored** on servers on the Internet, so the World Wide Web is a part of the Internet.

HTML

The backbone of the World Wide Web is made of HTML files, which are specially formatted documents that can **contain links**, as well as images and other media. All web browsers can read HTML files. In addition to HTML, it's common for websites to use technologies like CSS (Cascading Style Sheets) and JavaScript to do more advanced things.

URL

To get to a webpage, you can **type** the URL (Uniform Resource Locator) into a browser. The URL, also known as the web address, tells the browser exactly where to find the page. However, most of the time people get to a webpage by **following** a link from a different page or by searching for the page using a search engine.

The World Wide Web was created in 1989 by Tim Berners-Lee, a software engineer. Before then, computers could communicate over the Internet, but there were no webpages.

Did you know?

The foundation of the Internet began in 1969, when the U.S. Department of Defence created ARPAnet, a project to allow military personnel to communicate with each other in an emergency.

By 2012, the number of Internet users worldwide reached 2.4 billion—about one-third of the world's population.

To store all of the information that's available on the Internet, you would need more than 1 billion DVDs or 200 million Blu-ray discs.

Adapted from:

<http://www.gcflearnfree.org/internet101/1>

Useful words and expressions

1. advanced – продвинутый, более развитый
2. amazing – поразительный
3. backbone – основа, суть
4. both – оба
5. brief – краткий
6. constantly – постоянно
7. CSS – вложенные таблицы стилей
8. dedicated – зд. специализированный
9. emergency – непредвиденный случай, ЧП, авария
10. engine – мотор, двигатель
11. evolving – зд. развивающийся
12. exactly – именно, конкретно
13. in existence – существующий
14. familiar – знакомый
15. farther apart – на большом расстоянии
16. however – однако, тем не менее,

17. HTML – (Hypertext Mark-up Language) язык гипертекстовой разметки
18. in addition – дополнительно; вдобавок; кроме того;
19. interchangeably – взаимозаменяемо; по очереди, попеременно
20. integral – неотъемлемый
21. need – нужно
22. overview – обзор
23. overwhelming – зд. подавляющий
24. part – часть
25. peer-to-peer (P2P) – пир-ту-пир, пиринговый, децентрализованный (Компьютерные системы,

которые действуют в качестве серверов и связаны друг с другом через Интернет, что позволяет обмениваться файлами минуя центральный компьютер)

26. population – население
27. relatively – относительно
28. terms – термины
29. the same – такой же
30. URL – (Uniform Resource Locator) унифицированный указатель [местонахождения информационного] ресурса

Task 6. Put the words into the right order.

1. an integral part / of our / is / the Internet / lives / every day
2. network / in the / the Internet / the largest / is / computer
3. a computer / a server / that / many / in a network / is / 'serves' / different computers

4. stored / webpages / on / are / servers
5. formatted / HTML files / specially / documents / are
6. browsers / HTML files / read / all / web / can
7. a webpage / type / you / to get to / can / a browser / into / the URL

Task 7. Complete the table

verb	translation	noun	translation
link	связывать, соединять		
process	обрабатывать	1. – 2. –	
		requirement	требование
connect	соединять; объединять		
		storage	хранилище;
serve	служить, обслуживать	1. – 2. –	
		format	формат, форма, вид
		experience	опыт
access	иметь (получить) доступ,		
		foundation	основание; основа
vary	менять(ся), изменять(ся)		

Task 8. Complete the sentences with the words from the table above. Use the right part of speech in the right form.

1. - There is a great ... of animals on our planet Earth.
- In shops all over the city you can find a ... of new models of computers.
- In different shops prices on this new model of a cell phone can ...
2. - With your mobile you can get ... to the Internet through Wi-Fi easily.
- There was a note on the laboratory door: 'No ...'.
3. - When my brother was 19 he ... in the Russian Army.
- This bus line ... a large district.
- Tourists were satisfied with the ... of this hotel.
- A server is a computer that "... many different computers in a network by running specialized software and storing information.
4. - You can ... your files on your computer as well as on the Internet.
- Websites are ... on servers on the Internet.
- To complete massively complex tasks your computer should have enough of ...

5. - The engineer ... much time to do this work professionally
- The client communicates with the server to get the information that it ...
- To take part in this project you must meet all the
6. - To build a house is a long and hard ...
- Computer is a clever machine which can ... information.
7. - When you are looking for a job, the first question at the job interview will be about your previous ...
- She has 15 years ... in the job.
- Sam has never ... this way of working. Everything was new for him.
- If you are new to the online ... , it may be a bit overwhelming.

Task 9. Complete the sentences with the right word from the box. All the words are given in the right form.

run available provides store hyperlinks require variety

- The World Wide Web is a virtual network of websites connected by
- When you keep information or things somewhere – you ... them.
- It ... much time and effort to do the high-quality work.
- My uncle is not very rich, but he ... his own business.
- In this specialized shop you can find a great ... of new models of laptops.
- The mobile phone you are calling is not ... at the moment. Try again later.
- Our company ... the best service for our clients all over the world.

Task 10. Match the words with their definitions.

1. data	a. information made available by a website or other electronic medium
2. common	b. a number of interconnected computers, machines, or operations
3. content	c. the knowledge or skill acquired by a period of practical experience of something, especially that gained in a particular profession
4. experience	d. a category of people or things having common characteristics
5. network	e. the things that are held or included in something
6. type	f. a code or instruction which connects one part of a program or an element in a list to another
7. link	g. ordinary; of ordinary qualities; without special rank or position

Grammar: the Gerund

1. The gerund combines characteristics of the verb and the noun. It is formed by adding the suffix – ing to the stem of the verb. In a sentence the gerund can be:

Subject	Smoking is harmful for your health. Cleaning the house is necessary.	Курение вредно для твоего здоровья. Уборка дома необходима.
Object	Jim likes making people laugh. Kate likes going to rock concerts.	Джим любит смешить людей. Кейт любит ходить на рок концерты.
Predicative	His job is creating websites. The duty of students is doing homework.	Его работа – создавать вебсайты. Обязанность студентов – делать домашние задания.

2. There can be a preposition before the gerund.

After five hours in a boat Sam was very tired of rowing .	После пяти часов в лодке Сэм очень устал от гребли .
She went away without turning her head.	Она ушла, не поворачивая головы.
Thank you for helping me with the car. I really appreciate that.	Спасибо, за помощь мне с машиной. Я действительно это ценю.

3. The gerund can be translated into Russian:

as a noun	Dancing can help you to be fit. The main task for you is preparing for exams. Smiling makes your day happier.	Танцы могут помочь тебе быть в форме. Твое главное задание – подготовка к экзаменам. Улыбка делает твой день счастливее.
as an infinitive	He turned off his computer before leaving . It is no good missing the lessons. I don't like reading yellow press.	Он выключил свой компьютер перед тем, как уйти . Не хорошо пропускать занятия. Я не люблю читать желтую прессу.
as an adverbial participle	And without waiting for her answer he turned and went away. On seeing Jane he stopped and waved to her.	И, не дожидаясь ее ответа, он повернулся и ушел. Увидев Джейн, он остановился и помахал ей.
As a subordinate clause	Nick objected to going there now. I remember locking the door.	Ник возражал против того, чтобы идти туда сейчас . Я помню, что закрывала дверь на ключ .

Task 11. Open the brackets using the verbs in the form of the gerund.

- ... (to repair) cars is his business.
- Why do you avoid ... (to speak) to him?
- While ... (to make) the experiment, they came across very interesting phenomena.
- ... (to take) a cold shower in the morning is very healthy.
- That's going without saying that all the classrooms need every day ... (to clean).

- John was very glad of ... (to find) his lost boot.
- Peter insisted on ... (to help) his friend.
- We try to avoid ... (to go) shopping at weekends.
- He is thinking of ... (to buy) a new tablet.
- I'm thinking of ... (to accept) your proposal.
- Thank you for ... (to come).
- This equipment needs ... (to repair).
- There are two ways of ... (to get) sugar: one from sugarcane and another from beet.

Task 12. Translate the following sentences into Russian. Pay attention to the translation of the gerund.

1. Today's Internet is a constantly evolving tool that not only contains an amazing variety of information but that also provides new ways **of accessing, interacting, and connecting** with people and content.
2. A server is a computer that "serves" many different computers in a network **by running** specialized software and **storing** information.
3. Most of the time, people get to a webpage **by following** a link from a different page or **by searching** for the page using a search engine.
4. **Depending on** how the components in a circuit are put together, everything from a burglar alarm to a computer microprocessor can be constructed.
5. Ever since the first iPad appeared, the choices **for buying** tablet have increased dramatically.
6. Before the integrated circuit, assembly workers had to construct circuits by hand, but engineers soon realized that manually **assembling** the vast number of tiny components needed in, for example, a computer would be impossible, especially **without generating** a single faulty connection.

Task 13. Complete the following sentences. Use the verbs from the box in the form of the gerund. Translate the sentences.

do, write, ask, have, visit, speak, go, move, catch

1. You should practice ... English more often.
2. Jane hates ... to the cinema late.
3. Have you finished ... your letter?
4. Nick suggested ... a picnic by the river next weekends.
5. We put off ... our friends until next Saturday.
6. They're considering ... to Canada.
7. Sam kept on ... the same question again and again.
8. Tom jumped out of the way to avoid ... a little girl.
9. Mike dislikes ... paperwork.

Check yourself

Task 16. Choose the correct translation. There can be more than one right answer.

1. His job is **repairing computers**.
 - a. починка компьютеров
 - b. чинить компьютеры
 - c. починяющий компьютер
2. I tried to **avoid writing additional paragraph**.
 - a. избежать написания дополнительной главы.
 - b. избежать дополнения написанной главы
 - c. избежать пишущего дополнительную главу

Task 14. Translate the following sentences into English.

1. Я люблю слушать классическую музыку.
2. Сергей думает о том, чтобы купить новый компьютер.
3. Я поздравил своего друга со сдачей экзамена по физике.
4. Этот ученый продолжал искать новые методы развития своего исследования.
5. Им пришлось отложить поездку на море из-за угрозы шторма.
6. Цена машины была такая высокая, что он и думать не мог о том, чтобы купить ее.
7. Очень трудно бросить курить, так что и не начинай делать это.
8. Я долго думал о решении этой проблемы.

Task 15. Rewrite the following sentences using the gerund.

1. Jane looked at him for some minutes **and didn't speak**.
2. Tom suggests **that we should exchange opinions on the matter**.
3. After his usual jogging in the morning he could feel **that his heart was beating fast**.
4. Thank you **that you invited me to your party**.
5. Their friends suggested **that they should go on a trip together**.
6. In the darkness the travellers were afraid **that they might lose their way**.
7. Thank you **that you helped me**.
8. Our teacher of English insists **that we should read aloud every day**.
9. Lucy remembers **that she has seen this picture somewhere**.
10. I am very glad **that I helped you**.

3. **While carrying out an experiment**, they exploded some oxygen.

- a. Во время проведения эксперимента
- b. Пока они проводили эксперимент
- c. Проводя эксперимент

4. I insist on **doing it now**.

- a. на том, что это надо сделать сейчас
- b. на выполнении этого сейчас
- c. чтобы оно сделало сейчас

5. This method requires **making a model**.

- a. сделать модель
- b. выполнения модели
- c. моделирования

Reference on grammar

1. Герундий: <http://engblog.ru/gerund>
<http://www.native-english.ru/grammar/gerund>

Technical reading: how to read numbers and formulas

Task 17. Study the following table:

Symbol	Reading
=	is; is equal to; equals
$2+5=7$	two plus five equals seven
$4-1=3$	four minus one equals three
$4\times 2=8$	four times two equals eight; four multiplied by two
$6\div 2=3$	six divided by two equals three
0.3	nought point three / point three
0.01	nought point nought one / point nought one
5.84	five point eighty four
2%	two per cent; smth has increased by 2 %
	one third
$1\frac{1}{2}$	one and a half
	four fifth
$\frac{\quad}{\quad}, \frac{\quad}{\quad}$	ratio of 3 x to seven, two minus x over y plus 5
5^3	5 to the power of three

Task 18. Read the following equations and fractions, pay attention to numbers and formulas.

- $\frac{\quad}{\quad} = 2 - x$
-
-
- $\frac{\quad}{\quad} - \frac{\quad}{\quad} - \frac{\quad}{\quad} - \frac{\quad}{\quad} - \frac{\quad}{\quad} - \frac{\quad}{\quad}$
- $\frac{\quad}{\quad}$

Task 19. Read the following sentences:

- In the example $9 + 3 = 12$; 9 and 3 are the addends, 12 is the sum.
- In the example $15 - 7 = 8$; 15 is the subtrahend, 7 is the minuend and 8 is the remainder. Subtraction may be checked by addition: $8 + 7 = 15$.
- In the example $12 \times 5 = 60$ or $12 \cdot 5 = 60$; 12 is the multiplicand, 5 is the multiplier and 60 is the product (12 and 5 are the factors of product).
- In the example $48 : 6 = 8$; 48 is the dividend, 6 is the divisor and 8 is the quotient. Division may be checked by multiplication.

Task 20. Rewrite the following equations in numbers as in the example:

Example: Ratio of $34x$ to six equals x minus 1.

-
- a and b is equal to c.
 - a plus b over a minus b is equal to c plus d over c minus d.
 - a plus b over a minus b is equal to c.
 - Four minus three is one.
 - Ten point three five multiplied by point nought nought one.
 - Thirty five divided by five is seven.
 - Three sevenths plus three and two fifths.
 - Two multiplied by three is six.

Revision Lessons 8-9

Task 1. Match to parts of the sentences according to the text "The Internet".

1. In the early days, most people just used the Internet ...	a. ... acts as both a server and a client.
2. Today's Internet ...	b. ... computer network in the world.
3. The Internet is the largest ...	c. ... to search for information.
4. A LAN is two or more connected computers sharing ...	d. ... also provides new ways of accessing, interacting, and connecting with people and content.
5. In a WAN computers are farther apart and are linked ...	e. ... a virtual network of websites connected by hyperlinks (or "links").
6. A server is a computer that "serves" many different computers in a network ...	f. ... communicates with the server to get the information it requires.
7. A client ...	g. ... the web address, tells the browser exactly where to find the page.
8. In peer-to-peer networks, each computer ...	h. ... can contain links, as well as images and other media.
9. The World Wide Web is ...	i. ... created ARPANet, a project to allow military personnel to communicate with each other in an emergency.
10. HTML files are specially formatted documents that ...	j. ... by telephone lines, dedicated telephone lines, or radio waves.
11. The URL, also known as ...	k. ... by running specialized software and storing information.
12. The foundation of the Internet began in 1969, when the U.S. Department of Defence ...	l. ... certain resources in a relatively small geographic location.

Task 2. Match the words with similar meanings.

1. malicious	a. to repair
2. to cause	b. a break
3. to fix	c. to supply
4. to replace	d. incorrect/defective
5. to provide	e. to defend
6. a crash	f. harmful
7. to protect	g. to change
8. faulty	h. to run
9. to launch	i. to be the reason

Task 3. Complete the sentences with the right word or phrase.

botnets	caused	provide	procedures
state-of-the-art	updated	inheritance	
wear down	executes	freezes and crashes	
attachment			

- For multiple networked computers, hardware routers typically ... firewall protection.
- Never open an e-mail ... from someone you don't know.
- Computer operating systems are periodically ... to stay in tune with technology requirements and to fix security holes.
- There are types of spyware or ... using your computer's resources to reach out to other users.
- After many years of everyday use some parts of electronic devices
- This new computer was created using ... technology.
- If your computer is moving slowly, it's only a matter of time until ... become the norm.
- In Windows 8, the blue screen gives you more detailed information about what ... the error.

- Computer is a clever machine which ... tasks given by a programmer.
- Class-based style of programming is object-oriented programming style that gains ... by processing classes as objects.
- ... , also known as routines, subroutines, methods, or functions simply contain a series of computational steps that must be carried out.

Task 4. Complete the sentences with the right word or phrase.

features; in wide use; inheritance; modified; enables; in terms of; sequence
--

- This manual gives you a ... of actions to do if you want to install this program.
- Big memory and fast processor are the main ... of this computer.
- An ... is money or property which you receive from someone who has died.
- The simple switch operation of transistors is what ... your computer to complete massively complex tasks.
- Imperative type of programming describes computation ... statements that change a program state.
- Nowadays tablet PCs are ... among students.
- After the first presentation of the device to his colleagues the scientist ... it.

Task 5. Choose the correct variant.

- Some participants insist on ... this question into the conference program.
a. included b. including
c. to be included
- The basic job of computers is ... of information.
a. processing b. to be processed c. processed
- ... is a basic mouse action to place a cursor to close a window, etc.
a. clicked b. clicking
c. to be clicked
- ... information about a suspect's background may be obtained from a database.
a. detailing b. detail c. detailed
- All components ... for a computer are included on a single chip.
a. needed b. need c. needing
- ... in pencil the article was difficult to read.
a. writing b. write c. written
- There are good reasons for ... a compromise.
a. made b. to make c. making
- ... the energy of the atom we produce electric energy at atomic power plants.
a. use b. using c. used
- The device ... in our laboratory will be used in industry.
a. made b. make c. making
- The electronic parts ... by our factory are reliable.
a. producing b. produced c. to produce
- ... of minicomputers was started under the international cooperation.
a. designing b. designed c. to be designed
- ... a programmer he knew how to write programs.
a. been b. being c. to be
- E-mail is only the ... point of using computer communication services.
a. starting b. started c. starts
- We know silver _ ... the best of conducting materials.
a. to be b. been c. be

Task 7. An art project.

Kevin Kelly, executive editor of Wired Magazine, wanted to know how people pictured the Internet, so he started collecting submissions back in 2009. He called his collection the Internet Mapping Project. Draw your picture of the Internet. What would you draw? If you want to, you can upload your picture to the Kevin Kelly's album.

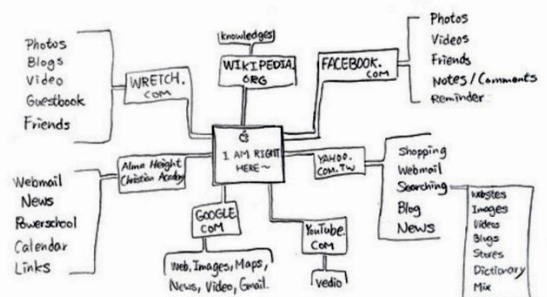
<https://www.flickr.com/photos/kevinkelly/albums/72157613562011932>

Task 6. Translate the following sentences into Russian.

- Senior engineer wanted the device to be examined in this laboratory.
- We know electrons to be negatively charged particles.
- Writing the article he had to use a lot of foreign materials.
- Designers considered the idea to be reasonable.
- The results of the experiment are reported to contradict the idea.
- Scientists working at new computers have a lot of different problems to solve.
- Printers are known to vary greatly in performance and design.
- Automation makes it possible to obtain and develop new sources of energy.
- The only thing for you to do is to use the microscope.
- For these experiments to be meaningful the observations must be made at regular intervals.
- The text was very interesting but rather difficult for the students to translate it without a dictionary.
- This situation is too complex for us to understand.
- Adding numbers is the easiest process in the system of calculating.
- To develop the supercomputer, highly developed electronics and new materials were required.

THE INTERNET MAPPING PROJECT

Please draw a map of the internet, as you see it. Indicate your "home."



Your age: 14 Your occupation: student Average number of hours per day on the internet: 1-2
Return to Kevin Kelly (kk@kk.org, or 149 Amagosa Ave., Pacific, CA 94064) For results see www.kk.org.

Lesson 10. Communication Technologies. Part 1. Radio

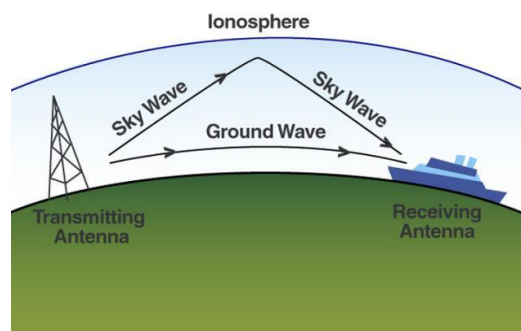
Starter

- Do you often listen to the radio?
- Do you know what exactly the radio is?

- Do you know how the radio works?

Task 1. Put the following sentences into the correct order to describe how radio works.

- This process can happen between one powerful transmitter and many receivers
- When the radio waves hit a receiver, they make electrons vibrate inside it, recreating the original signal.
- Electrons rush up and down the transmitter, shooting out radio waves.
- that is why thousands or millions of people can pick up the same radio signal at the same time.
- The radio waves travel through the air at the speed of light.



http://www.spaceweather.eu/files/images/id_266_0.preview.jpg

Word bank

1. amplitude modulation (AM) – амплитудная модуляция	12. speed – скорость
2. frequency modulation (FM) – частотная модуляция	13. to measure – мерить, измерять
3. to arrive – прибывать	14. a mixture – смесь
4. to broadcast – 1) передавать по радио или телевидению 2) вещать, транслировать	15. a movement – движение
5. a carrier – зд. несущая	16. a receiver – приемник
6. to cause – вызывать, быть причиной fluctuations – колебания, флуктуации	17. to reach – достигать
7. frequency – частота	18. to represent – представлять
8. to get through – зд. пройти, дойти	19. to transmit – 1) передавать, 2) отправлять, посылать
9. interference – зд. помехи	20. a transmitter – передатчик
10. invisible – невидимый	21. wavelength – длина волны
11. length – длина	22. wired connection – проводное соединение
	23. wireless – беспроводной

Task 2. Match these two columns to make phrases. Translate the phrases.

1. a radio	a. energy
2. to solve	b. to another
3. electrical	c. movement
4. wired	d. wave
5. from one place	e. connection
6. up-and-down	f. through the air
7. to send	g. the problem

Task 3. Here are some colloquial phrases used in the text. Match them with their Russian equivalents.

1. That's why	a. никак нельзя
2. In other words	b. вернуть назад
3. is likely to get lost	c. таким же образом (способом)
4. there's no way	d. поэтому
5. to get it back again	e. скорее (вероятнее) всего потеряется, пропадет
6. in the same way	f. другими словами

Task 4. Match the year and the invention. Use the Internet when necessary.

June 1894	After reading about Lodge's demonstrations, the Russian physicist Alexander Popov builds a "Hertzian wave" (radio wave) based lightning detector using a coherer.
May 1895	Marconi establishes a radio station on the Isle of Wight, England. In the U.S. during 1897, Tesla applies for several wireless power patents. Those two patents were issued in early 1900. distance, using a "coherer" as a detector.
1896	Oliver Lodge demonstrates the optical properties of "Hertzian waves" (radio), including transmitting them over a short
1896	Marconi was awarded a patent for radio with British Patent 12039, Improvements in Transmitting Electrical Impulses and Signals and in Apparatus There-for. This is the initial patent for radio based wireless telegraphy.
1897	Alexander Popov demonstrates the transmission of signals between buildings at the University of St. Petersburg.

Radio

What is radio?

You might think "radio" is a gadget you listen to, but it also means something else. Radio means sending energy with waves. In other words, it's a method of transmitting electrical energy from one place to another without using any kind of direct, wired connection. That's why it's often called wireless. The equipment that sends out a radio wave is known as a transmitter; the radio wave sent by a transmitter whizzes through the air and completes its journey when it reaches a receiver.

How does this happen?

The electromagnetic energy, which is a mixture of electricity and magnetism, travels past you in waves. These are called radio waves. Like ocean waves, radio waves have a certain speed, length, and frequency. The speed is simply how fast the wave travels between two places. The wavelength is the distance between one crest (wave peak) and the next, while the frequency is the number of waves that arrive each second. Frequency is measured with a unit called "hertz", so if seven waves arrive in a second, we call that seven hertz (7 Hz).

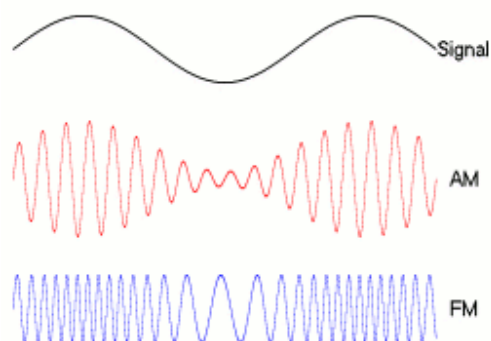
Analog radio

Radio waves carry energy as an invisible, up-and-down movement of electricity and magnetism. A program is transmitted by adding it to a radio wave called a carrier. This process is called modulation. Sometimes a radio program is added to the carrier in such a way that the program signal causes fluctuations in the carrier's frequency. This is called frequency modulation (FM). Another way of sending a radio signal is to make the peaks of the carrier wave bigger or smaller. Since the size of a wave is called its amplitude, this process is known as amplitude modulation (AM). Frequency modulation is how FM radio is broadcast; amplitude modulation is the technique used by AM radio stations.

Sending information by changing the shapes of waves is an example of an analogue process. This

means the information you are trying to send is represented by a direct physical change. The trouble with AM and FM is that the program signal becomes part of the wave that carries it. So, if something happens to the wave en-route, part of the signal is likely to get lost. And if it gets lost, there's no way to get it back again. That's why analogue radios can sound crackly, especially if you're listening in a car. Digital radio can help to solve that problem by sending radio broadcasts in a coded, numeric format so that interference doesn't disrupt the signal in the same way.

AM and FM Differences



Picture from: <https://illumin.usc.edu/114/catch-a-wave-radio-waves-and-how-they-work/>

Digital radio

Digital radio sends speech and songs through the air as strings of numbers. No matter what comes between your radio and the transmitter, the signal almost always gets through. That's why digital radio sounds better. But digital technology also brings many more stations and displays information about the program you're listening to (such as the names of music tracks or programs).

By Chris Woodford. Adapted from: <http://www.explainthatstuff.com/radio.html>

Useful words and phrases

1. to add – добавлять, прибавлять,
2. almost always – почти всегда
3. to arrive – прибывать, приезжать
4. an example - пример
5. to call – звать, называть
6. to carry - нести
7. certain – определенный; некоторый
8. to change – менять, изменять
9. to complete – завершать; заполнять
10. crackly - с треском, со свистом
11. a crest – физ. вершина волны
12. direct – прямой
13. to disrupt - нарушать; разрывать
14. each – каждый
15. en-route - по пути, по дороге
16. especially – особенно
17. a gadget – прибор, устройство
18. to happen – происходить, случаться
19. kind – вид, род

20. to know - знать
21. no matter - неважно
22. to mean – значить, означать
23. numeric - числовой; цифровой
24. a peak – пик, вершина
25. to send – отправлять, посылать
26. a shape - форма
27. to sound - звучать
28. That's why – поэтому
29. through – сквозь, через
30. to travel past – зд. проходить мимо
31. a song - песня
32. a string - ряд, последовательность, цепочка
33. a trouble – проблема, затруднение
34. a unit - единица, часть, элемент; единица измерения
35. to whizz – мчаться, проноситься со свистом
36. while – в то время как, зд. тогда как
37. without – без

Task 5. Read the text and answer the questions.

1. What is radio?
2. What equipment is necessary for radio transmission?
3. What is electromagnetic energy?
4. What characteristics does a radio wave have?
5. What is modulation?
6. What do you know about **analogue radio** transmission?
7. What do you know about **digital radio** transmission?
8. Which of them you think is better?

Task 6. Decide if the following sentences are true (T) or false (F) according to the text.

1. Radio is a small device designed only for listening to music.
2. Radio is not connected with electricity at all.
3. In a certain way radio waves are similar to ocean waves.
4. In analogue radio transmission there is only one way of sending a radio signal.
5. Sending information by changing the shapes of waves is an example of a digital process.
6. The trouble with AM and FM is that the transmitted information directly depends on the wave that carries it as the program signal becomes part of that wave.
7. Digital radio sends speech and songs through the air as strings of numbers.

Task 7. Match the terms with their definitions according to the text.

1. wavelength	a. the number of waves that arrive each second
2. speed	b. when a program is transmitted by adding it to a radio wave called a carrier
3. frequency	c. when the program signal causes fluctuations in the carrier's frequency
4. amplitude modulation (AM)	d. the size of a wave
5. modulation	e. radio which sends information by changing the shapes of waves
6. digital radio	f. the distance between one crest (wave peak) and the next
7. frequency modulation (FM)	g. a radio wave which carries information
8. amplitude	h. radio which sends speech and songs through the air as strings of numbers
9. analogue radio	i. how fast the wave travels between two places
10. a carrier	j. when the peaks of the carrier wave are made bigger or smaller

Task 8. Complete the table.

verb	translation	noun	translation
to mix			
to mean			
		a connection	
to add			
		a receiver	
to equip			
		a disruption	
to interfere			
		transmission	
		modulation	

Task 9. Complete the sentences using words from the table above. Put the words into the right form.

1. - I ... this book as a gift.
 - We have ... your letter of the 15th May
 - The equipment that catches radio waves is known as a
2. - You mustn't allow them to ... with your business.
 - This way, the tracking code will work correctly, and it won't ... with the rest of your scripts.
 - Digital radio sends radio broadcasts in a coded, numeric format so that ... doesn't disrupt the signal like with analogue radio system.
 - The TV picture had a lot of
3. - The dictionary tries to tell you what words
 - What do you ... by that?
 - Radio ... sending energy with waves.
 - She couldn't understand the ... of that sentence.

4. - All computer rooms at the university are ... with the - modern laptops.
 - How much does it cost to ... this classroom for an online conference?
 - The ... that sends out a radio wave is known as a transmitter.
5. - The story is a magical ... of fantasy and reality.
 - The electromagnetic energy is a ... of electricity and magnetism.
 - To make a salad you need to ... all the ingredients.
 - Not to spoil the result - ... the ingredients slowly.
6. - From primary school he could easily ... numbers mentally (in his head).
 - A program is transmitted by ... it to a radio wave called a carrier.
 - And in ... , we offer you a 2% discount.
 - Everything is clear, there's nothing to

Task 10. Match the words with similar meanings.

to send	to arrive
a gadget	a peak
information	to finish
to get through	machinery
to complete	to transmit
a crest	data
equipment	a device

Task 11. Complete the table.

verb	translation	noun	translation
to measure			
		a call	
		a trouble	
to code			
to sound			
		a change	

Task 12. Complete the sentences using words from the table above. Put the words into the right form.

- After they graduated from university there was a great ... in their lives.
- She didn't want to ... anything in her course work.
- He typed his security ... into the computer and entered the system.
- Secret information is usually ... in a complicated way.
- Frequency is ... with a unit called "hertz".
- Money is not a ... of happiness.
- ... travels much slower than light.
- Liza was so frightened she couldn't make a ...
- It ... like the church bells
- She kept her ... to herself.
- Your ... is that you can't take rejection.
- Let me ... you with one more question.
- Why did you ... me yesterday? – I wanted to invite you to the cinema.
- I forgot my phone at home. When I came back, there were ten unanswered ...

Task 13. Find sentence parts in the following proverb and define the part of speech.

Do you agree with it?

Don't trouble trouble till trouble troubles you. It only doubles troubles and troubles others too.

Task 14. Translate the following sentences into English.

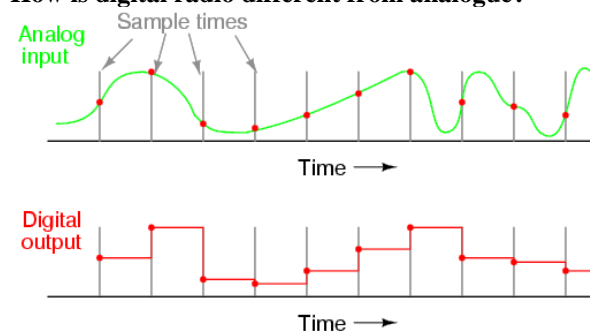
- Радио – это метод передачи электрической энергии из одного места в другое без использования проводных соединений.
- Оборудование, которое передает радио волны, называется передатчик.
- Прибор, который принимает сигналы, называется приемник.
- Электромагнитная энергия – это смесь электричества и магнетизма.
- Частота измеряется в «герцах».
- Цифровое радио отправляет речь и песни по воздуху как последовательность цифр.
- Отправление информации с помощью изменения формы радио волн – это аналоговый процесс.

- Люди после 20 не могут слышать звук определенной частоты.
- Радио и звуковые волны не видимы.
- Радиоволны проходят со скоростью света.
- Свет представляет собой электромагнитное излучение.
- Мы не могли установить беспроводную сеть в этой комнате, поэтому мы используем проводное соединение.

Task 15. Read this short text and find out the difference between digital and analogue radio transmissions. Insert the following words and phrases into the right place in the text.

fragments	getting through	interference
multiplexing	put them together	receiver
text information	transmitter	wide band

How is digital radio different from analogue?



Picture from:

<http://sub.allaboutcircuits.com/images/04252.png>

- The transmitter sends program signals broken into 1) ... and coded in numbers (digits).
- The 2) ... sends each fragment many times to increase the chances of it 3) ...
- Even when things 4) ... or delay some of the fragments, the 5) ... can still piece together fragments arriving from other places and 6) ... to make an uninterrupted program signal.

To help avoid 7) ... , a digital radio signal travels on a huge, broad band of radio frequencies about 1500 times wider than those used in analogue radio. This 8) ... allows a single digital signal to carry six stereo music programs or 20 speech programs in one go. Blending signals together in this way is called 9) Part of the signal might be music, while another part could be a stream of 10) ... that tells you what the music is, the name of the DJ, which radio station you're listening to, and so on.

Grammar: The Infinitive

1. The Infinitive is a non-finite form of the verb. In Modern English the Infinitive, like the gerund and the participle, has a double nature, nominal and verbal. The formal characteristic of the Infinitive is the particle **to**.

In a sentence the infinitive can be:

Subject	To know everything is impossible. To be here again is very pleasant to me. To remember about it is very important.	Знать все – невозможно. Быть здесь снова – очень приятно для меня. Помнить об этом – очень важно.
Predicative	My dream is to visit London. To live is to move. The problem is how to correct it. Your task is to learn this rule by heart.	Моя мечта посетить Лондон. Жить значит двигаться. Вся проблема – как это исправить. Ваше задание – выучить это правило наизусть.
Object	Tell me how to do it. I don't know whether to go there or not. Kim learnt to drive very quickly.	Скажи мне как это сделать. Я не знаю идти ли туда или нет. Ким научилась водить машину очень быстро.
Adverbial modifier	I've phoned you to discuss our research. We opened the window to air the room. To remember it I made a note in my diary.	Я позвонил тебе, чтобы обсудить наше исследование. Мы открыли окно, чтобы проветрить комнату. Чтобы запомнить это, я сделал запись в своем ежедневнике.

2. The Infinitive also has:

Negative forms	It's important not to forget about his birthday. He asked me not to do it.	Важно не забыть о его дне рождения. Он просил меня не делать этого.
Passive forms	This is the task to be done today This work should be finished till the end of the week.	Это задание должно быть выполнено сегодня. Эту работу следует закончить до конца недели.

3. The Infinitive WITHOUT "to":

1. after modal verbs (can, could, must, may, might, should etc.) He can work with advanced software. You may come in. It might rain later. You must prepare for the exam.	BUT to be able to, have to, ought to He is able to carry out complex tasks. You have to wait till the end of the lecture. Children ought to help their parents.
2. after the verbs let, make, see, hear, feel Let me do it myself. Spending time with my family makes me feel happy.	BUT to-infinitive after be made, be heard, be seen (passive forms) Clare was made to fill out lots of forms.
3. after had better and would rather You had better take the train because the traffic is so heavy at the moment. It's so cold outside. You'd better wear a fur coat.	
4. after the verb help the infinitive can be with or without "to" Jane helped me (to) choose the present for him. Nick helped her (to) clean the house before going for a walk.	

Task 16. Complete the following sentences with the particle "to" before the infinitive where necessary.

1. Her son asked her ... let him ... go to the club.
2. You must ... make him ... practice an hour a day.
3. Mary was made ... repeat the song.
4. John is not sure that it can ... be done, but he is willing ... try.
5. Let me ... help you with your bags they must ... be heavy.
6. Nina asked me ... read the letter attentively and ... write an answer.
7. Everyone ought ... take care of their health.
8. Dave looked for the book everywhere but could not ... find it.

9. We had ... put on our raincoats and ... take umbrellas because it was raining outside.
10. An old lady told me not ... walk on the grass.
11. You had better ... go there at once if you don't want to be late.
12. I would rather ... tell them about it. It's too important to keep a secret.

Task 17. Translate the following sentences into Russian. Pay attention to the use of the infinitive.

- To walk in the garden was a pleasure.
- That was hard for him to decide what to do.
- The plan of our conference will be discussed at the meeting to be held on October 27.
- To advertise on television is very expensive.
- Pete proved to be one of the most hardworking students of his group.
- Sam knew himself to be strong enough to take part in the expedition.
- Electricity proved to be able to travel over a long piece of wire.
- The results are reported to contradict the idea.
- An engineer wanted the device to be examined in this laboratory.
- A new modern computer centre is likely to be established at the university next year.

Task 18. Translate the following sentences into English.

- Мы решили принять участие в этой конференции.
- Я так рада видеть вас снова.
- Когда учишь иностранный язык, важно не забывать о грамматике.
- Она попросила напомнить ей о собрании.
- Я пришел задать вам вопрос о вашей книге.
- Делать ошибки – это естественно.
- Сэм обещал не ходить туда больше.
- Быть здесь и говорить с вами – это удовольствие для меня.
- Важно было закончить работу в срок.
- Он обещал встретить нас в аэропорте.

Task 20. Choose the correct translation.

- I **decided to take part** at this competition.
 - решил принять участие
 - решение принять участие
- It's **important not to fail** this experiment.
 - не важно провалить
 - важно не провалить
- This is the **text to write and send**.
 - текст, который нужно написать и отправить.
 - текст написать и отправить

Task 19. Match to columns to make sentences. Translate the sentences.

1. Kim went to town ...	a. ... to take care of the environment.
2. I had a meeting with the boss ...	b. ... to do everything excellent.
3. Greenpeace is an international organization that works ...	c. ... to enter the university.
4. He shut the door quietly ...	d. ... to phone as soon as possible.
5. Every summer lots of young people take exams ...	e. ... to write programs.
6. Sometimes it is impossible ...	f. ... to discuss the new project.
7. To create websites ...	g. ... you should have much practice.
8. It is not so easy ...	h. ... to go shopping.
9. He promised me ...	i. ... can be really interesting.
10. To speak English well ...	j. ... not to wake up the baby.

Check yourself

- You **had better wear** a warm sweater.
 - имел лучше для того, чтобы носить
 - ты бы лучше надел
- My father **taught me to drive** a car.
 - научил меня водить
 - учил меня, чтобы водить
- My mother **made me wear** this coat.
 - заставила меня надеть
 - сделала мне

Reference on Grammar

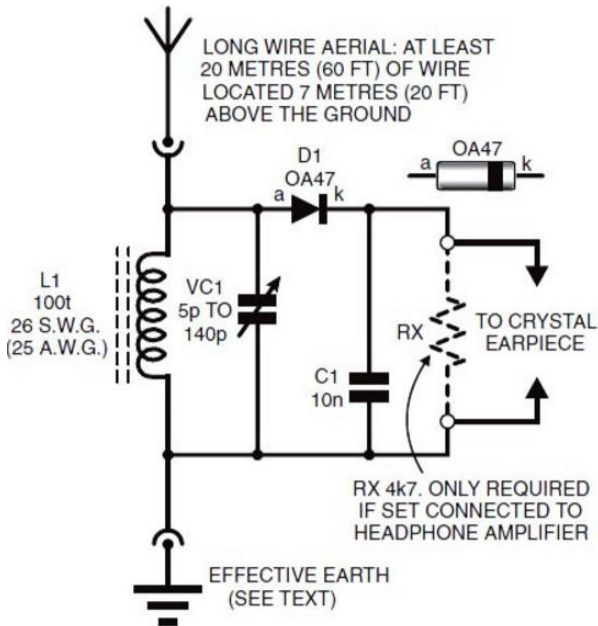
- Infinitive <http://www.native-english.ru/grammar/infinitive>
<http://www.homeenglish.ru/Grammarinf.htm>

Technical reading: how to describe a circuit diagram.

Task 21. Look at the picture and read the description of the diagram.

Crystal radio

The simplest radio receiver, known as a Crystal Set, consists of a coil, tuning capacitor, diode detector, and a pair of earphones. A typical circuit diagram for a Crystal Set Radio is given below where inductor or coil L1 is tuned by variable capacitor VC1 to the transmitter frequency. Diode D1 demodulates the signal, which is fed straight to the earphones. There is no amplification.



Circuit details

Ferrite loop aerial L1 and polythene dielectric variable capacitor VC1 form the tuned circuit. Point contact germanium diode D1 (1N34 or OA47) demodulates the signal; capacitor C1 bypasses residual r.f. (radio frequency) to earth and also exhibits a reservoir action, enabling the a.f. (audio frequency) output to approach its peak value. The recovered audio signal is fed directly to a crystal earpiece. Signal voltages introduced in the ferrite loop aerial by the radiated magnetic field are much too much to produce an output from the detector, and the diode detector is used here simply as a tuning coil. The ferrite core does, however, reduce the number of turns required for the coil winding, thereby reducing its resistance and increasing its audio quality.

Picture and text from:

<http://www.buildcircuit.com/how-to-make-a-batteryless-crystal-set-radio/>

Task 22. Find the equivalents to the Russian words.

катушка	конденсатор переменной емкости
диодный детектор	полиэтиленовый диэлектрик
настраивать	перенаправлять
уменьшать глубину модуляции	выполнять функцию
черезчур много	ферритовый сердечник
катушечная обмотка	таким образом

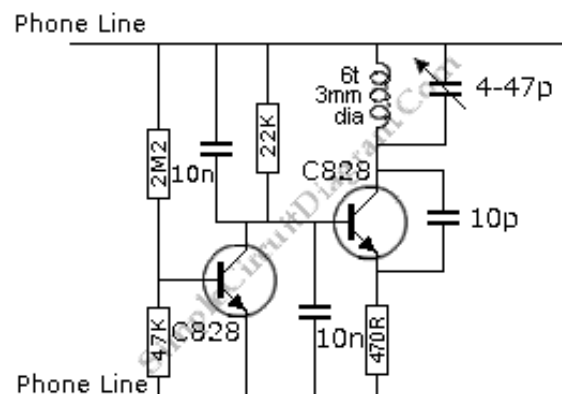
Task 23. Answer the questions.

1. What does a Crystal Radio consist of?
2. What is L1?
3. What does a diode D1 do?
4. What capacitor do you need for a crystal radio?
5. Where does the audio signal from the capacitor go?
6. What does the ferrite coil do?

Task 24. Look at the circuit diagram below and describe it using the phrases below.

- ... is connected in parallel with...
- ... is connected in series with...

For circuit diagram symbols see App. 3



Picture from:

<http://www.simplecircuitdiagram.com/2010/07/12/wire-less-telephone-line-spy/>

Lesson 10. Communication Technologies. Part 2. Television

Starter

- Do you watch TV?
- How does TV work?

- Do you think that TV will disappear in the future?

Task 1. Unscramble types of programs.

ehtawre	_____	2
postr	_____	1 5
manial	_____	8
csmui	_____	
ladnoiuatec	_____	
haskolwt	_____	6
zoqwshiu	_____	3
hemgsawo	_____	4 7 9

Task 2. Copy the letters in the numbered cells to other cells with the same number.

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

Task 3. Say whether you like the TV programs from exercise 1. Use the following words and phrases to help:

I like ... I don't like ...	because it is	funny interesting boring exciting terrible stupid useful relaxing useless
--------------------------------	---------------	---

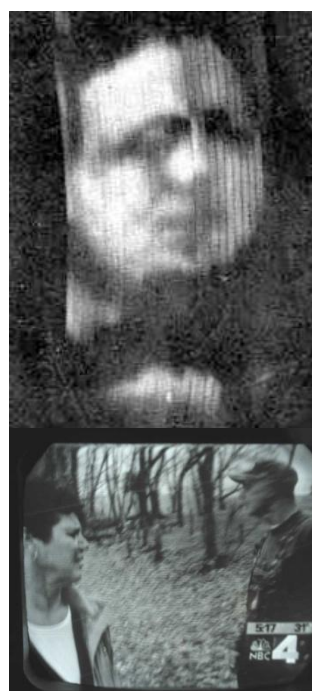
Word bank

1. aim – 1) цель 2) направлять(ся)	12. a manufacturer – производитель
2. an anode – анод, положительный электрод	13. a market – рынок
3. a bit – кусочек, элемент	14. a motion – движение
4. to broadcast – транслировать	15. to pass through smth – проходить сквозь, через ч.-л.
5. a cathode – катод, отрицательный электрод	16. a plasma screen – плазменная панель
6. an electron gun – электронная пушка	17. to project – проецировать
7. a hole – дыра	18. to promote – продвигать
8. an improvement – улучшение	19. a screen – экран
9. to introduce – представлять, вводить (новую технологию)	20. to transform – трансформировать, изменять
10. an inventor – изобретатель	21. to transmit – передавать
11. an LCD – Liquid Crystal Display, жидкокристаллический дисплей	22. vacuum – вакуум
	23. wealthy – богатый

Task 4. Before reading the text, match the phrases and their definitions. Use the Internet if necessary.

a. electromechanical television scanning system or mechanical television	c. Cathode Ray tube
b. living pictures or pictures in motion	d. Kinescope
	e. dissector tube
	f. CRT technology
	g. television station
	h. colour picture tube

1. a vacuum tube containing an electron gun (a source of electrons) and a fluorescent screen
2. transmitting television tube
3. the technology that uses cathode ray tubes
4. A television station is a type of broadcast station that broadcasts both audio and video to television receivers
5. a cathode-ray tube that has three different colours of phosphors, so it can show a colour picture
6. is a television system that relies on a mechanical scanning device, such as a rotating disk with holes in it or a rotating mirror
7. a television picture tube
8. pictures that move like in a video



The first known photograph of a moving image produced by Baird's "televisor", circa 1926

Picture from https://en.wikipedia.org/wiki/Mechanical_television

The screen of the 1939 DuMont Model 180

Picture from http://www.earlytelevision.org/dumont_180.html

A Brief History of Television

Who invented TV? Unlike many other inventions throughout history, the history of the television credits many inventors instead of just one.

Inventors from all over the world had been working on transmitting pictures or objects onto a screen since the 1830's, but the first physical television didn't evolve until the 1900's. Five men became the most popular and prestigious inventors of television.

A German inventor **Paul Nipkow** invented the first rotating disk that would allow pictures to transmit over wire in 1884. His discovery was the first electromechanical television scanning system in the world. This rotating disk would rotate at a fast pace, while light passed through the holes to create a picture on a screen.

John Baird became famous when he invented the first pictures in motion that were televised in Europe in 1924. He later transmitted the human face onto a screen, and during World War II invented the first colour picture tube. His contribution to the history of TV was enormous.

Charles Jenkins invented a mechanical television which transmitted one of the first moving images in 1923. This American inventor went on to promote his theories in the technology of the television along with other inventors when they transmitted the first living pictures onto a screen. Jenkins is also famous for creating the first television station in North America.

Vladimir Zworykin invented the Cathode Ray tube, which he named the Kinescope and started a new era in the history of TV. Before the Kinescope, televisions in the 1920's were mechanical. The Cathode Ray tube was not only used for transmission; this device transformed the television into an electronic device.

Finally, an American farmer named **Philo Farnsworth** at the age of discovered a way to transmit images onto a screen by the use of 60 horizontal lines, which made the picture clearer. Farnsworth also invented over 165 devices, including the dissector

tube, which became the groundwork for televisions we use today.

First Commercial Televisions The 1928 Baird model mechanical television sets were introduced to the public at the "Olympia" Radio Exhibition in 1929. These mechanical TV sets projected orange-red blurry images on a screen about the size of a dollar coin.

The first televisions sold for about fifty-five dollars, which only wealthy people could afford. Electronic televisions were introduced to the United States at the 1939 World's Fair. The first electronic television set was the 1938 DuMont Model 180 and cost around one hundred twenty-five dollars.

Early Television

When the first television came on the market, you could only watch a play on



a screen the size of a dollar coin. The actors also had to take turns in front of the camera, because the screen was only big enough to see one person at a time. The real milestone of the era - the Cathode Ray Tube would be the basis for all televisions for nearly 100 years. In 1931 Allen B. Du Mont made the first commercially practical and durable CRT for television. The CRT technology allowed TV screens to get bigger and better. But all televisions during these early years were black and white. It wasn't until 1953 that the introduction of the first colour TV broadcasts occurred and manufacturers raced to make colour TVs for consumers.

Adapted from:

<http://www.historyoftelevision.net/#sthash.rMkCWwCB.dpuf>

Useful words and phrases

1. to afford – позволить себе
2. to allow – разрешить
3. along with – наряду с
4. to attract – притягивать
5. blurry – расплывчатый
6. bright – яркий
7. clear – четкий, ясный
8. a coin – монета
9. a consumer – потребитель
10. a contribution – вклад
11. to credit – приписывать
12. durable – надежный, долговечный
13. enormous – огромный
14. to evolve – развиваться
15. an exhibition – выставка
16. at a fast pace – быстро, высокими темпами
17. to go on – продолжаться
18. a groundwork – основа
19. to heat – нагревать
20. to hold out of – удерживать от чего-либо

21. instead of – вместо
22. to light up – зажечь, загораться
23. a milestone – рубеж
24. to occur – случаться, происходить
25. an oscilloscope – осциллограф
26. a play – пьеса
27. prestigious – престижный
28. to pull – тянуть, притягивать
29. quite – достаточно, довольно
30. to race – гнаться
31. a ray gun – лучевая пушка
32. to rotate – вращаться
33. to shoot out – выстреливать
34. to take turns – чередоваться
35. to televise – передавать телевизионную программу
36. throughout – на всем протяжении
37. a tube – трубка
38. unlike – в отличие от
39. visible – видимый

Task 5. Read the text quickly and complete the table.

Year	Inventor	Invention
1884		
	John Baird	
		mechanical television
1929		
	Philo Farnsworth	
	Allen B. Du Mont	
1931		

Task 6. Read the text again and answer the questions.

1. When did the first physical television appear?
2. Where was Nipkow from?
3. How does a Nipkow disk work?
4. What is John Baird famous for?
5. When did he invent s colour picture tube?
6. Who demonstrated moving pictures earlier, Baird or Jenkins?
7. Where did Jenkins create a first television station?
8. What is a Kinescope?
9. How many inventions did Farnsworth have?
10. What did he invent?
11. What quality of picture did the TV sets at the "Olympia" Radio Exhibition project?
12. How much was an electronic TV set?
13. Why did actors take turns in front of the camera?
14. When did the colour television appear?

Task 7. Fill in missing words into the sentences according to the text.

1. Inventors from all over the world worked on television since
2. The first electromechanical television scanning system ... pictures over wire.
3. John Baird transmitted the human face onto a
4. Charles Jenkins and other inventors ... theories in the technology of the television.
5. The Cathode Ray tube was an
6. 60 horizontal lines made the ... clearer.
7. Only wealthy people could afford
8. In 1939 ... were introduced at the 1939 World's Fair.
9. TV screens were bigger and better because of ... technology.

Task 8. Match the words to make phrases and translate them.

an electron	television
Liquid Crystal	gun
to pass	a theory
electromechanical	moving pictures
television	to public
to transmit	Display
to introduce	station
to promote	through

Task 9. Decode the words from the word bank and put them into the sentences below.

doane	acdohte	loeh	cuotdreni	itrnveon
trmeak	reecns	uuvacm		

1. A person who invented a particular process or device or who invents things as an occupation.
2. A positively charged electrode.
3. A negatively charged electrode.
4. A space that contains no air or other gas.
5. An area or arena in which commercial dealings are conducted.
6. An opening in something that goes right through it.
7. The surface of a cathode ray tube or similar electronic device on which images and data are displayed.
8. To tell each other's names somebody, so that you can get to know each other.

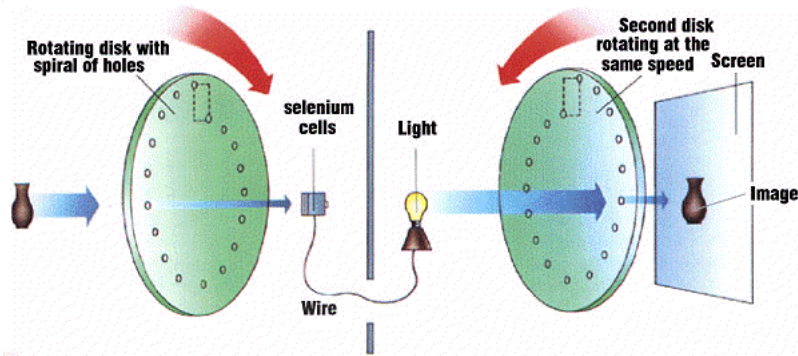


Model KVN-49 (1949) Picture from: http://www.earlytelevision.org/russian_postwar.html

Task 10. Translate the sentences.

1. Изображения передавались с помощью диска Нипкова.
2. До электронного телевидения существовало механическое телевидение.
3. Первая телевизионная станция была создана Чарльзом Дженкинсом.
4. Первое механическое телевидение передавало картинку размером с долларовую монету.
5. Катодно-лучевая трубка стала основой телевизоров.
6. Технология ЭЛТ позволила производить большие телевизионные экраны.
7. После того, как было представлено цветное телевидение, производители начали выпускать цветные телевизоры.

Task 11. Fill in the text according to the scheme.

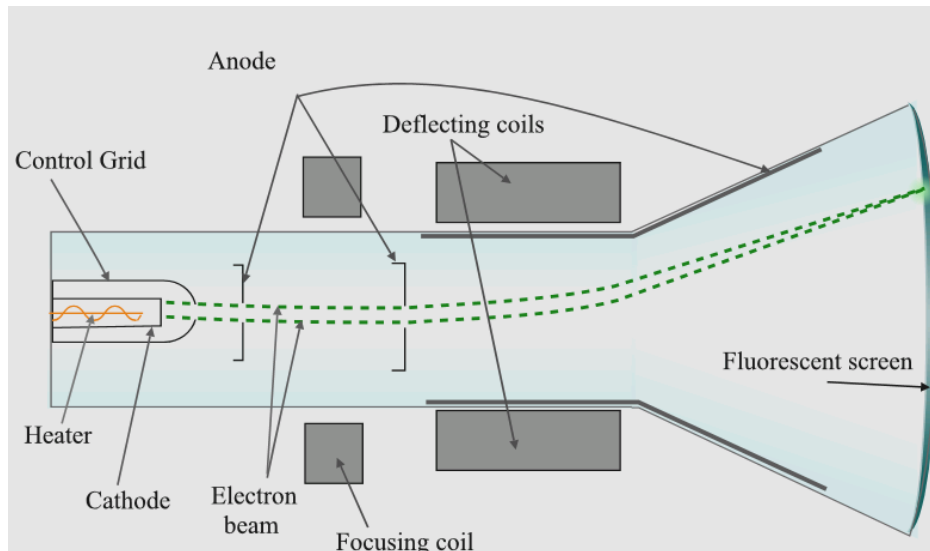


Nipkow disk system consists of two 1) ... and each disk has several 2) ... on it; those holes are positioned so that they can scan every part of an 3) ... in turn as the disk rotated. The 4) ... coming from each hole is then turned into an electrical current. Then that current turns on the bulb at the other end of the 5) The light from the bulb passes through the second disk that is

rotating at 6) as the first disk. This produces a picture on the ..., but the picture only has eighteen-line resolution quality.

Picture and text from:

<http://www2.hesston.edu/Physics/TelevisionDisplays/HISTORY1.HTM>



Task 12. Read the text quickly and match the headings and the paragraph. One heading is extra.

1. The Principle of Operation
2. General Information
3. The Manufacturing Process of CRT
4. Basic components of CRT
5. The Use of CRT

Task 13. Put the following words into the text. Use the picture above to help.

vacuum	field	invented	television	picture
plasma	screens	screen	monitors	crystal
electrons	tube	second	anode	control

A. The cathode ray tube or CRT was invented by Karl Ferdinand Braun. It was the most common type of display for many years. It was used in almost all computer 1) ... and televisions until LCD and 2) ... appeared.

B. A cathode ray tube is an electron gun. The cathode is an electrode (a metal that can send out 3) ... when heated). The cathode is inside a glass 4) Also inside the glass tube is an 5) ... that attracts electrons.

This is used to pull the electrons toward the front of the glass tube, so the electrons shoot out in one direction, like a ray gun. To better 6) ... the direction of the electrons, the air is taken out of the tube, making a 7)
C. The electrons hit the front of the tube, where a phosphor 8) ... is. The electrons make the phosphor light up. The electrons can be aimed by creating a magnetic 9) By carefully controlling which bits of phosphor light up, a bright 10) ... can be made on the front of the vacuum tube. Changing this picture 30 times every 11) ... will make it look like the picture is moving. Because there is a vacuum inside the tube, and the tube must be glass for the phosphor to be visible.

D. The cathode ray tube was 12) ... in 1897, and used as an oscilloscope (a machine to show waves). Later, along with other inventions and improvements, it was used for the first modern electronic 13) ... by Philo T. Farnsworth in the 1920's. The CRT was the main type of television screen until the Liquid 14) ... display became popular in the early 2000's.

Picture and text from:

https://simple.wikipedia.org/wiki/Cathode_ray_tube

Grammar: the Gerund vs the Infinitive

We use the Infinitive:	
1. after certain verbs with to :	agree, decide, plan, hope, learn, want, promise He agreed to take me to the airport.
2. after certain verbs without to :	can, must, should, may, might, make, let, help My mother helped me solve the problem. He made me run a hundred meters every day.
We use the Gerund:	
3. after certain verbs:	avoid, consider, dislike, enjoy, finish, keep, practice, prefer, stop, understand We considered using this method of computing. I enjoy reading .
4. after prepositions:	I am interested in making airplane models. Gina is very good at writing reports. He went away without saying anything.
We use both the Infinitive and Gerund:	
5. after certain verbs:	begin, start, continue, like, love, hate Our group will begin to study / studying IT next term. Paul likes to visit / visiting his friends.

Note: See full list of verb patterns in App. 1

Task 14. Put the particle "to" into the sentences if necessary.

- Don't worry. The test may not ... be very difficult.
- I'm sorry I forgot ... call you yesterday. Is there any news about your mum?
- It's not a very good book. You won't ... like it.
- Jennifer couldn't ... answer because she didn't prepare.
- My trainer makes me ... work very hard.
- Our teacher sometimes lets us ... leave early.
- The sound of rain makes me ... feel good.
- They might not ... receive the letter until next week.
- When are you planning ... go home tonight?
- You can't ... smoke here. Smoking is not allowed here.

Task 15. Put the following verbs into the form of Gerund and complete the sentences.

do fly lie play ride run swim travel try get

- After ... several times, I finally broke my last record.
- I enjoy ... in my sofa on Sunday morning.
- ... is a fast way of ...
- After ... my homework, I usually play computer games.
- I lay in bed and thought about ... up.
- Pete doesn't like ... the World of Warcraft.
- Sam likes ... in the park before breakfast.
- We like sport, especially tennis and ...

Task 16. Change the verb in brackets into Gerund. Write two variants if possible.

- Do you prefer (to travel) by bus or by car?
- I dislike (to get up) early in the morning.
- I hate (to write) long composition.
- I love (to sit) at home in the evenings.
- I think it's time to stop (to play) basketball.
- Mr. Jones started (to work) here long time ago.
- What time did you finish (to watching) the film last night?
- Why don't you like (to go) to the gym?

Task 17. Complete the sentences with a preposition and the Gerund of the verb in brackets. Translate the sentences.

about x2 of in after by for at without

- Are you interested ... (to join) the English Speaking Club?
- ... (to open) the door, John looked into the room and turned on the light.
- I am already tired ... (to write) the text.
- I'm worried ... (to pass) me exams.
- Jane is very good ... (to swim).
- This device is used ... (to measure) the frequency.
- Try to open the box ... (to turn) the lock.
- We talked ... (to go) to the cinema at the weekend.
- When Simon saw the dog, he ran away ... (to stop).

Task 18. Put the verbs in brackets into the correct form, Gerund or Infinitive.

- We plan (to meet) them here.
- I want (to see) the manager.
- Don't forget (to lock) the door before (to go) to bed.
- My mother told me (not to speak) to strangers.
- Ronald tried (to explain) but Paula refused (to listen).
- You will do it; you just should (to practice) more often.
- We must finish (to write) before the end of the lesson.
- At lessons she annoyed me by (to speaking) about nothing.
- He decided (to test) the components by (to use) high temperatures.
- Can we solve this problem without ... (to use) the LEDs?

Check yourself

Task 19. Translate the sentences.

1. Папа порекомендовал мне почитать Жюль Верна.
2. Продолжай читать, у нас еще есть время.
3. Ты любишь писать письма?
4. Ты можешь прекратить шуметь?

5. Ты хочешь найти свою тетрадь?
6. Я забыла покормить кота.
7. Я ненавижу делать уборку.
8. Я просто пытаюсь тебе помочь.
9. Я решил купить новый дом.
10. Я учусь водить машину.

Reference on Grammar

1. Gerund vs Infinitive

<http://anglyaz.ru/grammatika/grammarlessons/51--4/292-verb-patterns-.html>
<http://engblog.ru/gerund-or-infinitive-verb-lists>

Technical reading: how to write a CV

Task 20. Study the sample CV in App. 2, and match the parts of a CV with their description.

Education	Additional Skills
References	Personal Interests
Personal Details	Employment
Personal Statement	Key Skills

1. a few lines summarizing who you are, what you're good at and what makes you special
2. do you like reading, dancing, football, etc.?
3. former bosses, teachers or other people who can confirm that you are a good candidate.
4. nationality, age etc.
5. previous jobs and what your role was;
6. skills that you need at your workplace
7. schools, university, other training and qualifications
8. things you can do that weren't part of your formal training, such as languages, computer skills etc.

Task 22. Use the sample CV as an example and create your own CV. You can use special online services; see links below.

<http://www.livecareer.co.uk/cv-builder#.Vj5M2bfhCM8>
<https://cvmkr.com/CV/>
<http://www.reed.co.uk/cvbuilder/>

Task 21. Write your personal statement using prompts below.

1.

<ul style="list-style-type: none"> -highly skilled -highly motivated -reliable -creative -hardworking -versatile -flexible -competent -enthusiastic -effective -qualified -adaptable -energetic 	with an experience in ...	<ul style="list-style-type: none"> -design -information technologies -web design -electronics engineering -information security
--	---------------------------	--

2.

I am looking for a position of	<ul style="list-style-type: none"> a web designer an engineer a specialist a manager
--------------------------------	--

Total Revision Lessons 6-10

Task 1. Match two columns to make phrases.

Make up 7 – 10 sentences with these phrases.

1. solution	a. idea
2. integrated	b. a program
3. ground-breaking	c. diodes
4. the flow	d. hardware
5. light-emitting	e. storage
6. wireless	f. computer
7. long-term	g. care of
8. to run	h. to a problem
9. a wearable	i. rid of
10. malicious	j. of current
11. to get	k. code
12. faulty	l. software
13. to take	m. circuit
14. source	n. the instructions
15. to follow	o. connection

Task 2. Choose the right variant.

- I ... you when I ... home from work.
 - 'll phone ... get
 - phone ... will get
 - will phone ... will get
- The ... you earn now, the ... pension you will get later.
 - many ... big
 - much ... bigger
 - more ... bigger
- He ... about it a week ago and he didn't tell you.
 - knows
 - knew
 - know
- We ... you about our holidays when we ... back.
 - tell ... come
 - will tell ... will come
 - 'll tell ... come
- If a burglar ... to force the door open, sensors ... the alarm.
 - try... will trigger
 - tried ... will trigger
 - tries ... will trigger
- If I ... shopping, I ... that copybook for you.
 - 'll go ... 'll buy
 - go ... will buy
 - went ... 'll buy
- After I ... school, I ... the university.
 - left ... entered
 - leave ... enter
 - leave ... 'll enter
- When I ... home, I ... dinner.
 - came ... cook
 - come ... 'll cook
 - comes ... will cook

Task 3. Choose the right variant.

- Manufacturers ... transistors using a highly automated process.
 - produces
 - produce
 - will be produce
- Lately we ... a few papers on this problem.
 - published
 - have published
 - are publishing
- Many products ... amplifiers for sound reproduction.
 - include
 - is including
 - will include
- Transistors ... very little power.
 - wastes
 - waste
 - have wasted

- In 1940s American scientists ... the first transistor.
 - invented
 - invent
 - have invented
- He ... all the lectures.
 - attend
 - have attended
 - attends
- The parts of transistors
 - don't wear out
 - wore out
 - doesn't wear out.
- Semiconductor devices ... the growth of electronics.
 - accelerate
 - accelerated
 - have accelerated

Task 4. Put the words into the correct order.

- moving silhouette/ Scottish/ John Logie Baird/ the transmission/ publicly/ inventor/ pictures/ demonstrated/ in 1925/.
- the history of radio/ the invention/ within/ people/ were involved/ of radio/ in/ several/.
- of electronics/ now/ exclusively/ solid-state/ the science/ deals/ transistors/ almost/ with/ or other/ devices/.
- to carry/ most of/ devices/ modern/ are used/ electronic/ or/ information/ to give/.
- was/ Heinrich Hertz/ the first/ and measured/ waves/ German physicist/ who detected/ electromagnetic/.
- up-to-date/ the Web/ the best/ one of/ information/ for/ is/ resources/.
- together/ fibre-optic/ telephone/ networks/ can be/ by/ or/ linked/ lines/ cables/.
- computers/ the only/ understand/ language/ can/ directly/ code/ called/ is/ machine/.

Task 5. Translate the following sentences into Russian.

- Databases are programs, which allow you to store, look at or change a large quantity of information quickly and easily.
- Network connections using radio signals without network cables are becoming more common.
- There are two main advantages if IC over discrete circuits: cost and performance.
- With mobile phone system, all communications take place through a central control base station.
- Automation makes it possible to obtain and develop new sources of energy.
- Semiconductor devices are manufactured on the surface of a thin substrate of semiconductor material.
- The performance of integrated circuits is high since the components switch quickly and consume little power because the components are small and close together.
- Around the same time, computers became widely accessible for personal use by individuals in the form of personal computers.
- The keyboard and the mouse are external and connected to the back plate of the motherboard.
- Nowadays laptop computers or simply laptops (also called notebooks) are in wide use.
- An icon is a small picture representing an object, process or function.
- Hardware means the different types of equipment a computer consists of.

Check yourself: Answers

Lesson 7. Computers. Part 2. Types of computers.

Task 14. Put the verb into the Past Simple or Present Perfect form.

1. visited/ have not been
2. Have you ever written / have never written
3. have you seen / I have looked
4. have you bought / I bought
5. met
6. have you seen / watched

Lesson 6. Integrated circuits. Part 1. Invention of an integrated circuit.

Task 17. Put the verbs in brackets into the Future Simple Form.

1. won't be able;
2. I will send;
3. I will go;
4. I will see;
5. won't have;
6. I will put;
7. Sam will start;
8. I will go

Lesson 7. Computers. Part 1. Configuration.

Task 20. Put the verb into the Present Perfect form.

1. Has James read;
2. Has Mary ever been;
3. Have you found;
4. I have been;
5. hasn't drunk;
6. haven't come;
7. has made;
8. haven't arrived;
9. have you lost

Lesson 6. Integrated circuits. Part 2. Electronic Components

Task 14. Put the verbs in brackets into the Future Simple, the Present Simple or the Present Continuous form.

1. am seeing;
2. are you doing;
3. am going, does it start;
4. is having, will you come, will come;
5. does the train arrive, are you going.

Lesson 7. Computers. Part 1. Configuration

Task 20. Put the verb into the Present Perfect form.

1. Has James read;
2. Has Mary been;
3. Have you found;
4. I have been;
5. My dog hasn't drunk;
6. Peter and Jane haven't come;
7. Sue has made;
8. They haven't arrive;
9. Why have you lost.

Lesson 7. Computers. Part 2. Types of computers.

Task 14. Put the verb into the Past Simple or Present Perfect form.

1. I visited; I haven't been;
2. Have you ever written; I have never written;
3. Have you seen; I have looked;
4. have your bought; I bought;
5. I met;
6. Have you seen; I watched.

Lesson 8. Computer protection. Part 1. Information security

Task 14. Translate the following sentences.

1. Я скачиваю новую программу, позволяющую мне проверять почту без браузера.
2. В некоторых случаях даже работающий брандмауэр не может защитить ваш компьютер от взлома.

3. При приобретении (приобретая) новый компьютер с операционной системой проверьте антивирус.
4. Остерегайтесь сайтов, которые вы не знаете.
5. Когда проверяете почту, будьте осторожны с прикрепленными файлами.

Lesson 8. Information Security. Part 2. Problems with computers.

Task 15. Translate the following sentences.

1. Твой компьютер заражен рекламным ПО.
2. Я удалил файл, зараженный рекламным ПО.
3. Сэм принес вчера отремонтированный компьютер домой.
4. Смотри, твой телевизор работает, я его починил.
5. Мы заменили все мониторы в компьютерном классе.
6. Замененная звуковая карта плохо работает.
7. Я только что проверил почту. Там исправленная статья от профессора.

Lesson 9. Information technology. Part 1. Programming languages

Task 20. Choose the correct participle.

1. carrying;
2. decorated;
3. floating;
4. made;
5. rising;
6. eating;
7. written;
8. speaking

Lesson 9. Information technology. Part 2. The Internet

Task 16. Choose the correct translation. There can be more than one right answer.

1. a, b
2. a
3. a, b, c
4. a, b
5. a, b

Lesson 10. Communication Technologies. Part 2. Television

Task 19. Translate the sentences.

1. My father recommended me to read Jules Verne.
2. Continue to read / reading. We still have time.
3. Do you like writing letters?
4. Can you stop making noise?
5. Do you want to find your book?
6. I forgot to feed the cat.
7. I hate doing cleaning.
8. I just try to help you.
9. I decided to buy a new house.
10. I learn to drive a car.

Vocabulary

Lesson 6. Integrated circuits. Part 1. The invention of the integrated circuit

1. assembly – монтаж, сборка
2. automated – автоматизированный
3. a component – деталь, компонент
4. to connect – соединять
5. to construct – строить, создавать
6. to depend on – зависеть от ч.-л.
7. different – отличный, другой
8. effective – эффективный
9. to have to – должен
10. a layer – слой
11. manually – вручную
12. to process – обрабатывать
13. a solution to a problem – решение проблемы
14. a wire – провод

Lesson 6. Integrated circuits. Part 2. Electronic Components

1. an anode – анод (положительный электрод)
2. a capacitor – конденсатор
3. a cathode – катод (отрицательный электрод)
4. a diode – диод
5. an electric charge – электрический заряд
6. to measure – измерять
7. to put – класть
8. a resistor – резистор
9. to resist – сопротивляться
10. a value – значение

Lesson 7. Computers. Part 1. Configuration

1. to act – действовать, работать
2. built-in – встроенный
3. a capability – способность, возможность
4. a computer case – корпус компьютера
5. to convert – преобразовывать; превращать
6. to cover – покрывать, накрывать
7. directly – непосредственно, напрямую
8. hardware – аппаратное обеспечение, "железо"
9. indirectly – косвенно, опосредованно
10. inside – внутри
11. to install – устанавливать
12. long-term – долгосрочный
13. memory – память
14. a plate – пластина, плата
15. power – энергия; мощность, сила
16. removable – съёмный, сменный; заменяемый
17. to save – 1) охранять, защищать; 2) беречь, экономить
18. short-term – краткосрочный
19. to start up – запускать, начинать
20. to store – хранить, сохранять
21. a socket – гнездо, разъем
22. software – программное обеспечение (ПО)
23. performance – исполнение, выполнение
24. through the cable – через кабель
25. to unplug – выдернуть вилку из розетки; отключить

Lesson 7. Computers. Part 2. Types of computers.

1. an adapter – переходник, переходное устройство
2. capable of – способный
3. capacity – 1. способность; 2. емкость
4. to compose – составлять
5. to control – управлять
6. to cost – стоить
7. a desktop – десктоп, настольный компьютер
8. external – внешний
9. a feature – функция, характеристика
10. in comparison to – по сравнению с ч.-л.
11. inbuilt – встроенный
12. to increase – повышать(ся)
13. to offer – предлагать
14. performance – производительность
15. to provide – предоставлять
16. to run – запускать, выполнять
17. to serve – обслуживать
18. size – размер
19. through – через, с помощью
20. versatility – универсальность
21. weight – вес

Lesson 8. Computer protection. Part 1. Information security

1. attachment – вложение к письму
2. botnet – бот-сеть, сеть инфицированных компьютеров, рассылающих спам
3. to delete information – стирать информацию
4. to ensure – удостовериться
5. firewall – брандмауэр (аппаратные или программные средства межсетевой защиты)
6. to forward – пересылать
7. to get access – получить доступ
8. to let – позволить
9. malicious software – вредоносные программы
10. to prevent – предотвращать
11. to protect – защищать
12. to provide with smth. – предоставлять, обеспечивать чем-либо
13. reliable – надежный
14. spyware – шпионское ПО
15. to steal passwords – красть пароли
16. to update – обновлять
17. web browser – веб-браузер, средство для просмотра веб-страниц
18. worm – червь, вид вредоносного ПО, распространяющего свои копии по сети

Lesson 8. Computer protection. Part 2. Problems with computers.

1. adware – ПО с размещённой в нём рекламой
2. anti-spyware programs – антишпионские программы
3. to be infected – быть зараженным
4. to cause – вызывать, быть причиной
5. to change rapidly – меняться быстро
6. a common error – распространенная ошибка
7. a crash – авария, крушение; зд. выход компьютера из строя
8. faulty hardware – неисправное «железо»
9. a fix – зд. разрешение проблемы
10. freeze – заморозка; комп. зависание
11. to get rid of – избавиться
12. to launch a program – запускать программу
13. to look up – искать что-либо в справочнике
14. the most recent version – самая последняя версия
15. to plug in – вставить в розетку, подключить
16. to replace – заменить
17. to surf the Web – бродить по сети
18. to take care of – заботиться о ч.-л.
19. to update the driver – обновить драйвер
20. to wear down – изнашиваться

Lesson 9. Information technology. Part 1. Programming languages

1. to be in wide use – широко использоваться
2. class-based – основанный на классах
3. command – 1) команда; 2) управлять
4. to compile – компилировать
5. to enable – делать возможным, наделять способностью
6. execution – выполнение (программы)
7. functional – функциональный, относящийся к функциональному программированию
8. to gain – получать
9. imperative – императивный
10. inheritance – наследование, наследство
11. in terms of – в терминах, говоря языком
12. to modify – изменять, модифицировать
13. object-oriented – объектно-ориентированный
14. open-source – открытый, с открытыми исходниками
15. possible – возможный, вероятный
16. procedure – процедура, оформленный специальным образом обособленный именованный набор команд, выполняющий некоторые действия
17. procedural – процедурный
18. routine – подпрограмма (одно из базовых понятий, означающих функциональный блок кода)
19. run-time environment – среда исполнения (программы)
20. scripting language – язык написания сценариев
21. sequence – последовательность
22. source code – исходный код
23. syntax – синтаксис
24. template – шаблон

Lesson 9. Information technology. Part 2. The Internet

1. to access – иметь (получить) доступ (к чему-л.)
2. to act – действовать
3. available – доступный
4. certain – некий, некоторый
5. a concept – понятие, идея; концепция
6. common – общий; обыкновенный
7. to connect – соединять; связывать; объединять
8. to consist of – состоять из
9. to contain – содержать
10. content – содержание; содержимое
11. data – данные
12. experience – опыт
13. to follow – следовать
14. to include – включать в себя, содержать
15. a network – сеть
16. to interact – взаимодействовать; влиять друг на друга
17. to process – обрабатывать
18. to provide – давать, предоставлять; обеспечивать
19. to require – требовать
20. to run – 1) обеспечить работу; 2) управлять
21. a request – требование; запрос
22. to search – искать
23. to serve – служить
24. to share – делить; делиться
25. to store – хранить
26. a type – тип, вид
27. to type – печатать, набирать (на клавиатуре)
28. a variety – разнообразие, многообразие,
29. a way – 1) путь, дорога; 2) способ, метод

Lesson 10. Communication Technologies. Part 1. Radio

1. amplitude modulation (AM) – амплитудная модуляция
2. frequency modulation (FM) – частотная модуляция
3. to arrive – прибывать
4. to broadcast – 1) передавать по радио или телевидению 2) вещать, транслировать
5. a carrier – зд. несущая
6. to cause – вызывать, быть причиной fluctuations – колебания, флуктуации
7. frequency – частота
8. to get through – зд. пройти, дойти
9. interference – зд. помехи
10. invisible – невидимый
11. length – длина
12. speed – скорость
13. to measure – мерить, измерять
14. a mixture – смесь
15. a movement – движение
16. a receiver – приемник
17. to reach – достигать
18. to represent – представлять
19. to transmit – 1) передавать, 2) отправлять, посылать
20. a transmitter – передатчик
21. wavelength – длина волны
22. wired connection – проводное соединение
23. wireless – беспроводной

Lesson 10. Communication Technologies. Part 2.

Television

1. aim – 1) цель 2) направлять(ся)
2. an anode – анод, положительный электрод
3. a bit – кусочек, элемент
4. to broadcast – транслировать
5. a cathode – катод, отрицательный электрод
6. an electron gun – электронная пушка
7. a hole – дыра
8. an improvement – улучшение
9. to introduce – представлять, вводить (новую технологию)
10. an inventor – изобретатель
11. an LCD – Liquid Crystal Display, жидкокристаллический дисплей
12. a manufacturer – производитель
13. a market – рынок
14. a motion – движение
15. to pass through smth – проходить сквозь, через ч.-л.
16. a plasma screen – плазменная панель
17. to project – проецировать
18. to promote – продвигать
19. a screen – экран
20. to transform – трансформировать, изменять
21. to transmit – передавать
22. vacuum – вакуум
23. wealthy – богатый

Appendix 1 List of verb patterns

Verb + to + Infinitive

agree
appear
arrange
ask
care
cease
choose
claim
decide
demand
deserve
expect
fail
forget
get (be allowed to)
happen
hesitate
hope
learn
manage
neglect
offer
plan
prefer
prepare
pretend
promise
propose
refuse
seem
swear
tend
threaten
vow
wait
want
wish
would like
(meaning "wish" or "want")
yearn

Verb + Gerund

admit
advise
allow
anticipate
appreciate
avoid
can't help
can't see
cease
complete
consider
defend
delay
deny
despise
discuss
70

dislike
don't mind
encourage
enjoy
finish
imagine
involve
keep
mention
mind
miss
neglect
permit
postpone
practice
prefer
propose
recall
recollect
recommend
report
require
resent
resist
risk
suggest
stop
tolerate
understand
urge

Verb + Infinitive OR Gerund

begin
start
continue
intend
like
love
hate
can't stand
can't bear

Verb + Infinitive WITHOUT to

can
could
may
might
must
mustn't
needn't
shall
should
will
would
let + object
let's
make + object

Appendix 2 Sample CV

John Smith

smithjohn@yandex.ru

+7 123 456 7899

23 Lenin Street, Tomsk, 634041

PERSONAL STATEMENT

I would like to follow a career in Web Design. I am well-organised, highly motivated and have excellent communication skills. In addition I am reliable, flexible, and quick to learn.

KEY SKILLS

Programming Languages

- HTML / XHTML
- XML
- CSS
- JavaScript
- PHP
- MySQL
- Flash

Software Packages

- Microsoft Office
- Photoshop
- Dreamweaver
- Indesign

EDUCATION

- BA **Computer Science**
Tomsk State University of Control System and Radioengineering
- HSC including **Maths** (B), **Russian** (B), **IT** (A)
Pushkin School, Tomsk

EMPLOYMENT

Operator

Micran Research and Production Company, Tomsk

June 2014 – September 2014

PERSONAL INTERESTS

Cooking | Traveling | Reading | Table Tennis

ADDITIONAL SKILLS





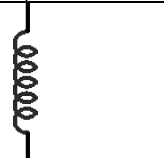
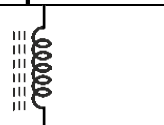

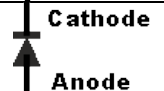



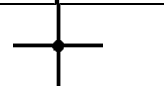
- Fluent English
- Working knowledge of Kazakh
- Clean driving licence

REFERENCES

References are available on request.

Sample CV from: www.careerone.com.au

Appendix 3 Circuit Symbols

	Resistor (Europe)
	Resistor (US)
	Capacitor (Fixed non-polar)
	Variable capacitor (Operator adjustable)
	Inductor
	Inductor with ferrite core
	Basic diode
	Basic diode (showing electrodes)
	Bipolar transistor (NPN - this type is the more widely used variety)
	Bipolar transistor (PNP)
	Crossed wires
	Joined wires

<http://www.radio-electronics.com/info/circuits/>

Appendix 4 Irregular Verbs

Infinitive	Past Simple	Past Participle	Перевод
arise	arose	arisen	появляться
be	was, were	been	быть
beat	beat	beaten	бить, побеждать
become	became	become	становиться
begin	began	begun	начинать
blow	blew	blown	дуть
break	broke	broken	ломать
bring	brought	brought	приносить
broadcast	broadcast	broadcast	вещать
build	built	built	строить
burn	burnt, burned	burnt, burned	гореть
buy	bought	bought	покупать
catch	caught	caught	ловить
choose	chose	chosen	выбирать
come	came	come	приходить
cost	cost	cost	стоить
cut	cut	cut	резать, стричь
dig	dug	dug	копать
do	did	done	делать
draw	drew	drawn	рисовать
drink	drank	drunk	пить
drive	drove	driven	вести машину
eat	ate	eaten	есть
fall	fell	fallen	падать
feed	fed	fed	кормить
feel	felt	felt	чувствовать
fight	fought	fought	драться
find	found	found	находить
fly	flew	flown	летать
forbid	forbade	forbidden	запрещать
forget	forgot	forgotten	забывать
forgive	forgave	forgiven	прощать
freeze	froze	frozen	замерзать
get	got	got	получать
give	gave	given	давать
go	went	gone	идти
grow	grew	grown	расти
hang	hung	hung	вешать
have	had	had	иметь
hear	heard	heard	слышать
hide	hid	hidden	прятаться
hit	hit	hit	бить
hold	held	held	держать
hurt	hurt	hurt	ранить
keep	kept	kept	хранить
know	knew	known	знать

Infinitive	Past Simple	Past Participle	Перевод
lay	laid	laid	класть
lead	led	led	вести
learn	learnt	learnt	учить
leave	left	left	уходить, оставлять
let	let	let	позволять
lie	lay	lain	лежать
light	lit, lighted	lit, lighted	освещать
lose	lost	lost	терять
make	made	made	делать
mean	meant [ment]	meant [ment]	иметь в виду
meet	met	met	встречать
pay	paid	paid	платить
put	put	put	класть
read	read [red]	read [red]	читать
ring	rang	rung	звонить
run	ran	run	бежать
say	said [sed]	said [sed]	говорить
see	saw	seen	видеть
sell	sold	sold	продавать
send	sent	sent	отправлять
set	set	set	ставить
sew	sewed	sewn, sewed	пришивать
shake	shook	shaken	трясти
shine	shone	shone	светить
shoot	shot	shot	стрелять
show	showed	shown	показывать
shut	shut	shut	закрывать
sing	sang	sung	петь
sit	sat	sat	сидеть
sleep	slept	slept	спать
slide	slid	slid	скользить
speak	spoke	spoken	говорить
spend	spent	spent	тратить
stand	stood	stood	стоять
steal	stole	stolen	красть
swim	swam	swum	плавать
take	took	taken	брать
teach	taught	taught	обучать
tear	tore	torn	рвать
tell	told	told	говорить
think	thought	thought	думать
throw	threw	thrown	кидать
understand	understood	understood	понимать
wake	woke	woken	просыпаться, будить
wear	wore	worn	носить
win	won	won	побеждать
write	wrote	written	писать