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Английский язык для специальности «Информатика и вычислительная техника»

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Учебное пособие

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Данное учебное пособие является методическим сопровождением учебного курса «Иностранный язык» для направления 230100.62 «Информатика и вычислительная техника». В задачи пособия входит обучение студентов работе с языковыми материалами на английском языке в рамках их будущей специальности, а также развитие навыков устной и письменной речи. Значительное внимание уделяется также закреплению грамматических навыков студентов.

Подготовлено на кафедре иностранных языков и РКИ.

What do you know about Machine Learning? If it's a new notion for you, look it up on the Internet and exchange ideas with your partner.

Reading comprehension

1.Read the text on Machine Learning and match paragraph headings with paragraphs:
a.**Democratization of Machine Learning in the Cloud**
b.**Humans and machines: separation of functions**
c.**What is Machine Learning**
d.**Demand-Supply Gaps in Data Science and Machine Learning will Arise**
e.**2017 Machine Learning Trends in Research**

2.Which paragraph tells us about
a.separation of tasks between machines and people?
b.Machine learning helping to solve problems in programming?
c.ordinary businessmen getting access to business analytics?(3)
d.one of Google's resources available for everyone?
e.future shortage of specialists in Machine Learning?

3.Put the sentences, summarizing the main idea of each paragraph, in the correct order:
a.Every businessman with a laptop and Internet access will be able to use Machine Learning functions via Cloud technology.
b.Machine Learning will soon change the face of business and our routine daily activities.
c.Smart machine will never be able to replace humans.
d.Machine Learning should be developed using open standards and idea sharing.
e.In the near future the USA will have to train more specialists in Machine Learning.

4.Answer the questions on the text in your own words:

a.How does Machine Learning work with large amounts of data?

b.What is the result of combining Machine Learning with Artificial Intelligence?

c.In what way will research in Machine Learning be put into practice?

d.What are the three main factors in making Machine Learning available for everybody?

e.How will Machine Learning and Cloud technologies change the way they do business?

f.What changes will have to be made in the education system in relation to Data Science field?

g.What is the difference in traditional data specialists' training and the new approach?

h.What is the meaning of poor results in "autonomous car" research?

i.In what situation are smart machines unable to replace people?

5.Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.

Machine Learning trend in 2017.

1.   _____

Machine Learning (ML) has revolutionized the world of computers by allowing them to learn as they progress forward with large datasets, thus mitigating many previous programming pitfalls and impasses. Machine Learning builds algorithms, which when exposed to high volumes of data, can self-teach and evolve. When this unique technology powers Artificial Intelligence (AI) applications, the combination can be powerful. We can soon expect to see smart robots around us doing all our jobs – much quicker, much more accurately, and even improving themselves at every step. Will this world need intelligent humans anymore or shall we soon be outclassed by self-thinking robots? What are the most visible 2017 Machine Learning trends?

In the research areas, Machine Learning is steadily moving away from abstractions and engaging more in business problem solving with support from AI and Deep Learning. In What Is the Future of Machine Learning, Forbes predicts the theoretical research in ML will gradually pave the way for business problem solving. With Big Data making its way back to

mainstream business activities, now smart (ML) algorithms can simply use massive loads of both static and dynamic data to continuously learn and improve for enhanced performance.

2. _____

Democratization of AI and ML through Cloud technologies, open standards, and algorithm economy will continue. The growing trend of deploying prebuilt ML algorithms to enable Self-Service Business Intelligence and Analytics is a positive step towards democratization of ML. In "Google Says Machine Learning is the Future", the author champions the democratization of ML through idea sharing. A case in point is Google's Tensor Flow, which has championed the need for open standards in Machine Learning. This article claims that almost anyone with a laptop and an Internet connection can dare to be a Machine Learnin expert today provided they have the right mind set.

3. _____

The provisioning of Cloud-based IT services was already a good step to make advanced Data Science a mainstream activity, and now with Cloud and packaged algorithms, mid-sized ad smaller businesses will have access to Self-Service BI and Analytics, which was till now only a dream. Also, the mainstream business users will gradually take an active role in data-centric business systems. Machine Learning Trends – Future AI claims that more enterprises in 2017 will capitalize on the Machine Learning Cloud and do their part to lobby for democratized data technologies.

4. _____

The business world is steadily heading toward the prophetic 2018, when according to McKinsey the first void in data technology expertise will be felt in US and then gradually in the rest of the world. The demand-supply gap in Data Science and Machine Learning skills will continue to rise till academic programs and industry workshops begin to produce a ready workforce. In response to this sharp rise in demand-supply gap, more enterprises and academic institutions will collaborate to train future Data Scientists and ML experts. This kind of training will compete with the traditional Data Science classroom, and will focus more on practical skills rather than on theoretical knowledge.

5. _____

If the threat of intelligent machines taking over Data Scientists is really as real as it is made out to be, then 2017 is probably the year when the global

Data Science community should take a new look at the capabilities of so-called "smart machines." The repeated failure of autonomous cars has made one point clear – that even learning machines cannot surpass the natural thinking faculties bestowed by nature on human beings. If autonomous or self-guided machines have to be useful to human society, then the current Artificial Intelligence and Machine Learning research should focus on acknowledging the limits of machine power and assign tasks that are suitable for the machines and include more human interventions at necessary checkpoints to avert disasters. Repetitive, routine tasks can be well handled by machines, but any out-of-the-ordinary situations will still require human intervention.

Vocabulary tasks
1.Study the vocabulary list for this unit and try to single out the words, related to IT. You might need to use a dictionary to check the meaning of some words:
A data set, (to) evolve, Artificial Intelligence, accurate, (to) engage in, (to) predict, (to) pave the way, mainstream, (to) dare, a packaged algorithm, data-centric, gradually, the demand-supply gap, (to) collaborate, (to) train, a capability, (to) surpass, current, (to) acknowledge, (to) assign a task.

2.Make up all possible collocations using the vocabulary list, for example: to evolve gradually, ...

3.Match the words to their definitions:

1.a data set	a.(to) be brave enough to do
2.(to) evolve	b. (to) be the first to
3.Artifiacial Intelligence	c. having date as its main element
4.accurate	d. (to) guess what will happen in the future
5.(to) engage in	e. (to) teach
6.(to) predict	f. an ability or a talent
7.(to) pave the way	g. a shortage of something
8.mainstream	h. (to) give a task
9.(to) dare	i.(to) agree that something is true
10.a packaged algorithm	j. (to) overcome

11.data-centric	k. an ability of a computer to think like a human
12.gradually	l. going on at present moment
13.the demand-supply gap	m. not abruptly
14.(to) collaborate	n.(to) work together
15.(to) train	o. not extreme, moderate
16.(to) surpass	p. (to) participate
17.current	q. (to) develop
18.(to) acknowledge	r. precise
19.a capability	s. an amount of data having something in common
20.(to) assign a task	t. a complex algorithm

4.Paraphrase the sentences using the active vocabulary:
a.We need to prepare more specialists in IT.
b.They can overcome this difficulty id they work together.
c.Her was given this task.
d.The situation in this field is complicated at this moment.
f.We need more equipment for this project, but there is not enough of it in the market.
g.Apple was the first to design a personal computer.
h.Do you have enough courage to do this task?
i.A lot of people took part in this project.
j.We just need something moderate, don't go to extremes.
k.I know a person who can guess what will happen in the future.
l.All the calculations have to be precise.

5.Finish the sentences using your own ideas:
a.This data set can be used for…
b.If this trend continues to evolve, …
c.The future belongs to Artificial Intelligence, because …
d.If these computations are not accurate, …
e.You should not be engaged in this argument, otherwise …
f.If you don't like the mainstream approach, …
g.The demand-supply gap in the market of mobile telephones may lead to…
h.Our university needs to train more specialists in …
i.The current economic situation requires …

j.If you dare to acknowledge your mistakes …
k.If you can't collaborate with other people, …

Speaking
Choose one aspect of Machine Learning and prepare an 8-minute presentation for the group. Use online resources to help you.

Grammar
Present Tenses
The present tenses in English are used:
- to talk about the **present**
- to talk about the **future**
- to talk about the **past** when we are telling a story in **spoken** English or when we are summarising a book, film, play etc.
There are **four** present tense forms in English:

Tense	Use	Form
Present simple	For things that are always true, things that happen repeatedly. In commentaries, instructions, stories and jokes. To describe events that happen one after another. **today; every day/week/month; usually; sometimes; often; seldom; always etc.**	I work
Present continuous	To talk about things that are happening just around the time when we speak. To talk about changes that are happening. To talk about the future. **now; at the moment; at this time etc.**	I am working
Present perfect	To talk about past actions with some importance now, have results now or they are news. **ever; never; already; yet; recently; just; since etc.**	I have worked

Present perfect continuous	To say how long things have been going on up to now. **for a long time; for two hours; since yesterday; sine 5 o'clock etc.**	I have been working

Exercises
1. *Find the examples of present tenses in the text. Explain your choice.*

2. *Choose the correct item.*
1. Machine learning …. Incredibly powerful to make predictions or calculated suggestions based on large amounts of data.
a. has been
b. is
c. are
2. Since the 1960s, cloud computing .... along a number of lines, with Web 2.0 being the most recent evolution.
a. has developed
b. is being developing
c. develops
3. Many IT professionals …. the benefits cloud computing offers in terms of increased storage, flexibility and cost reduction.
a. recognise
b. are recognizing
c. have recognized
4. Machine Learning …. algorithms, which when exposed to high volumes of data, can self-teach and evolve.
a. builds
b. is building
c. have been building
5. Automatic or Self Guided Vehicles …. computer-controlled "driverless" mobile vehicles.
a. were
b. have been
c. are
6. Cloud computing ….. users and enterprises with various computing capabilities to store and process data

a. is allowing

b. have allowed

c. allows

7. While many machine learning algorithms …. for a long time, the ability to automatically apply complex mathematical calculations to big data is a recent development.

a. is around

b. have been around

c. arounds

8. Most commonly a data set …. to the contents of a single database table.

a. is corresponding

b. have been corresponding

c. corresponds

9. The term Big Data …. in use since the 1990s

a. is

b. is using

c. has been

10. In the twenty-first century, AI (artificial intelligence) …. an essential part of the technology industry, helping to solve many challenging problems in computer science.

a. is become

b. have become

c. becomes

3. *Complete the sentences for situations in the present. Decide which tense you need to use*

1.Ms Smith (work) ……….. as a sales representative for three years.

2. In her job, she (drive) …………….around a lot to meet her customers all over the country.

3. Today she (travel) ………………500 km to meet a customer.

4. She (be/surely) ………………tired now.

5. At the moment, Ms Smith (stand) ……………..in her hotel room.

6. She (arrive/just) ………………….

7. But she (can/not) ………………..take a little nap now because she (must) ……..call her customer.

8. They (wait/probably) …………… for her phone call.

4. *Choose Present Simple or Present Continuous.*

1. He (play) computer games every day. What game he (play) now?

He always (play) computer games!

2. What computer languages you normally (use)? What computer languages you (use) in your current project?

3. We are a small company specializing in personal service: we (install) software, we (install) hardware. We (install) a new forms program on the server and it will be online soon! Please keep watching!

4. We usually (not leave out) even a minor detail but we intentionally (leave out) of this chapter features of C that are important for writing bigger programs.

5. This company (work) to develop evolvable software. They currently (work) on the LSI design of a single chip which will integrate a genetic algorithm, a specialized memory system and a dynamic Boolean function.

6. I usually (send) a couple of e-mails every day. Be careful! You (send) your e-mail to the wrong address!

7. Every evening he (try) to hack into Pentagon computers. Look! He (try) to download their UFO files!

8. You often (chat) to people on the Internet? What's the nickname of the person you (chat) right now?

9. You (remember) what device (look after) cache coherency?

10. He even (not understand) what application his computer (run).

11. Look! She (send) him an e-mail! She (write) she (love) him!

12. I (not recognize) the man who (sit) in front of my computer.

4. *Choose the correct form.*
1. What *are you doing/ do you* do with my computer.
2. Not so many passenger planes *fly/ are flying* faster than sound.
3. A lot of people *have started/start to use* Linux system because they think it is

    better than Microsoft's Windows programs.
4. Look! The professor *is coming/comes*.
5. Can you explain why water always *runs/ is running* downhill.
6. You look tired. *Have you been /Hare you* working hard?
7. *I've lost/I lose* my smartphone. *Have you seen/are you seeing* it anywhere?
8. It's nice to see you again. What *have you been doing/are you doing* since we last met.

9. Nobody *gets/is getting* up early for fun.
10. "what are *you looking/do you* look at?" "Our new schedule"
11. I'm *playing/play* computer games every weekend.

5. *Are the underlined verbs right or wrong? Correct the verbs that are wrong.*
   1.The program Caissa developed by Moscow scientists has won the world chess championship for computer programs.
   2.In the field of artificial intelligence knowledge-based systems and behavior- based systems modelled and simulated exhibitions of intelligence of different types.
   3.The 1870 census was the point in history where the processing of data as well as the calculation of mathematical equations has become the object of automation.
   4.Since 1986 the number of known viruses grew to several thousand different viruses, most of which are MS-DOS.
   5.Scanners have been the most popular and widespread form of virus defense.
   6.In 1944 the first general purpose automatic digital computer was built.
   7.Finally a new series of languages known as fourth – generation languages appeared.
   8.The PC has just initiated the connection with e-mail server.

6. *Correct mistakes in the sentences.*
   1. In the 90s and early 21st century AI achieved its greatest success.
   2. Artificial intelligence uses in a wide range of fields including medical diagnosis, stock trading, robot control, law, scientific discovery and toys.
   3. From SIRI to self-driving cars, artificial intelligence (AI) is progressing rapidly.
   4.There is more and more jobs which humans are leaving to robots such as exploring another planet, defusing bombs, exploring inside a volcano or just doing boring household chores like cleaning.
   5. Many factory jobs are performed by industrial robots nowadays. It is leading to cheaper production of various goods, including automobiles and electronics.
   6. In the long term, an important question is what will happen if an AI system becomes better than humans at all cognitive tasks.

7.There is a lot of books and films about people losing control over clever machines which begin to kill their creators.

8. Most researchers agree that a superintelligent AI is unlikely to exhibit human emotions like love or hate, and that there is no reason to expect AI to become intentionally benevolent or malevolent *(доброжелательный/злобный)*

9. But of course it is some reasons to worry about robots.

10. The use of robots in industry have been leading to unemployment as many jobs are performed by machines.

11. The robot misconception is related to the myth that machines can't control humans. Intelligence is enabling control: humans control tigers not because we are stronger, but because we are smarter.

12. This means that if we cede our position as smartest on our planet, it's possible that we might also cede control.

5. Write 150 words showing your attitude to Machine learning and AI. Use the active vocabulary and grammar of the lesson.

Unit 2
Databases

What methods of storing data are you familiar with? Have you ever worked with a database?

Reading comprehension

1.Read the text on storing data and match paragraph headings with paragraphs:
a.**The Disadvantages of Polyglot Persistence**
b.**What is Polyglot Persistence**
c.**The Benefits of Polyglot Persistence**
d.**Factors to Consider When Employing Polyglot Persistence**

2.Which paragraph tells us about:
a.how long it takes to do repairs in Polyglot Persistence
b.why the process is called "Persistence"
c.the ability of this system to make processes simpler?
d.the connection between the amount of data stores and the complexity of the persistence layer?
e.the "storage philosophy" used in Polyglot Persistence?
f.why where to store data is such an important decision?

3.Put the sentences, summarizing the main idea of each paragraph, in the correct order:
a.Polyglot Persistence simplifies operations, it is fast and efficient.
b.Polyglot Persistence works with different types of databases, and "persistence" means that memories are saved in a safe location.
c.Choosing where to store data is important, and working with two different data stores is complicated.
d.The system is expensive and requires trained specialists.

4.Answer the questions on the text in your own words:
a.Why is it impossible to simply download Polyglot Persistence?
b.What does the term "Polyglot Programming" describe?
c.Why is the system "persistent"?
c.Why is it possible to avoid fragmentation with Polyglot Persistence?
d.How does this system work with "relevance"?
e.Why are repairs so time-consuming?
f.What is the important condition for the system to operate?
g.What might a mistake with choosing where to store data result in?

h.Why is it important to separate the "persistence layer"?

5.Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.

Utilizing multiple data stores and data models: Is Polyglot Persistence worth It?

   1.   _____

Polyglot Persistence is a process for storing data in the best database available, no matter the data model and data storage technology. This process is based on the understanding different data stores will handle certain types of data better than others. Polyglot Persistence is, unfortunately, not available for easy "downloading", but must be designed for the unique Data Architecture of each individual enterprise. This "storage philosophy" is a recent development, and still needs to evolve, technologically.

The words "poly" and "glot" are Greek in origin, but were assembled for use in English during the 17th century. The word polyglot means to speak and write in multiple languages. The term "Polyglot Programming" appeared in 2006, to describe the understanding certain computer languages are excellent at solving specific problems, while others are not, and for this reason, programs should include multiple languages. The persistence part of Polyglot Persistence refers to memories that are "saved" in a safe way or location, allowing them to be "persistent." Polyglot Persistence uses a program that communicates with multiple types of databases, and uses the most "appropriate database" to store and process data.

   2.   _____

Polyglot Persistence provides support for multiple database models and is able to utilize the best data model for the job. The Polyglot Persistence philosophy comes with its own "technical" strengths and weaknesses. Polyglot Persistence provides some key benefits:

· Simplifies Operations: Different databases, coordinating and working with one another, make for complicated operations and cause fragmentation. Polyglot Persistence simplifies operations and helps to select the best component for the situation, helping to eliminate fragmentation.

· Faster Response Time: All the features of databases in the program are leveraged, improving response times.

· Efficiency: The ElasticSearch app can return results using "relevance" as a priority in the listings, while MongoDB cannot. A Polyglot Persistence application would "automatically" assign relevance-oriented processing.

3. _____

Utilizing a Polyglot Persistence model can be both difficult and expensive. Specialists often need to be brought in to integrate the different databases. These expenses should be given serious consideration in evaluating long term goals. Other problems to consider are:

· Permanent IT staff will need training on the "new" systems.

· Maintenance and repairs can be time consuming, because running tests is difficult. If data is sharded into many databases, the testing of data layers can become complicated. Debugging is, of course, also quite time consuming.

· Making sure a system with multiple components is fault-tolerant is difficult, to say the least. Integrating multiple databases requires a significant amount of operational and engineering expenses. A business will need to have experts for each database technology. For the program to remain operational, all of the databases must be up and running. This situation makes the fault tolerance the weakest link.

4. _____

When using two, or more, different kinds of databases, where to store the data becomes a decision. A bad decision could result in having to rework the system, including the time needed to migrate data from one database to another. The person, or team, writing the program should be able to provide useful advice.

Applications also have to deal with the increasing complexity of your Data Architecture, having to communicate with two potentially very different data stores. When done correctly, it should be possible to separate the "persistence layer" (a group of communication files) of the application, and free up the rest of the application to do its work. The more data stores available, the greater the potential for increasing the complexity of the data persistence layer.

Vocabulary tasks

1.Study the vocabulary list for this unit and try to single out the words, related to IT. You might need to use a dictionary to check the meaning of some words:

(to) store data, a database, (to) handle, (to) be available, (to) download, (to) design, origin, (to) assemble, persistence, (to) process data, a benefit, (to) save data in memory, appropriate, (to) refer to, a feature, (to) evaluate, (to) be up and running, time-consuming, staff, tolerance

2.Make up all possible collocations using the vocabulary list, for example: (to) store data in a database, ...
3.Match the words to their definitions:

1. (to) store data	a. suitable
2. a database	b. (to) deal with
3. (to) handle	c. (to) create or develop
4. (to) be available	d. a characteristic
5. (to) download	e. where something comes from
6. (to) design	f. (to) be related to
7. origin	g. taking a lot of time
8. (to) assemble	h. the ability to cope with something
9. persistence	i. people working in an organization
10. (to) process data	j. (to) function properly
11. a benefit	k. a useful characteristic
12. (to) save data in memory	l. (to) get information to your computer from the Internet
13. appropriate	m. (to) assess positive and negative aspects
14. (to) refer to	n.(to) keep information
15. a feature	o. a collection of information
16. (to) evaluate	p. (to) be accessible
17. (to) be up and running	q. (to) put together
18. time-consuming	r. an ability to keep something

| 19. staff | s. (to) keep information in a special place |
| 20. tolerance | t. (to) manipulate information |

4.Paraphrase the sentences using the active vocabulary:
a.He was able to create an absolutely new product.
b.Manipulating information requires special skills.
c.This mobile has some characteristics.
d.We need to put together this device as soon as possible.
e.Can you assess all the positive and negative aspects of this proposal?
f.All the important information should be easily assessable.
g.This system has a strong ability to cope with different bugs.
h.Working on this project took us a lot of time.
i.Where does this idea come from?
j.You need to provide all the suitable papers for this procedure.
k.All the people working here are highly-qualified specialists.

5. *Finish the sentences using your own ideas:*
a.If we train new staff to work with this app…
b.Though the process was time-consuming, …
c.If you download something from an unreliable source, …
d.To make sure the project is up and running, we need…
e.The fact that he has zero tolerance for failures means …
f. The ability to ask appropriate questions makes …
g.He was asked to evaluate the functionality of the device, so he …
g.After he was told for the second time that the boss was not available, he decided …
i.Information or memory persistence means that …
j.The term "database" usually refers to …
k.I usually store all the important data …

Speaking
Imagine you are at a press-conference with the designers of Polyglot Persistence. Prepare 8 questions you would like to ask them to understand better how the system functions.

Grammar

18

Talking about the future

There are several ways of talking about the future in English.

Present Simple	We use the present simple to talk about timetables, arrangements etc.	Our class starts at 9.30
		It's Wednesday tomorrow
		What time does the film start tonight?
With going to structure.	To talk about plans and intentions	I'm going to drive to work today
	When we can see that something is likely to happen	Be careful! You are going to fall
With the present continuous	For plans or arrangement	I'm leaving tomorrow. I've got my plane tickets
With will	When we make predictions	It will be a nice day tomorrow
	To mean want to or be willing to	I hope you will come to my party
	To make offers and promises	I'll see you tomorrow

	To talk about offers and promises	Tim will be at the meeting
Clauses with if	In clauses with if we often use a present tense form to talk about the future	We won't be able to go out if it rains
In clauses with time words like when, after, and until	we often use a present tense form to talk about the future:	I'll come home when I finish work. You must wait here until your father comes

Other ways to talk about the future:

Future continuous	We use it to say that something will be going on at a certain time in the future To ask politely	I'll be writing letters at 5 o'clock on Monday. Will you be staying in this evening?
Be+ infinitive	We often use this structure to talk about official plans or fixed personal arrangements.	The president is to visit USA in September.

Future in the past	When we are talking about the past and want to say that something was still in the future at that time.	She was a little nervous, because she was flying to China the next day.
Future perfect	To say that something will have been completed by a certain time in the future	David will have known the results by Saturday.
Future perfect progressive	To say how long something will have continued by a certain time	By the following summer , we'll have been building a new house for a year.

Exercises

1. Are these rules correct or not?
1. We often use present forms for the future….
2. We often use past forms for the future….
3. We often use be going to for the future….
4. We often use the present continuous for the future….
5. We often use the simple present for promises….
6. We often use the simple present when we decide things….
7. We often use the simple present when we talk about timetables….
8. We use present forms mostly when we can see the future in the present….
9. We never use will for predictions….

2. Find the examples of future tenses in the text. Explain your choice.

3. Choose the correct item.
  1. What kinds of storage devices …. in the future?
a. We will be using
b. Will use

c. Use
2. The database technologies of the future …. very different than what we have today.
a. Will be
b. Are going to be
c. are
3. We …. all the available database tables for it and after it …. "Finish" button.
a. Are to choose/press
b. Will choose/press
c. Will choose/will press
4. Speed …. a major component of user interfaces.
a. Will have become
b. Will become
c. Becomes
5. Before the end of the year we …. the new application.
a. Will have finished
b. Are finishing
c. Will finish
6. Virtual reality … become part of modern life.
a. Will become
b. Is becoming
c. Becomes
7. The Prime Minister …. an emergency plan on climate change.
a. Is to announce
b. Will announce
c. Is going to announce
8. I saw my computer science teacher yesterday. He told me he …. To the conference, but I don't know if he went.
a. Would go
b. Would have gone
c. Had gone
9. "Is your report ready?", "No, but …. By this evening".
a. Have finished
b. Would finish
c. Will have finished
10. Nik is interested in computers. …. computers at the University?

a. Will he study
b. Is he going to
c. Is he to study

4.Put the verb into the correct form.
1. She was very rude to me. I refuse to speak again until_____(she/apologise).
2. I'm sorry you've decided to leave the company_____(I/miss) you when_____(you/go).
3. Are you still programming? What time_____(you/finish)?
4. I'm not ready yet. _____(I/tell) you when_____ (I/be) ready. I promise_____(I/not/be) very long.
5. What do you plan to do when _____ (you/finish) your course at college.
6. I wonder where _____(we/live) ten years from now.
7. When I finish this job I _____(be/work) on it for two years.
8. What time_____(I/phone) you tonight? About 7.30?
9. We must do something soon, before _____ (it/be) too late.
10. Why are you putting on your coat? _____ (you/go) somewhere?

5.Write what you will (or might) be doing at this time:
in two hours' time
eight hours from now
this time tomorrow
this time next Saturday
two days from now
in two weeks
in six months
this time next year
two years from now
five years from now

6. Read the text and fill in the gaps choosing appropriate future forms
Hannah Jones gazes into the future of futurology.
People have always wanted to look into the future. I am no exception. I still read my horoscope every day: "When you get home on Friday, you

1)_____(have) a pleasant surprise". I live alone and my puppy isn't
house-trained yet, so I hardly ever have a pleasant surprise at home.
This weekend, however we 2)_____(get) a surprise because hundreds of
futurologists 3)_____(meet) at Newcastle University. The conference
4)_____(start) on Thursday and the experts 5)_____(discuss) the
impact of technology on the future. I logged on to the conference site and
found these predictions:
The technology already exists, so very soon all of us 6)_____(use) our
voices to give instructions to computers.
In the next few years we 7)_____(communicate) with our friends using
life-sized video images on large screens in our living-rooms.
By the year 2020, computers 8)_____(become) more efficient and
powerful than the human brain.
By the year 2030, genetic engineering 9)_____(enable) us to live for at
least 150 years.
By the middle of the century, computers, millions of times smarter than
us, 10)_____(develop). By the time we 11)_____(link) our brains
with "ultra-smart" computers.
By the end of the century, we 12)_____(colonize) our solar system and
13)_____(look) for ways to colonize deep space!
Much more interesting than horoscopes, I am sure you 14)_____(agree)!
I've decided I 15)_____(give) up astrology and take up futurology. I'll
be there in Newcastle this weekend. At nine o'clock on Sunday morning I
16)_____(listen) to the great Duke Wilard talking talking about the
future. If
you can't beat the future, join it!

1. A. will be having   B. will have   C. have

2. A. get   B. are getting   C. will get

3. A .will have met   B. meet   C. are meeting

4. A. starts   B. will have started   C. is going to start

5. A. will be discussing   B. discuss   C. are discussing

6. A will use   B. are going to use   C. use

7. A. will have comunicated   B. are communicating   C. will be communicating

8. A. will already have become   B. are already becoming   C. will already be becoming

9. A. will be enabling   B. is enabling   C. will enable

10. A. is going to be developed   B. develop   C. will have been developed

11. A. will be linking   B. are linking   C. link

12. A. will have colonized   B. are colonizing   C. are going to colonize

13. A. will have looked   B. will be looking   C. are looking

14. A. will have agreed   B. will be agreeing   C. will agree

15. A. will have given   B. 'm going to give   C. give

16. A. 'll be listening   B. am listening   C. will listen

7.Read this paragraph. Underline all the future continuous forms.
Today we find most robots working in factories around the world. But

what will the robots of the future be doing? One designer predicts that in just a few years, small intelligent robots will be dealing with all the household chores. This is going to make life a lot easier. While one robot is cooking dinner, another one will be vacuuming the floor. But what about outside the home? Will robots be playing football or fighting wars? Scientists aren't sure. What is certain, however, is that robots will be playing a more and more significant role in our lives.

7. *Complete each sentence using the verb in brackets and the Future Simple, be going to, Future Continuous or Future Perfect.*
1. Tennis practice starts at 10, and we plan to play for two hours. (finish) By 12 o'clock,
....
2. The phone is ringing! (answer) I
.... the phone.
3. Do you want to come to the disco with us? (come) .... you
.... ?
4. Look at those clouds. (rain) Do you think
.... ?
5. Their plane lands at 7.30. Let's get there earlier. (wait) At 7 o'clock, we
....

8. Choose the correct answer.
Jeff's family usually comes to stay with us for Christmas, but 1. (by this Christmas / this Christmas) we are going to visit them instead. They live on the coast of Queensland in South Australia. I can hardly wait – I 2. (will have / will be having) a fantastic time there. School holidays 3. (are going to start / will start) on Friday, and we are going to leave the following morning. At this time next week, I 4. (will be swimming / will have swum) in the sea, and snorkeling with Jeff. He's an expert snorkeler, and he 5. (is going to practice / will have practiced) with me every day. 6. (By / On) the last day of our visit, Jeff's dad is going to take us to visit the Great Barrier Reef. I hope by then I 7. (will have improved / will be improving) enough

to snorkel at the reef and see the magnificent colored corals and brightly colored fish close up. The reef is 2,200 kilometers long and people say it's an underwater wonderland. Next year I 8. (am going to learn / will learn) scuba diving, because only serious divers can dive in the deeper waters on the outer edges of the reef.

9. *Describe how you see the future of Data storage in 120-150 words using the active vocabulary and grammar of the unit.*

 Data Modelling

Have you ever heard the term "data modeling"? Can you guess the meaning from the meaning of the components of this word combination?
Reading comprehension

1.Read the text on Data Modelling and match paragraph headings with paragraphs:
a.**The current situation with NoSQL databases**
b.**Stages in Database development**
c.**What is Data Modelling**
d.**Using various data models and paradigms**
e.**The Growth of No-Relational Models**

2.Which paragraph tells us about:
a.object-oriented Database Management Systems?
b.the need for qualified data modelers?
c.the influence of a programming language on a data base and a data model used?
d.different data models providing different paradigms?
e.suitability of NoSQL for using with Big Data?
f.some organizations avoiding using data models with their NoSQL systems

3.Put the sentences, summarizing the main idea of each paragraph, in the correct order:
a.We can single out 4 basic stages in the development of databases, starting from Data Management Systems up till the use of Big Data and no-relational data.
b.A data model depends on a company's goals and depends on a programming language and a database used.

c.Though NoSQL data stores have become popular, many organizations do not have enough specialists to work with them.

d.Data can be structured differently and with NoSQL models data is stored in different places.

e.NoSQL is convenient for working with unstructured data, but you need to understand the nature of the data you are working with.

4.Answer the questions on the text in your own words:

a.Why is it important to understand the goals of an organization to create an efficient data model?

b.What are the two key elements influencing the creation of a data model?

c.When was SQL introduced in programming?

d.Is Online Analytical Processing still used today?

e.What are the two main advantages of NoSQL?

f.Why is it important to understand the meaning of the data?

g.What is meant by paradigms and *polyglot persistence*?

h.Why have some companies not included data models into their NoSQL systems?

5.Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.

Traditional and contemporary methods of Data Modelling

1.   _____

Data Modelling is "the act" of creating a data model (physical, logical, conceptual etc.), and includes defining and determining the data needs of an organization, and its goals. The act of Data Modelling defines not just data elements, but also the structures they form and the relationships between them. Developing a data model requires that the architects (Data Modellers) work closely with the rest of the enterprise to establish goals, and the end users of the information systems, to establish process.

A data model contains "data elements" (for example, a customer's name, or an address, or the picture of an airplane) which are standardized and organized into patterns, allowing them to relate to each other. The programming language used has an influence on the shape of the model, as does the database being used. The model defines how data is connected, and how data is processed and stored inside the computer system. For example,

a data element representing a house can be associated with other elements, which in turn, represent the color of the house, its size, address, and the owner's name. How the information is organized varies from one model to the next. Data Modeling, databases, and programming languages are interdependent, and have evolved together.

2.   _____

Databases have evolved in basically four phases, and these phases tend to overlap:

· Phase I took place from roughly the 1960s to 1999, and included the development of Database Management Systems (DBMS) known as hierarchical, inverted list, network, and during the 1990s, object-oriented Database Management Systems.

· Phase II is described as relational, and introduced SQL and SQL products (plus a few nonSQL products) starting about 1990.

· Phase III supported Online Analytical Processing (OLAP), which was developed around 1990 (along with specialized DBMSs) and continues to be used today.

· Phase IV introduced NoSQL in 2008, supporting the use of Big Data, no-relational data, graphs, and more.

3.   _____

One of NoSQL's advantages is its ability to store data using a schema-less, or no-relational, format. Another is its huge data storage capabilities, referring to its horizontal scalability. This makes it particularly well-suited for handling unstructured data, and in turn, well-suited for processing Big Data. Rick van der Lans, an independent analyst and consultant stated:

"The Data Modeling process is always there. You can look at that role in a simple way, by thinking of it as a process that leads to a diagram. In the process of creating the diagram, you are trying to understand what the data means and how the data elements relate together. Thus, understanding is a key aspect of Data Modeling."

4.   _____

Because the data is structureless, a variety of data models can be used, after the fact, to translate and map out the data, giving it structure. It is generally understood different data models, and the different languages associated with them, provide different paradigms, or different ways of looking at problems and solutions. With NoSQL, it is common to store data in a variety of locations (horizontal scalability), providing a variety of

potential data model translations. This storage technique is called *polyglot persistence*.

     5.   _____

Because of their flexibility, and large data storage capacity, NoSQL-style data stores have become popular. However, NoSQL databases still have a long way to go, in terms of evolution. According to the research report " Insights in Modeling NoSQL", it was discovered many organizations haven't included a data model into their NoSQL systems, since Data Modeling with such data stores exists primarily within the actual code. Not too surprisingly, they also found these same organizations wanted to build and use a data model, and to increase the staff having Data Modeling skills. The discrepancy is based on a lack of modelers experienced with NoSQL databases, combined with nearly no tools for NoSQL Data Modeling. The need for experienced NoSQL Data Modelers, and the appropriate tools, is still an ever-present need.

Vocabulary tasks

1.Study the vocabulary list for this unit and try to single out the words, related to IT. You might need to use a dictionary to check the meaning of some words:
(to) define, (to) work closely with, (to) contain, a pattern, (to) establish goals, (to) vary, roughly, hierarchical, (to) overlap, inverted, (to) support, no-relational, scalable, (to) be well-suited for, particularly, (to) relate, a variety, (to) provide, flexibility, a lack of

2.Make up all possible collocations using the vocabulary list, for example: a hierarchical pattern …

3.Match the words to their definitions:

1.(to) define	a.(to) include
2.(to) work closely with	b.(to) work together be compatible with
3.(to) contain	c.having a different order
4.a pattern	d.(to) have a common area

5.(to) establish goals	e.organized in layers
6.(to) vary	f.having no structure
7.roughly	g.(to) decide on results
8.hierarchical	h.(to) use all the time
9.(to) overlap	i.a model
10.inverted	j.absence of
11.(to) support	k.able to be changed in size
12.no-relational	l.a different number of
13.scalable	m.especially
14.(to) be well-suited for	n.(to) be connected with
15.particularly	o.(to) give
16.(to) relate	p.an ability to adapt
17.a variety	q.(to) be an ideal candidate for
18.(to) provide	r.approximately
19.flexibility	s.(to) differ
20.a lack of	t.(to) describe or explain

4.Paraphrase the sentences using the active vocabulary:
a.We need to determine the results of this project.
b.We have a different number of options to choose from.
c.He is an ideal candidate for this job.
d.You will need an ability to adapt to ever-changing situation.
e.This player does not work together with this format.
f.This idea seems especially interesting.
g.The structure of this organization is arranged is layers.
h.These two systems are not connected to each other.
i.This lab work includes a lot of calculation.
j.It will take approximately 20 minutes of your time.
k.This job gives a lot of opportunities.
l.Our jobs have an area in common.

5.Finish the sentences using your own ideas:
a.Due to a lack of resources we couldn't …
b.Sometimes it's difficult to find a pattern in …
c.When I need support …

d.I would like to work closely …
e.It is particularly interesting to …
f.If the format is no-relational …
g.Hierarchical structure allows to …
h.He is well-suited for a programmer's job because …
i.Is the word order is inverted you must …
j.A huge variety of programming languages allows …
k.Life provides a lot of opportunities for those …
l.Flexibility in ethical questions means that …

Speaking
Choose one aspect of Data Modelling and prepare an 8-minute presentation for the group. Use online resources to help you.

Grammar
Past tenses
There are four past tenses in English. We use them to talk about things that started and ended in the past or things that started in the past and continue to the present.

Tense	Use	Form
Past simple	We use it for complete finished actions. We often use it in stories	I sent ten emails yesterday.
	yesterday; last week; last year; in 1984; in 2007; an hour ago; a year ago; a long time ago	It happened many years ago
		Did he call you last night? – Yes, he did.

Past continuous	We use it to talk about actions which were unfinished at a past time. **when; while; at five o'clock yesterday; at that moment; at that time; last year**	What were you doing at 10.00 last night?
Past perfect	The past perfect is used in the same way as the present perfect, but it refers to a time in the past, not the present. The past perfect used to talk about actions that were completed before some point in the past. The past perfect tense is for talking about something that happened before something else. **By the time;before;after;by two o'clock yesterday;by that time, already**	By the time he returned, I had finished my work on the report. Until yesterday, I had never seen that man in our office. He had washed his car before he cleaned the garage
Past perfect continuous	We use it when the action (past perfect continuous) lasted for some time before another action in the past happened (simple past). When the action	By the time he returned, I had been working for seven hours.

	lasted for some time before a specific point of time in the past.	I had been waiting for three months before they finally sent me an answer.
	by the time; before; after; when (in the meaning "by the time"); **+ for two hours; for a long time**	By seven o'clock last night she had already been typing for ten hours, so I told her to rest for a while.

Exercises

1. *Find the examples of past tenses in the text. Explain your choice.*

2. *Write the simple past*
    to define…………… to contain……….., to establish goals………….,
to vary………., to overlap……………., to support…………., to be well-
suited for……………., to relate…………., to provide……………

3. *Choose the correct item*
1. Young and Kent …….. to create a notation that should enable the analyst to organize the problem around any piece of hardware.
a. Wanted
b. Had been wanting
c. were
2. The first generation database system, ……….. Integrated Data Store.
a. Were called
b. Are called
c. Called
3. The detailed properties …………… with our adviser by the meeting.
a. Had been
b. Were

c. Were summarizing
4. Bill Kent, in his 1978 book Data and Reality,…………. a data model to a map of a territory.
a. Compared
b. Were comparing
c. Had compared
5. Helen was happy. She ………… the site using a program called Netscape Composer.
a. Created
b. Were creating
c. Had been creating
6. When I came to work in the laboratory they ……… on his model engine for six weeks.
a. Had been working
b. Had worked
c. Were working
7. In the 1960s data modeling ….. more significance with the initiation of the managemen information system (MIS) concept.
a. Gained
b. Had gained
c. Was gaining
8. When the first digital computer was developed, the first analog computer already …….. in use for some time
a. Had been
b. Was
c. –
9. The database evolution ………………. in four waves.
a. Was happening
b. Happened
c. Had been happening
10. By the end of the month she …………. some messages from the server.
a. Had deleted
b. Deleted
c. –
4. Find and correct mistakes in the sentences
1. My sister Molly lived in London before she had Moved to New Zealand.
2. After Nick ate the sandwiches, he drank some juice.

3. Nick had eaten all the sandwiches, had drunk all the juice and had gone to work.
4. As Neil had missed the bus, he walked home.
5. Sandy just started to watch TV when the phone rang.

5. *Find and correct mistakes in the sentences*

1. They were late but the lecture didn't start yet.
2. I had remembered that I left the iron switched on.
3. The floor was slippery because Tom spilt some juice on it.
4. Mary had given me the book I hadn't read before.
5. He returned home because he didn't lock the door.
6. Before the pupils had started the exam, they had switched their mobiles off.
7. Fred gave me the car back after he used it.
8. The concert had finished and we had gone to a nice restaurant.
9. I didn't recognize Henry because he lost much weight and grew a moustache
10. I visited so many beautiful places in China before I had come to the Great Wall

6. *Choose the correct words in italics.*
    0 After I brushed my teeth I went / ~~was going~~ to bed.
    1 I went / was going to the dentist five times last year.
    2 My computer broke down / was breaking down yesterday.
    3 Hilary fell on the ice last winter and broke / was breaking her arm.
    4 We were relaxing in the garden when / while we suddenly heard a loud noise.
    5 Karl didn't hear the doorbell because he listened / was listening to his iPod.
    6 After I left university, I worked in a bank and then I moved / was moving to an insurance company.
    7 My cousin couldn't visit us in August because she did / was doing a summer course.
    8 I was having a shower when / while the phone rang
7. *Put the verbs in brackets in Past Simple or Past Perfect*
    I went to a school reunion last week. I …….(to be) very surprised - so many things…......(to change). They …..(to knock down) the old

gymnasium, and the library…...(disappear). I …...(to walk) slowly round the school. Everything …...(seem) much smaller, although they …...(to build) some impressive new buildings. I…...(meet) lots of my old school friends, too, and they…...(not stay) the same either. Some of them …...(to move) to London, and most of them …...(to get) married. I …...(to talk) to the headmaster for a while - he …...(not to leave). He …...(to say) that he …...(to remember) every boy who …...(to attend) the school since he …...(to start) working there in 1982. But when I …...(to ask) him what my name was, he …...(to forget) that …...(to make) me realize that I …...(to change) too.

8. *Choose the correct form of the verb*
a. Reports are coming in that a train…………. near Birmingham. According to eyewitnesses it………..a concrete block which somebody………… on the line.(crash/hit/put)
b. Halfway to the office Paul……………….. round and…………back home, because he………..to turn the gas off. (turn/go/forget)
c. I ……….a lot of computer games recently/ (play)
d. When I…………home everybody …………TV. (get/watch)
e. 'How many times…….this film?' " this is the first time I…………it'.(you see/see)
f. My sister ……………..married three times (be)
g. After he ………….breakfast he down to write some letters. (finish/sit)
h. When I …………..him he…………as a waiter for a year or so. (meet/work)
i. I………. this job in January, and since then I ……………most of my time travelling.(get/spend)
j. While she…………on the phone the children………fighting and……..the window. Talk/start/break)
9. *Fill in each blank by putting the verb in (brackets) into the correct past tense (Past Simple, Past Continuous, Past Perfet Simple, Past Simple Continuous and Present Perfect Tenses)*
    1. I …………………………………………(see) my first baseball game when I …………………………………………(live) in New York.
    2. How many pints of beer …………………………………………(he/drink) before he ……………………………………….(leave) the pub?

3. It …………………………………………….. (rain) so we
………………………………… (decide) to stay at home all afternoon.
4. By the time I ……………………………………………..(leave)
university I ……………………………… (be) to France fifteen times.
5. What …………………………………………………..(you/do) at the time
the murder was committed?
6. When we ………………………(get) home we saw that someone
……………………………..(break) in to steal the DVD recorder.
7. He ………………………………..(send) to prison four times before he
……………………………………..(decide) that it would be better to go
straight.
8. I didn't realise I ………………………(lose) my credit cards until I
………………………..(try) to pay for dinner at the restaurant.
9. I ………………………………………(write) an email to my sister when she
………………………………(ring) me.
10. She was so upset by the news that she
…………………………………(drop) her tea
and………………………………(start) crying.

10. *Complete the second sentence, using the word in brackets, so that s has*
similar meaning to the first sentence
1. I started working at 8 and I was still working at 6 in the evening, when
you called. (BEEN)
When you called ……………… ten hours.
2. We often went to the seaside with our grandparents as children. (USED)
Our grandparents ………………….. to the seaside as children.
3. It's about 7 years since Laura started to learn Russian. (LEARNING)
Laura ……………………. 7 years.
4. Being with the older children soon stopped being frightening when I
went to secondary school. (USED)
I …………………………………. the older children when I went to
secondary school
5. Every night for the past week I have had the same dream. (HAVING)   I
……………….. for a week now.
6. I always disliked karate lessons but now I'm starting to enjoy them.
(USED)I ……………………………. Karate lessons, but now I'm staring
to.

Writing
Compare Traditional and contemporary methods of Data Modelling in a letter. Write about 130-150 words. Use the active vocabulary and grammar of the Unit.

Unit 4
3-D printing

What do you know about 3-D printing? Would you like to buy a 3-D printer for home use?

Reading comprehension

1.Read the text on 3-D printing and match paragraph headings with paragraphs:
a.**The benefits of the new approach.(2)**
b.**The prospects of the new approach.(5)**
c.**The authors and financing.(1)**
d.**The description of the process.(4)**
e.**The demonstrations of fabricated objects.**

2.Which paragraph tells us about:
a.who financed the research?
b.the areas of future application for the results of the research
c.an experiment with increasing the size of an object
d.previous research of the team
e.using computer simulations in the experiments

3.Put the sentences, summarizing the main idea of each paragraph, in the correct order:
a.The new method is economical and there are already some practical results.
b.The research team is international and financed jointly by the US and Singapore.
c.The method involves heating composite materials to make them change their shape.

d.The new method, which is an improvement of previous experiments, includes both mechanical programming and computer simulation.

e.The new method gives objects new revolutionary features, and its future looks very promising.

4.Answer the questions on the text in your own words:
a.What kinds of materials were used in this method?
b.Where was the paper published?
c.What was the team's previous research like?
d.How economical is the new method?
e.What kinds of objects did they use for the demonstration?
f.How do the soft and the stiff components interact?
g.What kinds of structures would the new method allow to create?
h.What new paradigm does Martin L. Dunn mention?

5.Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.

New 3-D printing method creates shape-shifting objects

1. _____

The team, which included researchers from the Singapore University of Technology and Design (SUTD) and Xi'an Jiaotong University in China, created the objects by printing layers of shape memory polymers with each layer designed to respond differently when exposed to heat.

The research was reported April 12 in the journal *Science Advances*, a publication of the American Association for the Advancement of Science. The work is funded by the U.S. Air Force Office of Scientific Research, the U.S. National Science Foundation and the Singapore National Research Foundation through the SUTD DManD Centre.

2. _____

"This new approach significantly simplifies and increases the potential of 4-D printing by incorporating the mechanical programming post-processing step directly into the 3-D printing process," said Jerry Qi, a professor in the George W. Woodruff School of Mechanical Engineering at

Georgia Tech. "This allows high-resolution 3-D printed components to be designed by computer simulation, 3-D printed, and then directly and rapidly transformed into new permanent configurations by simply heating."

Their development of the new 3-D printed objects follows earlier work the team had done using smart shape memory polymers (SMPs), which have the ability to remember one shape and change to another programmed shape when uniform heat is applied, to make objects that could fold themselves along hinges.

3. _____

"The approach can achieve printing time and material savings up to 90 percent, while completely eliminating time-consuming mechanical programming from the design and manufacturing workflow," Qi said.

To demonstrate the capabilities of the new process, the team fabricated several objects that could bend or expand quickly when immersed in hot water -- including a model of a flower whose petals bend like a real daisy responding to sunlight and a lattice-shaped object that could expand by nearly eight times its original size.

4. _____

"Our composite materials at room temperature have one material that is soft but can be programmed to contain internal stress, while the other material is stiff," said Zhen Ding, a postdoc researcher at Singapore University of Technology and Design. "We use computational simulations to design composite components where the stiff material has a shape and size that prevents the release of the programmed internal stress from the soft material after 3-D printing. Upon heating the stiff material softens and allows the soft material to release its stress and this results in a change -- often dramatic -- in the product shape."

5. _____

The new 4-D objects could enable a range of new product features, such as allowing products that could be stacked flat or rolled for shipping and then expanded once in use, the researchers said. Eventually, the technology could enable components that could respond to stimuli such as temperature, moisture or light in a way that is precisely timed to create space structures, deployable medical devices, robots, toys and range of other structures.

"The key advance of this work is a 4-D printing method that is dramatically simplified and allows the creation of high-resolution complex

3-D reprogrammable products," said Martin L. Dunn a professor at Singapore University of Technology and Design who is also the director of the SUTD Digital Manufacturing and Design Centre. "It promises to enable myriad applications across biomedical devices, 3-D electronics, and consumer products. It even opens the door to a new paradigm in product design, where components are designed from the onset to inhabit multiple configurations during service."

Vocabulary activities

1.Study the vocabulary list for this unit and try to single out the words, related to IT. You might need to use a dictionary to check the meaning of some words:
a polymer, (to) respond, (to) expose, (to) report, (to) fund, an approach, (to) incorporate, high-resolution, permanent, (to) apply, (to) fold, a hinge, (to) eliminate, workflow, (to) bend, (to) expand, soft, stiff, composite, a range

2.Make up all possible collocations using the vocabulary list, for example:
a range of polymers ...

3.Match the words to their definitions:

a polymer	a way or method of doing
(to) respond	a chemical compound
(to) expose	work as a process
(to) report	(to) force from a straight form into a curved or angular one
(to) fund	(to) make something disappear
an approach	(to) bring into a compact form by laying parts together
(to) incorporate	a jointed device on which something turns
high-resolution	(to) use or attach
permanent	consisting of different components
(to) apply	(to) make wider
(to) fold	limits between which variation is possible
a hinge	very sharp and clear (about a picture)

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(to) eliminate	(to) finance
workflow	(to) react to something
(to) bend	constant
(to) expand	(to) make something seen or open to something
soft	firm to touch
stiff	yielding to touch or pressure
composite	(to) include as a component
a range	(to) inform in a formal manner

4.Paraphrase the sentences using the active vocabulary:
a.You should organize the process of work more efficiently.
b.They showed it to us in high-definition.
c.You shouldn't yield so easily to pressure.
d.This big company includes a lot of smaller businesses.
e.I have finally found a constant job.
f.I can say that my interests have become wider.
g.He kept silent and avoided reacting to my questions.
h.This method of doing business is rather unusual.
i.This invention will make all our problems go away.
j.His assistant informed him about a problem with components delivery.
k.His speech made the problem seen to everyone.
l.This material is firm to touch, almost like a metal.

5.Finish the sentences using your own ideas:
a.High-resolution allows us to …
b.My approach to studies is …
c.If you want to eliminate all problems …
d.I need to find somebody to fund …
e.Using composite materials saves …
f.You can find a wide range of …
g.If you apply this approach …
h.You should respond politely to …
i.You should report to your boss …
j.Using polymers in production is effective because …
k.The cover is on hinges so …

l.You should avoid folding documents because …

Write a proposal to the Dean of your faculty on buying a modern 3-d printer. Give reasons for this decision. Your proposal should be 120 words minimum.

Grammar
Passive voice
When A does something to B, there are often two ways to talk about it: active and passive.
We use active verbs if we want A to be the subject
- My sister makes these toys
   We use passive verbs if we want B to be the subject
- These toys are made by my sister
   We make passive verbs with be (am, are, is etc.) + past participle. Passive verbs have the same tenses as active verbs.

Tense	Active	Passive
Present Simple	keeps	is kept
	is keeping	is being kept
Present Continuous		
Past simple	kept	was kept
Past Continuous	was keeping	was being kept
Present Perfect	has kept	has been kept

Past Perfect	had kept	had been kept
Future Indefinite	will keep	will be kept
Future Perfect	will have kept	will have been kept

Exercises

1. *Find the examples of passive voice in the text.*
2. *Put expressions from the box in the right place*

> 1.is exposed; 2.was exposed; 3.had been exposed;4. was being exposed; 5.has been exposed; 6.will be exposed; 7.is being exposed.

a. Present simple…………………………………
b. Present continuous……………………………….
c. Past simple………………………………………
d. Past continuous………………………………….
e. Future……………………………………………
f. Present perfect…………………………………
g. Past perfect ……………………………………

3. *Match the right sentences with the left ones*

Could you go somewhere, please?	they are not being given any more.
I had to walk home	This room is occupied.
The police arrested the robber	He is still being questioned
The book will not be published soon.	Our house is still being repaired.
	I'm being followed
Could we stay with you for a while?	I'm being picked up
Didn't he get a scholarship?	It's still being written
Excuse me, sir!	The car is still being repaired

Call the police quickly!   Are you being served

I don't need a lift, thank you

4.Turn from active into passive paying attention to tenses

1. Originally a standard printer company, Mimaki have moved on to the world of additive manufacturing.

2. The company recently unveiled it's first full-color 3D printer, the 3DUJ-553.

3. The company has stated that they used their proficiency in 2D inkjet printers as the base for this color technology.

4. The printer uses CMYK for coloring (along with white, clear and support materials).

5. The printer operates on UV ink, which it deposits from its 8 cylinders.

6. The company proposes two primary markets that they wish to aim this product towards.

7. The company have stated that it is especially suitable for the sign and graphics market and industrial goods production (modelling and final product).

5. The sentences below are all active. Put them into the passive, keeping the same meaning.

1.   Someone burgled my house while I was away.

My house ………….while I was away.

2.   He started to leave before they had given him the directions.

He started to leave before he …………..directions.

3.   I went to the showroom but was informed that they had sold all the houses.

I went to the showroom but was informed that all the houses……………..

4.   They were still building the hotel when we stayed there.

The hotel ……………………when we stayed there.

5.   They sent my son home from school for being cheeky to the teachers.

My son …………..home from school for being cheeky to the teachers.

6.   My doctor prescribed me some medicine for my cough.

I ……………………… some medicine for my cough.

7.   They haven't finished fixing my car yet. They're so slow!

My car …………………..yet. They're so slow!

8.   I visited my home town last year, only to find that they'd demolished the house I'd grown up in.

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I visited my home town last year, only to find that the house I'd grown up in………………….

6. <u>Complete the sentences with a passive construction, using the verbs given in the form suggested</u>.
1. Much of London (destroy) _____ by fire in the seventeenth century. (Past Simple)
2. The man who (bite)_____ by a snake was given a serum. (Past Perfect)
3. A leader should be a man who can (respect)_____. (Infinitive)
4. Many slums (demolish) _____ to make way for new buildings. (Present Continuous.)
5. The police (instruct) _____ to take firm action against hooligans. (Present Perfect)
6. He (save)_____ from bankruptcy by the kindness of a friend. (Past Simple)
7. A cease-fire (expect) _____ (declare) _____ later this week. (Present Simple, Infinitive)
8. A great deal of research (do)__ ____ into possible causes of cancer (Present Perfect)
9. The worker claimed that he (victimize)_____ by his employers. (Past Continuous)
10. The tenant (evict)_____ for not paying his rent. (Past Simple)
11. It (think) _____ that the Government would do something to help. (Past Perfect)
12. Three hundred new houses (build) _____ by the end of next year. (Future Perfect)
13. Because of a strike, work on the building had to (discontinue)___ _____. (Infinitive)
14. The witness strongly objected to (cross-examine)_____. (Gerund)
15. (Threaten)_____ by a blackmailer, he immediately informed the police.
(Perfect Participle)

16. I am not accustomed to (treat)_____ in that way. (Gerund)

17. The passengers ought (inform) _____ the train (withdraw)

_____ from service. (Perfect Infinitive. Past Perfect)

18. Customers (ask) _____ to ensure that they (give)

_____ the correct change before leaving the shop, as mistakes cannot

afterwards (rectify)_____. (Present Simple, Present Perfect, Infinitive)

19. Was he very upset at (not offer)_____ the job? (Gerund)

20. The man was sent to prison for six months, (find)

_____ guilty of fraud. (Perfect Participle)

7. Rewrite the following paragraph in the active voice.

Last summer our house was painted by me. The job took about two weeks. First, the exterior was washed using warm water and a mild detergent. Then all the chinks and pores in the walls were sealed with putty. After the putty had had a chance to dry, the exterior could be painted. A latex paint was used because it is easy to apply and cleans up with water. A whole week was needed to finish this part of the job. I was very careful to apply the paint evenly because I did not want to have to apply two coats. A color was used that was very close to the original color. Our house is a two-story house, which meant that a tall ladder was needed to do the second story. The paint can had to be balanced on the top rung of the ladder while I worked. When the job was finished, a great deal of satisfaction was felt by me. I had to pat myself on the back. Even my dad said that a good job was done.

8. Use a search engine (e.g. Google) to find 10 sentences beginning "I have never been". Write them out.

Question types

There are three basic question types in English:

- Yes/No: the answer is "yes or no"
- Question-word: the answer is "information"
- Choice: the answer is "in the question

Question Structure

1. General questions
   Also known as "Yes/No questions" because a short answer (yes or no) is expected. This kind of question is formed by putting an auxiliary verb before the subject (=inversion).
   General questions most often start with: Do? Did? Have? Has? Is? Are? Was? Were? Can? Could? etc.
   Do you live here? – Yes, I do. / Yes, I live here. – No, I don't. / No, I don't live here.

2. Special Questions
   Special questions are also called **Wh-questions** as most of them start with **"wh"**.
   For example: What? Which? When? Where? Why? Whose?
   How? How many? How much?
   Note: there are other question words that don't start with "wh" as well.
   How / how many / how often / how far / how much / how long / how old etc.
   Special questions require inversion, like general questions.
   ▪ 'Where are you from?'' I am from Russia'
   Attention: If the subject of a special question is the question word itself, then this kind of question is called *subject question*.
   Subject questions have the word order of an affirmative sentence.
   • Who's in charge here?
   • What makes you think so?

3. Tag questions
   They are mini-questions asked at the end of a statement to confirm it**.**
   A tag question (a disjunctive question) consists of two parts. The first part is a declarative sentence (a statement). The second part is a short general question (the tag). If the statement is affirmative, the tag is negative. If the statement is negative, the tag is affirmative.
   You love her, don't you?
   It's a nice day, isn't it?
   It was true, wasn't it?

4. Alternative questions
   Word order in alternative questions (questions with a choice) is the same as in general questions.
   Where does he live: in Paris or Rome? – He lives in Rome. / In Rome.
   Exercises
1. *Write questions the underlined words.*
   1.Bill and Tim use a PC every day.
   2.Carol helped Sue with the new program.
   3.Tom shouted at Mark.
   4.We met our teacher before the lecture.
   5.Jackie loves Michael. She often thinks about him.
   6.They went out with Nick.

2. *Write all types of questions to these sentences*
   1. 3D Printing Started in the '80s.
   2. 3D printing was primarily used for prototyping, but is now being used for production-ready pieces.
   3. 3D printers print a model in layers
   4. You can already print in titanium, ceramics, wood, etc!
   5. 3D printing can lower production costs.
   6. 3D printing is in the movies you watch.
   7. 3D printing is launching into space.
   8. 3D printing is being used for education.

3. *Study this description of a student's first term. Ask questions to the words in italics.*
   In her first term Pauline studies 6 subjects(1). She has classes on four days(2) each week. On Monday morning she has IT and Information Systems(3). Tuesday(4) is a free day for home study. On Wednesday she has Systems Analysis in Room 324(5). She studies Computer Architecture(6) on Thursdays. Programming(7) happens on Friday mornings. Communication takes place once a week(8) on Friday afternoons. She likes Mr Blunt's classes(9) most. She has a 15-minute coffee break each day and lunch break from 12.00 to 1.00(10).

Unit 5
Holographic Images

What do you know about holograms? Where are holographic images used?

Reading comprehension

1.Read the text Holographic Optical Elements and match paragraph headings with paragraphs:
a.**HOE in Automobiles**
b.**Creating holographic images with the help of LED**
c.**HOE Imaging and RGB LED Light**
d.**HOE for Heads up Displays and Wearables**

2.Which paragraph tells us about:
a.using holographic technology in the car interior lighting?
b.combining LED with holography?
c.the most practical applications of holographic optical elements?
d.creating a transparent image on a car's windshield?
e.using holography on Google glass?

3.Put the sentences, summarizing the main idea of each paragraph, in the correct order:
a.Holographic images have unique features which allow us to use them in various areas.
b.Putting together LED and holographic optical elements offers new opportunities.
c.Holographic optical elements are successfully used in helmets and smart glasses.
d.There is more than one way of using HOE in automobile lighting.

4.Answer the questions on the text in your own words:
a.What kind of images are Holographic Optical Elements?

b.When was this technology developed?

c.What are the two unusual features of HOE mentioned in the second paragraph?

d.What are the most realistic applications of HOE technology?

e.What three holographic characteristics took 10 years to improve?

f.What are red, green and blue colors responsible for in a windshield image?

g.How can HOE change the car interior dome light?

h.What is the role of HOE in car branding?

i.What are the HOE possibilities for using in helmets?

j.How is HOE technology used in smart glasses?

5.Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.

Holographic Optical Elements with LED-Based Optics

1._____

Advances in LED technology continue to bring new opportunities in digital displays. Existing optical technologies are also benefiting from the LED boom, specifically Holographic Optical Elements or HOEs. Holographic Optical Elements are holographic images embedded onto a thin, clear photopolymer film that can be applied to glass or plastic surfaces. When a light source, such as LED, is projected onto the surface, the invisible recorded holographic images come to life. Although the technology has existed for decades, scientists and engineers are turning once futuristic concepts into tangible opportunities for manufacturers and government agencies.

2.

Because holographic images are captured on thin flexible films, engineers can create unique displays that would otherwise be impractical with conventional optics. For example, HOEs can redirect images from a light source that is hidden from view. HOEs can also create a transparent image on a surface such as glass or acrylic. While the possibilities are practically endless, the most practical applications of HOE technology being developed are head-up displays (HUDs) on helmets and smart glasses, as well as holographic light projection on car windshields and for interior and exterior lighting.

3._____

HOE presents multiple opportunities for the highly competitive, high-end automotive industry. Scientists have been working on HOE technology for over a decade and have refined the holographic capabilities for brightness, transparency, and responsiveness to color selectivity (i.e., red, green or blue). For example, HOE film combined with an LED light source would allow a floating, transparent image to appear on the windshield without any obstruction of view. Because color selectivity is now possible, RGB LEDs can be divided by color and placed on the same thin, clear HOE film. Red could display distance to the vehicle ahead, green an approaching car, and blue the current vehicle speed. The driver does not need to focus on the image to view it or ever take his or her eyes off the road.

Other uses for HOE in automobiles include hiding a light source, such as interior dome lights, or center high mount stop light (CHMSL) on the rear windshield of modern cars. Based on Luminit's Transparent Holographic Component technology, the film combines a holographic image area, an acrylic guide and an LED light source to transfer the projected light. An example of how this could applied to a car's interior is the dome light. Dome lights typically protrude out of the vehicle ceiling. HOE film can be embedded in the liner and the light source can be concealed from view. Transparent in the off state, light from the dome would appear to come from the liner. HOE can also be a key factor in branding. Floor lights or mud lights, for example, on high end cars can project light as well as the auto manufacturer's logo.

4._____

HOE also performs well on heads up displays for pilots and motorcyclists as well as wearable technology such as smart glasses. For helmets, HOE possibilities include head-mounted displays for off-axis image projection of a high-resolution micro display through a thin plastic visor. For smart glasses, HOE eliminates prism-based optics currently used on Google glass with fully see-through technology that allows the images to be viewed at a virtual distance without added weight to the user.

Vocabulary activities

1.Study the vocabulary list for this unit and try to single out the words related to IT. You might need to use a dictionary to check the meaning of some words:

Advances in technology, holographic image, photopolymer film, a light source, invisible, (to) come to life, tangible, (to) capture, (to) hide from view, transparent, a windshield, hi-end, (to) refine, a vehicle, obstruction, (to) embed, wearable, mounted, a visor, off-axis

2.*Make up all possible collocations using the vocabulary list, for example: advances in holographic image technology…*

3.*Match the words with their definitions:*

advances in technology	the one you can wear
holographic image	a means of transport
photopolymer film	a barrier
a light source	technological progress
invisible	(to) disappear
(to) come to life	expensive and luxury
tangible	a 3-D image
(to) capture	(to) make better
(to) hide from view	a see-through
transparent	a film made of polymer
a windshield	the one that can't be seen
hi-end	a place from where light comes out
(to) refine	part of a helmet that covers eyes
a vehicle	fixed or attached firmly
obstruction	(to) appear or be born
(to) embed	the one you can touch
wearable	(to) get or catch
mounted	situated away from an axis
a visor	(to) fix deeply and firmly
off-axis	a front glass of a car

4.*Paraphrase the sentences using the active vocabulary:*
a.You need to make this obvious defects disappear.
b.The curtain was see-through so we could observe the process.
c.There was a crack in the front glass of the car.

d.I don't understand where the light comes from.
e.This concept appeared several years ago.
f.This shop only sells expensive and luxury items.
g.This technology needs to be made better.
h.The 3-D picture attracted everybody's attention.
i.Like any means of transport, this car has a wheel.
J.This idea must have some benefits which you can touch.
k.On its way light meets a barrier.
l.This thing on my helmet covers my eyes from the sun.

5.Finish the sentences using your own ideas:
a.It is a wearable gadget which …
b.If the windshield is obstructed by something …
c.Due to recent advances in technology we can …
d.The promotion system in the company is transparent - …
e.If you are aimed at buying only hi-end equipment, …
f.Photopolymer film helps to create …
g.If subtitles are embedded it means …
h.The light source was in front of him, so he …
i.Photography helps to capture the images …
j.If we refine holographic technology further, it will …
k.This off-axis position is dangerous because …
l.When mobile communication came to life, …

Speaking
Prepare a short (7-8 minutes) presentation on further applications of holographic imaging and give it in front of the group.

Grammar
Modal verbs

Can, could	**may, might**	**shall, should**	**will, would**	**must**
ought to				

The modal verbs are a special group of auxiliary verbs. We use them before other verbs to express certain meanings- for example permission, ability, possibility, certainty. They express the attitude of the speaker towards the facts contained in the sentence.

Modals have different grammar from other verbs.

- *There is no -s in the 3d person*
  He can work on the computer.
- There is no **do/does** in the question.
  May I use your calculator?
- There is no **don't/doesn't** in the negative.
  You shouldn't waste your time.
  Modal verbs can be used in a special structure with have + past participle (should have phoned).
  This is used mainly to talk about possibilities in the past; the exact meaning depends on the particular modal.
  Can, could ability, theoretical possibility, permission, request, offer.
  May, might possibility, permission, concession.
  Shall, should giving your opinion, expressing doubt, advise, instructions.
  Will, would prediction, truth and facts, obligation habits, intention.
  Must deduction, obligation, necessity
  Ought to duty, necessity and moral obligation.

Exercises
1. *Find examples of modal verbs in the text. Explain their meaning*
2. *Choose the right modal verb*
1. There are plenty of tomatoes in the fridge. You (mustn't; needn't ; may not; shouldn't)   buy any.
2. It's a hospital. You (mustn't; needn't ; may not; don't have to) smoke.
3. He had been working for more than 11 hours. He(must; need; had better; mustn't) be tired after such hard work. He (may; should; must; had better) prefer to get some rest.
4. I (could; might; can; must) speak Arabic fluently when I was a child and we lived in Morocco. But after we moved back to Canada, I had very little exposure to the language and forgot almost everything I knew as a child. Now, I (may; can; must; need) just say a few things in the language.
5. The teacher said we (can; needn't; must; should) read this book for our own pleasure as it is optional. But we (could; need; needn't; mustn't) read it if we don't want to.
6. (May; need; must; can) you stand on your head for more than a minute? No, I (may not; needn't cant)

7. If you want to learn to speak English fluently, you (could; need; needn't; mustn't) to work hard.
8. Take an umbrella. It (need; should; mustn't; might) rain later.
9. You (shouldn't; need; needn't may not) leave small objects lying around . Such objects(must; need; may; mustn't) be swallowed by children.
10. People(couldn't needn't mustn't may not) walk on grass.
11. Drivers (could; must; may) stop when the traffic lights are red.
12. (may; must; should; will) I ask a question? Yes, of course.
13. You(couldn't needn't mustn't may not) take your umbrella. It is not raining.
14. (can need should may)you speak Italian? No, I(shouldn't; needn't mustn't; cant)

3. *Choose the corresponding translation.*
   1. She ought to agree with their plan.
   a) Ей предстоит согласиться с их планами.
   b) Она должна согласиться с их планами.
   c) Ей следует согласиться с их планами.
   d) Она в состоянии согласиться с их планами.
   2. He was able to fulfill this work on time.
   a) Он должен был выполнить работу вовремя.
   b) Ему следовало выполнить работу вовремя.
   c) Он смог выполнить работу вовремя.
   d) Ему можно было выполнить работу вовремя.
   3. They won't be able to get new data.
   a) Они не смогут получить новые данные.
   b) Они не должны получить новые данные.
   c) Им не следует получать новые данные.
   d) Им нельзя получить новые данные.
   4. You may use the new computer.
   a) Вы можете пользоваться новым компьютером.
   b) Вам следует пользоваться новым компьютером.
   c) Вы должны пользоваться новым компьютером.
   d) Вы в состоянии пользоваться новым компьютером.
   5. In 5 years the Internet will be quite different.
   a) Через 5 лет Интернет может быть совсем другим.

b) Через 5 лет Интернет будет совсем другим.

c) Через 5 лет Интернет должен быть совсем другим.

d) Через 5 лет Интернету нужно быть совсем другим.

4. *Correct mistakes where necessary*
   1. Computer networks should always be vulnerable to attack.
   2. He was in a hurry but may find time to discuss our future work.
   3. I am not sure but I can found a mistake in calculations.
   4. It will be his fault that much of essential information was erased.
   5. The quest for information had to lead to stress.

5. *a. Put these sentences in the past.*
   1. I can get in, because I am invited.
   2. We must finish our work before going out.
   3. You should ask a professional to fix your roof.
   4. You may understand his explanation

   b. complete sentences with your own ideas
   1. Advances in technology will……………
   2. Holographic image can…………………..
   3. Photopolymer film can…………
   4. Holographic images can be captured…………..
   5. You ought to…………………..

6. *Put these sentences in the future.*
   1. I can get in, because I am invited.
   2. We must finish our work before going out.
   3. He can fly a kite.
   4. You would listen carefully

7. *Rewrite the sentences with can, may, must or have to.*
   Ex.: Is that all right if I borrow your pen? May/Can I borrow your pen?
   • Don't park your car on bends. It is illegal. You
     ....
   • Perhaps she will agree with it. Who knows? She
     ....

- Our teacher asked us to tidy the classroom. We
  ....
- I need your help. It's too much work for me. You
  .... Look at that baloon. It's over
  there. .... see .... ?
- Don't worry about dinner. I'll make it. You
  ....
- It is not necessary to be there. We
  ....
- Why don't you stay with us? No problem! You
  ....

8. *Match 1-10 to a-j*
1. It is a very good film. _____ 2. He is not sure now. _____ 3. She is so
   different. _____ 4. It is the last train. _____ 5. It's Sunday today. _____ 6.
   This exhibition is not free of charge. _____ 7. I'll prepare breakfast myself.
   _____ 8. The coach leaves tonight and it takes twelve hours to get here.
   _____ 9. Your address is the same. _____ 10. We have plenty of time.
2. a You needn't get up early.
   b You don't have to get up early.
   c We can't miss it.
   d We mustn't miss it.
   e You can be her sister.
   f You can't be her sister.
   g I have to buy a ticket.
   h I must buy a ticket.
   i He may come tomorrow. J
    He must come tomorrow.
9. *Rewrite the sentences with :can, may, must or have to.*
                        1. Is that all right if I borrow your pen?   May/Can I
   borrow your pen?
a. Don't park your car on bends. It is illegal.
   You..
b. Perhaps she will agree with it. Who knows?
   She..
c. Our teacher asked us to tidy the classroom.
   We..

d. I need your help. It's too much work for me.
    You..
e. Look at that baloon. It's over there.   .... see
    .... ?
f. Don't worry about dinner. I'll make it.
    You..
g. It is not necessary to be there.
    We ....
h. Why don't you stay with us? No problem!
    You..
10. Rewrite the sentences using a modal verb.
    1. You needn't / don't have to take a jacket.
    2. You should see a dentist.
    3. You must talk during the exam.
    4. You mustn't park here.
    5. You should study harder.
    6. He must go to the police station twice a week.
    7. Tom can speak Spanish.
    8. He could / was allowed to go to the party.
    9. That can't be our plane our plane.
    10. You needn't / don't have to take a thick coat.
    11. I should have paid for half of the meal, but I didn't.
    12. Mary shouldn't have told Steve about us.
    13. Anita may not have got the text message.
    14. They may have gone to the cinema.
    15. You shouldn't have asked the other couple to come with us.
    16. You can't have seen John because he is on a trip.
    17. Jake may be in his room. 35. We may not see them at the weekend.
    18. I may not go to the concert.
    19. Bringing up children can't be easy.
    20. You needn't / don't have to come.
    21. He should give up smoking.
    22. Students mustn't eat chewing-gum in the class.
    23. We must turn off the mobile phone.
    24. I couldn't cook when I was younger.
     Writing.

What can we do with Holographic Optical Elements with LED-Based Optics? Write down your ideas using modal verbs. (130-150 Words)

Unit 6
The Internet of Things

What do you know about The Internet of Things? Can you give any examples of it?

Reading comprehension
1.Read the text Potential Hurdles Limiting the Internet of Things and match paragraph headings with paragraphs:
a.**Privacy and Security**
b.**Internet Availability**
c.**Significant Expenses**
d.**Bright future spoiled by significant obstacles**
e.**Data Surge**

2.Which paragraph tells us about:
a.places where Internet connection is still bad?
b.how the Internet of things works?
c.how important it is for IT companies to guarantee security of clients' personal data?
d.the importance of convincing investors that IoT is worth spending so much money?
f.steps that must be taken to introduce the IoT on a large scale?

3. Put the sentences, summarizing the main idea of each paragraph, in the correct order:
a.Though the IoT is a great idea, there are still many areas where Internet access is a problem.
b.There are many great ideas related to the IoT, but also many barriers on its way.
c.With the coming of the IoT companies will need facilities for a big amount of data.
d.With the IoT in operation security becomes even more crucial.
e.Introducing the IoT needs a lot of investment.

4. *Answer the questions on the text in your own words:*
a.What is the main idea behind the IoT?
b.What is the attitude of most people to the IoT?
c.What kind of countries have problems with Internet access?
d.Where are they going to put sensors?
e.What has become cheaper?
f.How can companies make sure they get access to clients' private information?
g.What new technologies will be needed by 2020?

5.Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.

Potential Hurdles Limiting the Internet of Things
1._____

The hype surrounding the Internet of Things (IoT) is immense. The basic premise behind the IoT is to connect everyday objects to the internet through tiny sensors, allowing them to communicate with businesses, consumers, and each other. The potential for innovation is certainly there, and startups and major corporations have already come up with some intriguing ideas from internet-connected refrigerators to app-controlled light fixtures to smart clothing. A lot of people see the Internet of Things as the next great frontier of technology and consumer products, but just because many are predicting it doesn't make it inevitable. Notable obstacles have appeared that may end up hindering the rapid spread of the Internet of Things. While these hurdles can be overcome, companies and industries should make note of them to prepare for what may be a hard-to-navigate future.

2._____

The Internet of Things sounds good in principle, giving consumers unparalleled convenience and access to the latest technology, but there is one requirement that can't be ignored: the internet. Without an actual internet connection, the IoT can't function. While that may not be a problem for the majority of people, there are still many places in the world **without an internet connection. Many** companies, including Google, are trying to rectify this issue, but any solutions are still years away. Even countries that do have

high connectivity to the internet, like the United States, will often have spots where that connection is spotty or even non-existent. Worldwide internet connections have to happen for the IoT to become a fully functioning reality.

3._____

It's one thing to embed a sensor in a new consumer product; it's another thing to place them on items and structures that are already widely dispersed throughout the world. One idea for the Internet of Things is to place sensors on roads, traffic lights, utility grids, and buildings, but doing so represents an **expensive venture**. Many companies, while optimistic about the potential of the IoT, have yet to be convinced it's an investment worth making on such a large scale. Progress has been made concerning the expenses of the IoT, particularly in the creation of cheaper sensors, but more progress is needed before organizations truly embrace using them in everything. Until then, the full implementation of the Internet of Things will likely be delayed.

4. _____

In the wake of major security breaches at Home Depot and Target, along with the recent iCloud celebrity photo scandal, **privacy and security** are clearly on the minds of businesses and individuals. For now, the IoT only appears to raise those concerns exponentially. When everything from a toaster to a shirt is connected to the web, what does that mean for personal privacy and sensitive data? Companies will need to show they can protect customer information if consumers will ever trust wearing shoes that keep track of where they go and how many steps they take.

5. _____

It's estimated that **by 2020,** around 26 billion items and objects will be part of the Internet of Things. With that increase in internet-connected items will come a surge of new data being generated. As of right now, many companies aren't prepared to handle the amount of data that needs to be collected to make the IoT function well. There are many things businesses need to do to prepare their organizations for these new demands. New storage capabilities are needed, which can be done through **in-house storage options or through cloud storage.** New hardware is needed to handle an increased workload and more processing power. Businesses also need more effective data mining and the equipment to analyze data in real time. Once these technologies are adopted by more companies, the spread of the IoT will likely increase.

Vocabulary activities

1.Study the vocabulary list for this unit and try to single out the words related to IT. You might need to use a dictionary to check the meaning of some words:

Hype, a premise, a startup, fixture, a frontier, inevitable, an obstacle, unparalleled, actual, (to) rectify an issue, spotty connection, (to) embed a sensor, dispersed, a venture, on a large scale, implementation, in the wake of, (to) raise concerns, a surge, (to) adopt a technology.

2.Make up all possible collocations using the vocabulary list, for example: unparalleled hype…

3.Match the words with their definitions:

1.hype	a.to put in or attach a sensor
2.a premise	b.a front line, something most advanced
3.a startup	c.spread over large territory
4.fixture	d.(to) solve a problem
5.a frontier	e.a business project
6.inevitable	f.a sharp increase
7.an obstacle	g.after or following something
8.unparalleled	h.a project based on some innovation
9.actual	i.real
10.(to) rectify an issue	j.excessive advertising or publicity
11.spotty connection	k. one that can't be avoided
12.(to) embed a sensor	l.(to) start using a technology
13.dispersed	m.(to) increase worries
14.a venture	n. massively
15.on a large scale	o.connection not covering all the territory
16.implementation	p.putting into practice
17.in the wake of	q.a barrier or hurdle
18.(to) raise concerns	r.unique
19.a surge	s.something that can be fixed like lamps or sockets

20.(to) adopt a technology	t.a previous statement helping to support a conclusion

4.Paraphrase the sentences using the active vocabulary:
a.We need to put in sensors in all devices.
b.Wi-fi routers are spread all over the campus.
c.It will take time to solve this problem.
d.We need a real innovative project to get funding.
e.Security is a real barrier on our way.
f.This technology offers unique opportunities.
g.There is too much publicity around this project.
h.Putting this idea into practice will bring us a lot of profit.
i.Artificial Intelligence is one of the most advanced areas of modern science and technology.
g.Following the success of the project they set up a company.
k.It was one of the statements that led to the conclusion.
l.WI-fi connection is not everywhere in this building.

5.Finish the sentences using your own ideas:
a.If we use this method on a large scale …
b.The implementation of this technology will result in …
c.Recent security breaches raised concerns …
d.If we establish a startup company …
e.The surge in mobile phone market was caused by …
f.The main frontiers of modern technology are …
g.Progress in IT is inevitable because …
h.If we disperse sensors all over the place …
i.One of the obstacles for scientific progress in Russia is …
j.To rectify the issue of corruption we need …
k.If Internet connection is spotty we should …
l.In the wake of recent scandals we decided …

Speaking
Using the Internet as a source of information, prepare a short (7-8 minutes) presentation for the group on the topic, related to the Internet of Things

Grammar
The Infinitive
The infinitive is the base form of a verb. In English, when we talk about the infinitive we are usually referring to the present infinitive, which is the most common. There are, however, four other forms of the infinitive: the perfect infinitive, the perfect continuous infinitive, the continuous infinitive, & the passive infinitive.
The infinitive has two forms:

- the to-infinitive = to + base
- the zero infinitive = base

The present infinitive base is the verb form you will find in a dictionary.
The negative infinitive is formed by putting *not* in front of any form of the infinitive.
- I decided not to go to London.
- He asked me not to be late.
Tenses of the infinitive

	Active voice	Passive voice
Present	to work to write	to be worked to be written
Present continuous	to be working to be writing	-----------------
perfect	to have worked to have written	to have been worked to have been written
Perfect continuous	to have been working to have been writing	------------------

Functions
The to-infinitive is used in many sentence constructions, often expressing the purpose of something or someone's opinion about something. The to-infinitive is used following a large collection of different verbs as well.
The to-infinitive is used:
1. to express purpose

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Computer consultants meet with customers to advise them on the use of their company's products. 2. after certain verbs (advise, agree, appear, decide, expect, hope, promise, refuse etc)

He promised to sort out the problems.

3. after certain adjectives (angry, happy, glad, etc)

She was glad to see him.

4. after question words (where, how, what, who, which, but not after "why") Has she told you where to look for the mistake?

5. after would like/would love/ would prefer (to express specific preference)

I'd prefer to perform operations of data first.

6. after nouns

It's a pleasure to work with you.

7. after too/ enough constructions

He isn't skilled enough to develop a new system.

8. with it + be + adjective (+ of + object)

It was nice of him to help me.

The infinitive without to is used:

1. after modal verbs (must, can, will etc)

You must be back at 12 o'clock.

2. after had better/would rather. I'd rather have stayed in last night.

3. after make/let/see/hear/feel + object Mum let me watch TV.

I made him apologize.

But: in the passive form: be made/be heard/be seen + to infinitive.

He was made to apologize.

Note: help is followed by both a to-infinitive or an infinitive without to.

She helped me (to) wash the dishes.

Exercises

1. *Use on-line resources to make a list of verbs followed by infinitives.*

2. *Find examples of the infinitive in the text. Explain your choice in English.*

3. *Change the sentences as in example*
1. I couldn't understand the meaning of 'hype'(wasn't able) I wasn't able to understand the meaning of 'hype'

2. It is important to study enough (you should)
3. I have decided not to play computer games tonight (I won't)
4. I'd like to go camping this summer (might)
5. It's necessary to make careful plans (we must)
6. I want to change my job (I wish I could)
7. I will certainly pay you on Saturday (I promise)
8. This isn't a good time to go. (I had better)
9. I can play chess (I've learnt)
10. Perhaps he's ill. (he seems)

4. *Underline the mistakes if there are any.*
1. Tomorrow, we will get his friend help us pack the boxes.
To help_____
2. Every day, David tells me to eat the same thing for lunch.
_____
3. Yesterday, Robert and James let Jenny to beat them in the race.
_____
_
4. Bad weather caused the airline to cancel many of their fl ights.
_____
_
5. Mrs. Lee asked me collect her mail while she was away on a trip.
_____
6. Today, Alex's father had him to go to the hair stylist with his sister.

4. *Circle the correct answers.*
1. Did that sad movie we watched (cause / make) you cry?
2. Are you sure I can't (convince / make) you to come with us?
3. Evan's friends (made / persuaded) him to jump into the pool.
4. Sometimes late at night, my father (gets / lets) me drive the car.
5. My teacher is going to (get / have) me take a special math class next month.
6. Evelyn and Cassie are always (letting / asking) us to go shopping with them.
7. My violin teacher (made / convinced) me to practice for two hours every night.

8. Even though Rob doesn't like it, his father always (forces / has) him to go to music lessons after school.

5. *Fill in the correct tense of the infinitive.*
1.We'd better not bother her - she seems… to be studying…(to study). 2. Paul pretended…(finish) the work, but in fact he did nothing at all. 3. Jane hoped…(give) the prize, but someone else won it. 4. He seemed…(swim). He was all wet. 5. I should. …(give) him some instructions before I went on, but I forgot. 6. She says she would love (come) to lecture with us. 7. He must. …(practise) for hours - he solves equations very fast now. 8. They could. …(prepare) for an exam better. Now they have to take it again. 9. John must …(be) very busy these days - I never see him. 10. Jan should. …(give) us her new address before she left. 11. They appeared …(try) to install new software. 12. You should ……(study) now instead of watching TV!

6. *Rewrite the following sentences using an infinitive.*
1. It won't be any good my talking to him about it.
2. It is no use trying to convince him of this.
3. It wouldn't be much good complaining to the minister about it.
4. It was a difficult business starting the car with such a weak battery.
5. It is no fun having so many children to look after.
6. Will it be any good my seeing the boss about it?
7. It is just silly throwing away your chances like that.

7. *Complete the gap in each sentence with the correct form of the verb in brackets.*
1. The Help facility enables users…(get) advice on most problems.
2. Adding more memory lets your computer …(work) faster.
3. Windows allows you. …(display) two different folders at the same time.
4. The Shift key allows you…. (type) in upper class.
5. The Mouse Keys feature enables you …(use) the numeric keypad to move the mouse pointer.
6. ALT + TAB allows you …(switch) between programs.
7. The Sticky Keys feature helps disabled people(operate) two keys simultaneously.
8. ALT + PRINT SCREEN lets you …(copy) an image of an active

window to the Clipboard.

Fill in the Blanks with the Correct infinitive verb
1. He will be prepared……… (proposing) his idea to the manager.
2. He was satisfied ……. (getting) it across.
3. I am always rewarded…………… (explaining) that difficult theory.
4. They will be irritated………. (get) such low wages
5. He was thrilled…..(having) the cash with him.
6. He was unable…………. (beginning) the work.
7. We were ready…………. (explaining) that action.
8. He was afraid……………… (atempting) the exam.
9. She was reluctant………………… (saying) the truth.
10. He was unfit……………………(doing) the job.

9. *Give English equivalents of the italicized parts of the sentences*
1. *Для того, чтобы соответствовать цели эксперимента,* метод должен быть прост.
2. *Установить причинно-следственные отношения часто означает* решить проблему.
3. *Предвидеть будущее невозможно* без анализа прошлого.
4. *Говоря по правде*, все ожидали совершенно других результатов.
5. *Сделать выбор* часто *бывает самым трудным*.
6. *Чтобы не рисковать*, проверьте аппаратуру перед экспериментом еще раз.

10. *Translate the verbs in brackets using the Gerund. Use the dictionary.*
1.(хранение) large amounts of data is computer's main task.
2.There are new techn1.(хранение) large amounts of data is computer's main task.
2.There are new techniques for (моделирование) natural processes.
3.(выявление) special circumstances for absolute programming will be useful.
4.The process in computer technology is the key to (развитие) our industry.
5.William Gates and Paul Allen started (предлагать на рынке) BASIC and PC DOS softwareiques for (моделирование) natural processes.
3.(выявление) special circumstances for absolute programming will be

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useful.

4. The process in computer technology is the key to (развитие) our industry.

5. William Gates and Paul Allen started (предлагать на рынке) BASIC and PC DOS software

11. *Put the verbs in brackets into the –ing form or the* Infinitive.
There is much thinking and reasoning in mathematics. Students master the subject matter not only by 1) (to read and learn) but by 2) (to prove) theorems and 3) (to solve) problems. The problems therefore are an important part of 4) (to teach) because they require students 5) (to discuss and reason) and 6) (to polish up) their own knowledge. 7) (to understand) how experimental knowledge is matched with theory and new results extracted, the students need 8) (to do) their own reasoning and thinking. 9) (to think) your way and 10) (to make) your own choice of opinion and 11) (to discuss) other choices is part of good education in science and a good method of 12) (to teach).

12. *Explain your understanding of the infinitive in English to your partner. Compare your answers.*

13. *Make 7 sentences of your own using the vocabulary of the lesson. Explain the use of the gerund.*

What do you know about hackers and hacker attacks? Have you heard about the recent attack named "WanaCryptor"?

Reading comprehension

1. _Read the text "5 things we learned from WanaCryptor, the biggest ransomware attack in internet history" and match paragraph headings with paragraphs:_
a.**The killswitch was a simple URL check**
b.**Preventing and recovering from this kind of attack is expensive and complicated**
c.**It was based on a leaked NSA "cyber-weapon"**
d.**It preyed upon un-patched computers**
e**. It spread without exploiting user interactions**

2. _Which paragraph tells us about:_
a. the main reason why WanaCryptor was so successful?
b.the scale of the sisaster?
c.companies like Microsoft trying to blame users for not updating their software?
d.what kind of exploit is used in this worm?
e.a surprising fact of Microsoft releasing a patch for Windows XP?
f. finding a killswitch for the worm?

3._Put the sentences, summarizing the main idea of each paragraph, in the correct order:_
a.The worm was aimed at a specific domain and it could be stopped by checking its Internet address.
b.The main reason for the worm's success were many bugs in modern software.
c.The worm attacked only PCs and used the exploit created by American defence specialists.
d.Microsoft was fast to release security updates for its software.

e. With this worm a user doesn't even have to click on any link, all it needs is the Internet.

f. The worm attacked many countries, but was stopped quite fast.

4. Answer the questions on the text in your own words:

a. How much was the ransom the worm demanded?

b. What kind of group are Shadow Brokers?

c. In what way is this attack different from fishing?

d. What helps it attack local networks?

e. What does WannaCry check first?

f. How did the British researcher stop the attack?

g. When did Microsoft release the first security patch against this kind of attack?

h. Why does the author think it is unfair to blame users in such cases?

5. *Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.*

Five things we learned from WannaCryptor, the biggest ransomware attack in internet history

On May12, 2017, some hospitals in the United Kingdom were struck with a peculiar attack: computers taken over, data inside encrypted and held ransom, all for the measly payment of just $300. The attack spread rapidly, hitting 150 countries and shutting down everything from telecoms in Spain to the Interior Ministry in Russia. And then, through a stroke of luck, the WannaCryptor attack was stalled in its tracks, a killswitch discovered by happenstance just in time for the weekend. What, exactly are we to make of the largest ransomware attack in history?

1._____

The worm, known variously as WannaCry, WanaCryptor, and WannaCrypt, targets computers running Microsoft operating systems. It is built on an exploit named EternalBlue, one of many NSA "cyber-weapons" released by a group known as the Shadow Brokers, who first started leaking NSA tools late last summer.

2._____

Unlike phishing or spearphishing attacks, where a computer is compromised because a user clicks a link in a targeted email, WannaCry works without exploiting any human error.

Kasperksey Lab, a well-known cybersecurity company, wrote in a richly detailed FAQ about the attack that "Perhaps the main reason why Wannacry was so successful is the fact that the EternalBlue exploit works over the Internet without requiring any user interaction." Because it strikes over networks, it can still wreak havoc inside a local network even with the killswitch active, as the killswitch needs the internet to work.

3._____

Before WannaCry spreads, it checks to see if it can connect to a specific domain. If the domain is registered and occupied, it's done, and proceeds no further. If it fails to connect, then WannaCry spreads as it was designed to do, infecting machines and demanding ransom.

The killswitch was discovered by a young computer security researcher in the United Kingom, who registered the domain specified in the WannaCry programming, and then routed traffic to it to a sinkhole server, meant for trapping botnets. This security researcher wrote a great write-up of the experience of catching WannaCry.

4._____

Microsoft released patches for the vulnerable operating systems that can prevent the present version of WannaCry from infecting patched computers. The first patch that protects against attacks like this was released in March, though not every user automatically downloads and installs all patches or software updates. Microsoft reactively released a patch for *Windows XP*, a 16-year-old operating system that is no longer officially supported, yet still used in many computers. In customer guidance released about the attack, Microsoft recommends automatically updating as a proactive measure.

5._____

WannaCry worked because of a complex mishmash of circumstances. The availability of bitcoin as a way to pay ransoms to anonymous criminals certainly helped, as did the exploit developed by the NSA itself. Both took place in a context where people and organizations still use old software, and it's easy for companies like Microsoft to shift blame onto the NSA for making the exploit and on users for not patching security.

"Technology is shipped so full of holes that a huge part of the industry is a massive crew of highly-trained professionals working flat out to plug all the leaks, writes cybersecurity expert Stilgherrian. "Then, when customers inevitably slip and sink into in this torrent of faults, the vendors and cybersecurity professionals blame them for being unable to swim.""

Vocabulary activities

1. *Study the vocabulary list for this unit and try to single out the words related to IT. You might need to use a dictionary to check the meaning of some words:*
(to) demand ransom, (to) encrypt data, (to) take over a computer, (to) stall in one's tracks, (to) discover by happenstance, a ransomware attack, a worm, an exploit, (to) leak, phishing, (to) wreak havoc, a killswitch, a domain, (to) route traffic, (to) release a security patch, a customer guidance, a mishmash, (to) blame, (to) ship, a vendor

2. Match the words with their definitions:

1.(to) demand ransom	a.(to) code information
2.(to) encrypt data	b.(to) ask somebody to pay money using threat
3.(to) take over a computer	c.(to) be lucky to find out
4.(to) stall in one's tracks	d.an attack aiming to get money
5.(to) discover by happenstance	e.(to) give out
6.a ransomware attack	f.a kind of computer virus
7.a worm	g.(to) direct traffic
8.an exploit	h.(to) say that it's somebody's fault
9.(to) leak	i.mixture
10.phishing	j.(to) gain control over a computer
11.(to) wreak havoc	k.(to) prevent from moving further
12.a killswitch	l.a group of files increasing security of a program
13.a domain	m.a set of instructions for customers
14.(to) route traffic	n.software using a program's vulnerability to attack it

15.(to) release a security patch	o.(to) send
16. customer guidance	p.a seller
17.a mishmash	q.using false identity to access confidential data
18.(to) blame	r.(to) cause great damage
19.(to) ship	s.a method to quickly stop something
20.a vendor	t.a group of computers on a network

3.Make up all possible collocations using the vocabulary list, for example:
(to) leak a worm

4.Paraphrase the sentences using the active vocabulary:
a.The hacker attack caused great damage to the system.
b.It was an attack with the aim of making subscribers pay money to hackers.
c.We do not know the IP-address of this network.
d.They made confidential information available to everybody.
e.The traffic was directed to a particular server.
f.The dangerous virus was stopped from spreading.
g.It was a bit of luck that the anti-virus was created.
h.This set of instructions explains to them how to use the equipment.
i.The provider sent us a group of files to strengthen the system's security.
j.They sent us an e-mail using a false identity to make us give them confidential information.
k.It was a strange mixture of different styles.
l.We used a special method to quickly switch off the equipment.

5.Finish the sentences using your own ideas:
a.They demanded ransom for …
b.The data was encrypted, so …
c.If you haven't read the customer guidance, …
d.As soon as you transfer money, the online vendor …
e.Microsoft released a security patch to …
f.This phishing attempt had the purpose to …
g.The worm was stalled in its tracks, so …
h.The virus was discovered by happenstance and …
i.The traffic was routed to a specific server to …

j.This hacker group was blamed in …
k.If they demand ransom, we …
l.One employee leaked confidential data and …

<u>Speaking</u>
Using the Internet as a source of information, prepare a short (7-8 minutes)
presentation for the group on the topic, related to Internet security.

Grammar
The Gerund
Although the term might sound foreign, the gerund is a common part of
speech that most of us use every day, whether we know it or not. The
gerund looks exactly the same as a present participle, but it is useful to
understand the difference between the two. To find gerunds in sentences,
just look for a verb + ing that is used as a noun. It's that simple.
*Swimming in the ocean has been Sharon's passion since she was five years
old.*

As a noun the gerund may function in a sentence as
•the subject: Ex: *Programming* is my favorite subject.
•the direct object: Ex: I suggest *sending* an e-mail message.
•the prepositional object (after prepositions of, for, before, by, in,
besides, instead of, without, after and so on): Ex: He is fond of *playing*
computer games.
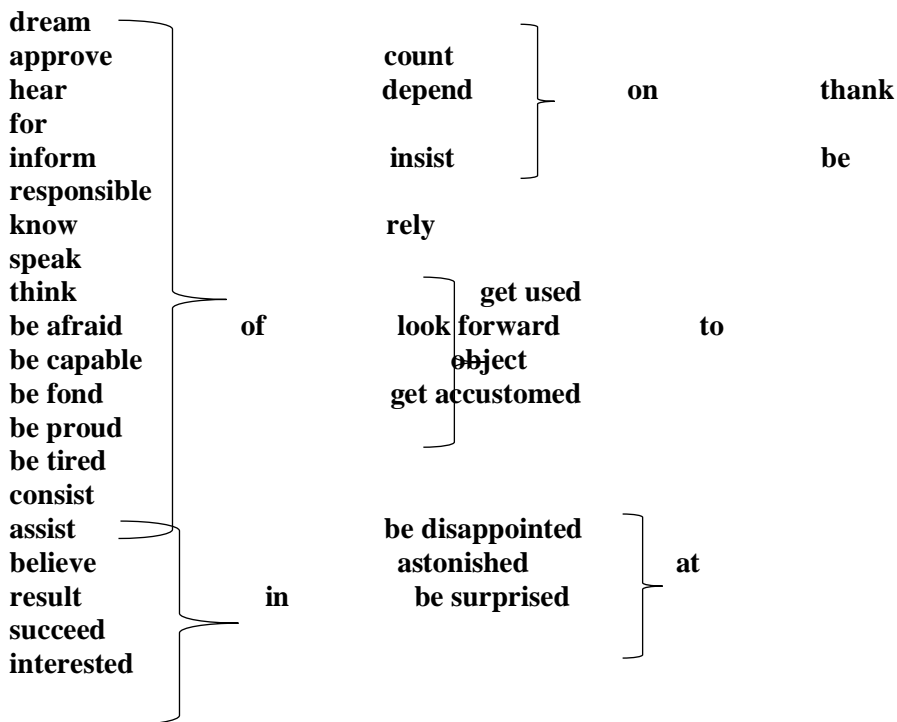•the predicate noun: Ex: Our aim is *solving* this problem.
The Gerund can be modified by a noun or a pronoun in the possessive
case: Ex: We know of George *Bool's having introduced* a theory of
logic, now known as Bool's algebra.
The Gerund is used after certain verbs and phrases:

The Gerund is used after certain verbs and phrases:
avoid, delay, deny, dislike, enjoy, excuse, finish, forgive, give up,
go on, keep on, mention, miss, mind, practice, put off, postpone,
be busy, be worth, can't help, it's no use, spend/waste, prevent,
recall, quit, tolerate, suggest, understand, save, recollect, stand,
admit, anticipate, consider, appreciate, fancy etc.

The Gerund is used after certain words with prepositions:

dream
approve   **count**
hear   **depend**   **on**   **thank**
for
inform   **insist**   **be**
responsible
know   **rely**
speak
think   **get used**
be afraid   **of**   **look forward**   **to**
be capable   ~~**object**~~
be fond   **get accustomed**
be proud
be tired
consist
assist   **be disappointed**
believe   **astonished**   **at**
result   **in**   **be surprised**
succeed
interested

the following verbs can be followed by -ing or to… with no difference in meaning :

begin, continue, intend, start, bother etc.

Ex: I like *painting/to paint.*

Some verbs can be followed by- ing or to… with a difference in meaning meaning:

	+ inf	+-ing
forget	forget to do sth	forget a past event
remember	remember to do sth	recall a past event
mean	intend to do	involve
go on	finish doing sth and	continue
regret	start	have second thoughts
try	doing sth else	about sth already done
want	be sorry to do	

stop	do one's best, attempt wish	do sth as an experiment
hate	pause temporarily hate what one is about	sth needs to be done finish, cease
be afraid	to do	feel sorry for what one is
	be too frightened to do	doing be afraid of what may happen

Ex: Remember *to back up* your copy.(= don't forget to back up)
I don't remember *backing up* your copy.(= I don't recall this event.)
As a **verb** the gerund may:
•take a direct and an indirect **object**: Ex: A data structure is a means of *representing* data in a computer.
•be modified by an **adverb** or an adverbial phrase: Ex: The task of computer designers consists in *organizing* a system properly.
•be used **in the Indefinite(Active and Passive)** and **the Perfect (Active and Passive**) forms:

	ACTIVE	PASSIVE	
Indefinite	doing	being done	refers to the present or future
Perfect	having done	having been done	the action of the Gerund happened before the action of the verb

Ex: He likes *working* on a computer.
We know of programs *being written* by him.
We can use Indefinite Gerund instead of Perfect Gerund without difference in meaning.
After having finished school he entered the university.
After finishing school he entered the university

Exercises.

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1. *Find examples of the Gerund in the text. Translate these sentences. Explain the use of the gerund in them.*

2. *Choose the correct item.*
   1. In 1937 Howard H. Aiken started… a computer at Harvard University.
   1) to develop 2) developing
   3) having developed 4) being developed

   2. Atanasoff suggested… vacuum tubes rather than electromechanical relays.
   1) to use 2) using of
   3) using 4) having used
   3. John von Neumann proposed… the instructions for the computer as numbers.
   1) to code 2) coding of
   3) to code of 4) coding

   4. The first microcomputer, the Altair 8800,was proposed… a kit form.
   1) to have 2) having of
   3) having 4) to having

   5. The user could add or subtract…wheels of Pascal's calculator.
   1) turning 2) to turn
   3) by turning 4) being turned

   6. These capabilities made the Mac easy to use… in computers.
   1) not training 2) without training
   3) after training 4) being trained

3. *Gerund or Infinitive - Exercise*
   1) A lot of people are worried about _____their jobs. (lose) 2) He agreed _____ a new car. (buy) 3) The question is easy _____ (answer) 4) Not everybody can afford _____ to university. (go) 5) I look forward to _____ you at the weekend. (see) 6) Are you thinking of _____ London? (visit) 7) He apologized for _____ so late. (arrive) 8) Stop

_____ noise, please; I'm studying. (make) 9) She doesn't mind _____ the night shift. (work) 10) I learned _____ the bike at the age of 5.(ride)

4. *Use the verbs in brackets to fill the gaps.*
   1 We arranged _____ under the station clock at half nine. (to meet) 2 I always try to avoid _____ him whenever I can. (to see) 3 I long _____ in Scotland again. (to be) 4 My Mum demanded _____ the manager. (to see) 5 My brother denied _____ my chocolate mousse. Maybe his hamster ate it. (to eat) 6 I tried _____ but I just couldn't. (to understand) 7 In the end I gave up _____ to persuade her. (to try) 8 Charlie was pretending _____ a chicken. (to be) 9 They chose _____ in a cheap hotel but spend more money on meals. (to stay) 10 We like Galicia so much that we keep _____ back there. (to go) 11 He deserves _____ severely punished. (to be) 12 When we visit my aunt, they expect me _____ on my best behaviour. (to be) 13 I didn't mean _____ her feelings. I'm really sorry. (to hurt) 14 I always put off _____ my homework until the last possible moment. (to do) 15 He goes on _____ me the same thing over and over again. (to tell) 16 I can't stand _____ in the queue at the baker's. (to wait) 17 The firemen managed _____ the fire pretty quickly. (to put out) 18 I never risk _____ through that part of town. (to go) 19 Clare offered _____ me to the airport, which was very kind of her. (to take) 20 Dad threatened _____ my pocket money if I didn't do my homework. (to stop)

5. *Put the verb into the gerund or the infinitive with -to*
   1.   I couldn't sleep so I tried _____ (drink) some hot milk.
   2.   She tried _____ (reach) the book on the high shelf, but she was too small.
   3.   They tried _____ (get) to the party on time but the bus was delayed.
   4.   We tried _____ (open) the window, but it was so hot outside it didn't help.
   5.   He tried _____ (get) a job in a newspaper firm but they wouldn't hire him.

6.   He tried _____ (get) a job in a newspaper firm but he still wasn't satisfied.
7.   You should stop _____ (smoke), it's not good for your health.
8.   We stopped _____ (study) because we were tired.
9.   They will stop _____ (have) lunch at twelve.
10.   We stopped _____ (have) a rest, because we were really sleepy.
11.   Oh no! I forgot _____ (buy) milk.
12.   Please don't forget _____ (pick) up some juice on your way home.
13.   I forget _____ (lock) the door, but I'm sure I must have locked it.
14.   Have we studied this before? I've forgotten _____ (learn) it.
15.   Please remember _____ (bring) your homework.
16.   I remember _____ (go) to the beach as a child.
17.   Finally I remembered _____ (bring) your book! Here it is.
18.   Do you remember _____ (eat) steak in that little restaurant in Rome?
19.   I regret _____ (tell) you that the train has been delayed.
20.   I regret _____ (tell) Julie my secret; now she has told everyone.

6. *There is one mistake in each of the following sentences. Correct it.*
    1.The way of solve this problem is very difficult.
    2.After to perform calculations a computer displays a result.
    3.Blaze Pascal`s merit consists in his construct the first mechanical computer.
    4.On performing the reasonable operations on a computer we solve different kinds of problems for our national economy.
    5.Logical operations consist with comparing, selecting, sorting, matching and determining.
    6.We were able to translate this text without use a dictionary.
    7.He started to learning computer when he was six.

7. *Complete these sentences with the correct form of the verb in brackets*
    1. Don't switch on without (check) the A drive for a floppy.
    2. The Caps Lock key allows you (type) all in capitals.
    3. You'll have to get used (change) your password each month.
    4. Changing the motherboard lets your computer (work) faster.
    5. They tried (hack into) the Pentagon's computers.
    6. You can get advice by (phone) their help line.
    7. The mouse wheel enables you (scroll) up and down the documents.
    8. He objected to (pay) for long distance calls to use the Internet.
    9. I want (learn) how to program XML.
    10. Before (switch off), make sure you have saved your work.

8. *How to protect your computer from WanaCryptor ? Write 150 words using the active vocabulary and grammar of the lesson.*

Unit 8
Robotics

Do you follow the news in the field of robotics? What new surprising robot technologies have you heard or read about?

Reading comprehension

1. *Read the text "Robots Learn to Speak Body Language" and match paragraph headings with paragraphs:*
a.**The applications of body tracking technology.**
b.**Problems understanding body movements**.
c.**Viewing body from different angles**.
d.**What is OpenPose**.
e.**No need for using much equipment**.

2. *Which paragraph tells us about:*
a.how the researchers built the data set for the system?
b.inability of robots to understand body language at present?
c.lack of necessity to use multiple cameras to make the system work?
d.using machine learning to analyze visual data?
e.an opportunity for a home robot to learn human emotions?
f.why 2-D resolution was not enough to make the system work?
g.an opportunity to track hand movements without using gloves?

3. *Put the sentences, summarizing the main idea of each paragraph, in the correct order:*
a.The methods the researchers used to collect and analyze the data
b.Modern robots can't read body movements yet.
c.After processing the data the system has become mobile.
d.possible applications for the system.
e.A new system, called OpenPose, simplifies understanding body language.

4.*Answer the questions on the text in your own words:*

a. What kind of equipment did the researchers need to track different body parts?
b. What do clenched fists tell us about a person's emotional state?
c. What did the researchers use a keypoint detector for?
d. What allows to track several people at once?
e. Why did the researchers need 3-D?
f. Why did they make their software open source?
g. In what way can the system be used in Virtual Reality?
h. What does the example with offering a tissue demonstrate?

5. Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.

Robots Learn to Speak Body Language

    1._____

If your friend says she feels relaxed, but you see that her fists are clenched, you may doubt her sincerity. Robots, on the other hand, might take her word for it. Body language says a lot, but even with advances in computer vision and facial recognition technology, robots struggle to notice subtle body movement and can miss important social cues as a result.

    2._____

Researchers at Carnegie Mellon University developed a body-tracking system that might help solve this problem. Called OpenPose, the system can track body movement, including hands and face, in real time. It uses computer vision and machine learning to process video frames, and can even keep track of multiple people simultaneously. This capability could ease human-robot interactions and pave the way for more interactive virtual and augmented reality as well as intuitive user interfaces.

    3._____

One notable feature of the OpenPose system is that it can track not only a person's head, torso, and limbs but also individual fingers. To do that, the researchers used CMU's Panoptic Studio, a dome lined with 500 cameras, where they captured body poses at a variety of angles and then used those images to build a data set. They then passed those images through what is called a keypoint detector to identify and label specific body parts. The software also learns to associate the body parts with individuals, so it knows,

for example, that a particular person's hand will always be close to his or her elbow. This makes it possible to track multiple people at once.

4._____

The images from the dome were captured in 2D. But the researchers took the detected keypoints and triangulated them in 3D to help their body-tracking algorithms to understand how each pose appears from different perspectives. With all of this data processed, the system can determine how the whole hand looks when it's in a particular position, even if some fingers are obscured. Now that the system has this data set to draw from, it can run with only <u>one camera and a laptop</u>. It no longer requires the camera-lined dome to determine body poses, making the technology mobile and accessible. The researchers have already released <u>their code</u> to the public to encourage experimentation.

5._____

They say this technology could be applied to all sorts of interactions between humans and machines. It could play a huge role in VR experiences, allowing finer detection of the user's physical movement without any additional hardware, like stick-on sensors or <u>gloves</u>. It could also facilitate more natural interactions with a home robot. You could tell your robot to "pick that up," and it could immediately understand what you're pointing at. By perceiving and interpreting your physical gestures, the robot may even learn to read emotions by tracking body language. So when you're silently crying with your face in your hands because a robot has taken your job, it might offer you a tissue.

<u>Vocabulary activities</u>

1. *Study the vocabulary list for this unit and try to single out the words related to IT. You might need to use a dictionary to check the meaning of some words:*
(to) clench one's fists, (to) take somebody's word for it, an advance, facial recognition, subtle, (to) miss a cue, (to) keep track of, simultaneously, (to) pave the way for, a notable feature, a limb, a dome, (to) build a data set, multiple, (to) triangulate, a perspective, accessible, (to) facilitate, (to) perceive, (to) pick up

2.*Match the words with their definitions:*

1.(to) clench one's fists	a.(to) follow closely
2.(to) take somebody's word for it	b.many
3.an advance	c.at the same time
4.facial recognition	d.a prominent characteristic
5.subtle	e.(to) close fingers into a tight ball
6.(to) miss a cue	f.a rounded roof on a building or a room
7.(to) keep track of	g.an arm or a leg
8.simultaneously	h.identifying somebody analyzing his face
9.(to) pave the way for	i.(to) lift something from the ground or catch something
10.a notable feature	j.(to) come to realize or understand
11.a limb	k.the one that can be reached
12.a dome	l.(to) make easier or help
13.(to) build a data set	m.(to) be the first to do
14.multiple	n.delicate or precise
15.(to) triangulate	o.(to) fail to notice a hint
16.a perspective	p.(to) collect information on a particular subject
17.accessible	q.(to) believe that what somebody is saying is true
18.(to) facilitate	r.progress
19.(to) perceive	s.(to) divide into triangles for research purposes
20.(to) pick up	t.a particular way of viewing something

3. *Make up all possible collocations using the vocabulary list, for example: (to) facilitate advance…*

4 *Paraphrase the sentences using the active vocabulary:*

a.My arms and legs were aching.

b.We need to follow their progress closely.

c.This prominent characteristic is easy to reach.

d.If we divide this picture into triangles it will be easier to work with.

e.She always believes in everything he says.

f.If we view it like this it doesn't seem much of a problem.

g.He took a coin from the ground and put it in his pocket.

h.The security system here identifies people by their faces.

i.There were many traces of people having grill parties around.

j.The differences are too delicate to describe.

k.Her fingers closed in a tight ball clearly demonstrated her anger.

l.After we have collected all the information on this issue we will process it using special software.

5.*Finish the sentences using your own ideas:*

a.If a person clenches his fists…

b.If we keep track of the advances in robotics …

c.The dome on this building means that …

d.The notable feature of my smart phone is …

e.It can be dangerous to take people's words for it because …

f.The invention of the personal computer paved the way to …

g.From my perspective, home robots …

h. Scientists picked up a signal from a distant galaxy which …

i.If you do several things simultaneously …

j.If a wi-fi hot spot is not accessible you can …

k.Modern computers can facilitate advances in …

l.Buildind a data set requires…

  Speaking

Using the Internet as a source of information, prepare a short (7-8 minutes) presentation for the group on the topic, related to robotics.

Grammar
The participle

English verbs have two participles: the present participle (typing, writing) and the past participle (typed, written).

Present Participle (-ing)	The input unit consists of some devices using different means. Performing addition the computer must have two numbers to be added.

Past participle (-ed)	He has made all the calculations
- in the Present Perfect	manually.
- in the Past Perfect	He had upgraded the computer
- in passive structures	before.
	The device was invented by a well
	known
	scientist.
	These research points are divided
	into two major
	areas.

1. When present participles (-ing) are used like adjectives or adverbs, they are active in meaning.
Computer Science is interesting.
A flickering image is annoying.
He sat in front of the computer trying to concentrate.
2. When past participles (-ed) are used like adjectives or adverbs, they are passive in meaning.
I'm interested in the history of computers.
Look at that broken keyboard.
He sat in his chair, filled with horror at what he had just seen.
3. Participles after a noun define and identify in the same way as relative clauses.
I met two students discussing the advantages of that method. (=who were discussing …)
The device invented by this scientist was another step in the development of computers. (= that was invented)
4. Participles can be used as adverbs. They can describe:
1) two actions that happen one after another.
Clicking on the icon she found software instructions.
If it is important that the first action is completed before the second action begins, we use the perfect participle.
Having set up his own Internet business, he became very rich.
Having punched holes in a card, the operator put it into the computer.
2) two actions that happen one because of another.
Being so good at writing programs, he was able to sell five games he'd

developed to a famous software company.

Not knowing what key to press, I waited patiently.

5. Many verbs are followed by –ing forms.

I spent the day surfing the net.

Don't waste time thinking about this problem.

He keeps on asking me to do research on the Internet.

Exercises

1.Translate the following sentences paying attention to the participles.

1. Like an elaborate calculator, a computer processes information stored in the form of a number.

2. Most main memory is made of integrated circuits containing random access memory (RAM).

3. These operational level systems provide the data that can be collected for use in control and planning systems.

4. The process pictured in Figure 4 is out of control.

6. Usually, a user's request calls attention to the opportunity being proposed for automating an activity and sets this process in motion.

7. Performing addition the computer must have two numbers to be added.

8. When pressing the keys operator makes adding machine operate.

9. When passed through the reading equipment the characters are read in a way similar to a way used for a magnetic tape.

2. Change the sentences using participles.

1. A memory unit is a part of a computer which stores information.

2. A machine which performs a sequence of reasonable operations on information is a computer.

3. An analog computer is a machine which computes by using physical analogs of numerical measurements.

4. Information is a set of marks that have meaning.

5. An input is a section of a computer which accepts information outside the computer.

6. Output is a device which puts information out of the computer.

7. Microcomputers are automating assembly lines, which provide the heart of sophisticated electronic games, making "intelligent" computer peripherals even faster.

8. A microcomputer is a small scale computer which uses a single

microprocessor chip in its architecture.

3. *Change questions according to the example.*
   - What do we call a unit which interprets instructions?
   - What do we call a unit interpreting instructions?
   What do we call a unit which:
   1. senses the interpretation of instructions and produces control signals?
   2. performs mathematical and logical operations?
   3. chooses the proper numbers from the internal memory and sends them to the arithmetic/logic unit at the proper time?
   4. obtains instructions from the main memory?
   5. accepts information outside the computer memory?
   6. memorizes information to be operated on?
   7. brings information out of the computers

4. *Translate into Russian paying attention to the participles.*
   1. Charles Babbage became annoyed by the mathematical errors he was constantly finding in printed navigational and astronomical tables.
   2. Programs could be stored.
   3. Twenty years ago the word "algorithm" was unknown to most educated people.
   4. The operator's console allows the person operating the computer to interact with it.
   5. There are many strong encoding programs available.
   6. The result is a printed document.
   7. In many developing countries the Internet may provide businessmen with a reliable alternative to the expensive and unreliable telecommunication
   systems of these countries.
   8. One of the benefits of distributed data processing is the ability to offload work from the central computer.
   9. There is a relational data model type used in microcomputers.
   10. Mainframes are large computers comprising a number of freestanding units.

Perfect Participles.
If it is important to show that the first action is completed before the

second action begins, we use the **Perfect Participle**.

He sat by the fire **reading** a "PC Magazine". (two actions happened at the same time)

Opening his case, he took out a "PC Magazine". (two actions happen one after another)

Having read the "PC Magazine" he went to bed. (the first action is completed before the second action begins).

5. *Make sentences beginning with Having ...*
   Example:
   Maria handed in her script. She had answered all the questions.
   Having answered all the questions, Maria handed in her script.
   1. He sent her an e-mail. He had tried phoning her several times.
   2. I had received an invitation. I felt I had to take part in that conference.
   3. He couldn't understand the message. He hadn't learnt any English.
   4. After she had scanned in the photos, she made a CD.

6. *Use the participles in the box below to complete the sentences.*

exciting shocking tiring amazing frightened endangered bored shocked surprising tired amazed threatening burning boring excited surprised upsetting frightening threatened burned/burnt astounding

   1. The _____ news made her cry. 2. The _____ three-hour class put me to sleep. 3. The panda is an _____ species. 4. The volcano made _____ noises as it expelled lava. 5. The _____ student fell asleep while writing in her journal. 6. She was overjoyed by the _____ news. 7. The children were _____ after watching the dull movie. 8. Your decision is _____. I was rather _____ by your choice. 9. After three hours in the _____ sun, the swimmers were terribly sun- _____. 10. I was so _____ I couldn't speak. 11. She has shown _____ resilience in the face of her difficulties. 12. The tourists were _____ when they saw the huge waterfall.

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! We can use structure should have+ past participle criticize other people's past actions.
You shouldn't have told him about the party.- I wanted it to be surprise.

Writing
Write sentences about these situations using should have+past participle.

1. Oh, no, they're gong to be late again. (lave home earlier)
   They should have left home earlier.
2. The costumer was really rude. (he/not speak to me like that)
   _____

3. You've made the alar go off. (not press that button)
   _____

   4. I had no idea it was your birthday. (you/ tell me)
      _____

   5. That car drove across the red light. (it/stop)
      _____

   6. She failed her driving test. (she/take/more driving lessons)
      _____

Unit 9
Data Storage

Where do you store the information you need on a regular basis? Do you use any portable devices for that?

Reading comprehension
1.Read the text "Data Storage Technologies of the Future" and match paragraph headings with paragraphs:
a. **Helium Drives**
b. **A need for more storage space**
c. **DNA**
d. **Shingled Magnetic Recording (SMR)**
e. **Holographic data storage**

2. *Which paragraph tells us about:*
a.the method which requires placing tracks closer to each other?
b.the method using another gas instead of air to fill hard drives?
c.special terms recently created to denote big amounts of data?
d.disks similar to DVDs, but a lot more capacitous?
e.a technology that imitates biological mechanisms?

3. *Put the sentences, summarizing the main idea of each paragraph, in the correct order:*
a.The ability of DNA to keep biological information is used to create a new storage method.
b.People will need more and more powerful devices for storing data.
c.Shingled Magnetic recording modifies a traditional method by putting tracks on the disk close to each other.
d.There were some achievements in using holograms for data storage several years ago.
e.Using helium instead of air inside hard drives has a number of advantages.

4. *Answer the questions on the text in your own words:*
a.What would surprise a time-traveller from the future about the way we store our data?
b.What are the three features of storage devices that scientists are trying to improve?
c.Who does Western Digital compete with in creating hard drives?
d.Is helium-based hard drive technology affordable for an ordinary user these days?
e.What is placing tracks in SMR technology compared to?
f.What is peculiar about the driver head in this method?
g.How much data can be stored on the DNA hard drive having the size of a table spoon?
h.How long can we store data on a DNA hard drive?
i.What is the difference between holographic and Blue-ray disks?
j.What happened to the leading developer of holographic data storage technology?

5. *Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.*

Data Storage Technologies of the Future

1._____
If someone from the future–two decades or two centuries from now–traveled back in time to today, they'd probably chuckle at our use of hard drives and USB sticks, the way we now wonder how we ever survived with floppy disks and Zip drives. Want a peek at the kinds of storage devices we'll be using in the future? From helium hard drives to DNA digital storage, here's what the future of data storage technology might look like. Inventors and researchers continue to push the envelope when it comes to capacity, performance, and the physical size of our storage media. Today, Backblaze, a cloud resource, stores 150 petabytes of customer data in its data centers, but in the future, they'll likely be able to store an almost incomprehensible amount of data–zettabytes if not domegemegrottebytes. (A petabyte is equivalent to one million gigabytes, a zettabyte equals one million petabytes, and a domegemegrottebyte equals 1,000 zettabytes.)

With the human race creating and saving an exponential amount of data, this is a great thing and the future of data storage is pretty exciting. Here are a few of the emerging storage technologies that may be signs of what's on the horizon.

2._____

Helium-filled hard drives have lately been pushing the capacity boundaries of hard drives, which are typically filled with air. Last September, Western Digital announced the world's first 10TB hard drive, just a few weeks after Seagate announced its 8TB air-filled hard drive (the largest hard drive at the time). By using helium instead of air, helium-filled drives use less power to spin the disks (which spin more easily thanks to less resistance compared to air), they run cooler, and they can pack in more disks. This summer, Backblaze created a 360TB Storage Pod with 45 HGST 8TB drives and found these to be tops for data load tests. At $0.068 per GB for the 8TB HGST helium drive, the technology is still expensive. Still, these high performance drives will likely only get cheaper and even more expansive–perhaps affordable enough even for consumer use.

3._____

SMR is a new hard drive recording technology. As with helium-filled drives, SMR technology allows for higher capacity on hard drives than traditional storage methods. SMR achieves higher areal densities by squeezing tracks closer together. Tracks overlap one another, like shingles on a roof, allowing more data to be written to the same space. As new data is written, the drive tracks are trimmed, or shingled. Because the reader element on the drive head is smaller than the writer, all data can still be read off the trimmed track without compromise to data integrity or reliability. In addition, traditional reader and writer elements can be used for SMR. This does not require significant new production capital to be used in a product, and will enable SMR-enabled HDDs to help keep costs low.

4._____

Perhaps the strangest new storage technology of the future is DNA. Yes, the molecule that stores biological information could be used to store other kinds of data. Harvard researchers in 2012 were able to encode DNA with digital information, including a 53,400-word book in HTML, eleven JPEG images, and one JavaScript program. DNA offers incredible storage density, 2.2 petabytes per gram, which means that a DNA hard drive about

the size of a teaspoon <u>could fit all of the world's data on it</u>–every song ever composed, book ever written, video ever shared. Besides the space savings, DNA is ideal for long-term storage: While <u>you're lucky if your hard drive lasts four years</u> and optical disks are susceptible to heat and humidity, lead Harvard researcher <u>George Church says</u>"You can drop DNA wherever you want, in the desert or your backyard, and it will be there 400,000 years later."

DNA takes a long time to read and write to and, as you might imagine, the technology is still too expensive to be usable now. According to <u>New Scientist</u>, in one recent study the cost to encode 83 kilobytes was £1000 (about $1,500 US dollars). Still, scientists are encoding information into artificial DNA and adding it to bacteria. It's like a sci-fi novel that's currently being written and lived. DNA could be the ultimate eternal drive one day.

5._____

Scientists and tech companies have been working on holographic data storage for at least a decade. In 2011, GE demonstrated its holographic discs storage: DVD-sized disks that could store 500GB thanks to cramming the data onto layers of tiny holograms (unlike Blu-Ray discs, which store data just on the surface). These discs also had a relatively long lifespan prediction of 30 or more years. Not much has been said about the Holographic Virtual Disc (HVD) lately, though, and one of the biggest developers of the holographic drives, InPhase Technologies, went bankrupt in 2010. That's not to say the technology won't be a prominent storage technology in the future.

<u>Vocabulary activities</u>

1. *Study the vocabulary list for this unit and try to single out the words related to IT. You might need to use a dictionary to check the meaning of some words:*
A storage device, (to) push the envelope, capacity, performance, incomprehensible, (to) push the boundaries, (to) emerge, (to) spin the disk, expansive, affordable, density, (to) overlap, incredible, long-term, susceptive, humidity, (to) encode, artificial, (to) cram, (to) go bankrupt.
2.Match the words with their definitions:

1.a storage device	a.unbelievable

2.(to) push the envelope	b.unnatural
3.capacity	c.sensitive
4.performance	d.a quality of having the amount of water in a gas
5.incomprehensible	e.inexpensive
6.(to) push the boundaries	f.(to) convert into some format
7.(to) emerge	g.(to) fill some space completely
8.(to) spin the disk	h.a quality showing how something works
9.expansive	i.(to) lose all the money
10.affordable	j.(to) make the disl rotate
11.density	k.(to) broaden the borders
12.(to) overlap	l.(to) have a common area
13.incredible	m.a piece of equipment for keeping data
14.long-term	n.volume
15.susceptive	o.the degree of compactness
16.humidity	p.impossible to understand
17.(to) encode	q.(to) appear
18.artificial	r.covering a wide area
19.(to) cram	s.(to) be innovative
20.(to) go bankrupt	t.lasting for a long time

3. *Make up all possible collocations using the vocabulary list, for example: incredible capacity…*
4. *Paraphrase the sentences using the active vocabulary:*
a.This news is unbelievable.
b.The volume of this disk is 1 TB.
c.His behavior looks a bit unnatural.
d.I need a new piece of equipment for keeping data.
e.In this matter our interests have a common area.
f.This city covers a wide area.
g.Some people are very sensitive to changes.
h.This project is going to take a long time.
i.This data needs to be converted into another format.
j.You shouldn't fill the whole space with your things.
k.We should check how the disk works.

l.I can feel that the amount of water in the air is high.

5. *Finish the sentences using your own ideas:*
a.If the design looks artificial …
b.The view was incredible and …
c.If you need to describe the performance of…
d.The company went bankrupt and …
e.If you cram all the material the night before the exam …
f.Inventors and designers always push the envelope in …
g.The premises are very expansive so …
h.My favorite storage device is …
i.This equipment is affordable because …
j.High level of humidity makes …
k.Soon a device will emerge which …
l.Optimal capacity for a laptop HDD …

Speaking
Choose the most promising- in your opinion- storage technology mentioned
in the text and prepare a 7-8 minute presentation, explaining your choice.

Grammar
The Complex object
The combination of a noun in the common case or a pronoun in the
objective case and an infinitive used after the predicate forms a **complex
object**. The relation between the noun (pronoun) and the infinitive is that of
subject and predicate.
I heard him call my name.
The infinitive may be used as a part of a complex object after the following
verbs:
 to hear, to see, to watch, to feel, to let, to make. After these verbs the
infinitive has no particle 'to'.

The use of the **Infinitive** with or without *to*, or the **Participle** depends
on the verb that is the Predicate.

After the verbs: **see,**	After the verbs: **let, make**	After such verbs as: **want,**

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feel, hear, watch, notice		expect, believe, know, advise, consider, order, tell, allow, find, think, like, hate etc.
1.*He **noticed** the computer work with breaks.* 2.*He **noticed** the computer* working *with breaks.* 3. *He **heard** him speaking on phone.* 4. *He **watched** her e-mail her friend.*	1.*I **let** him transmit information to another network.* 2. *Before writing a program my boss **made** me write an algorithm.* 3. *The invention of a transistor **let** the computers work more quickly and have far fewer failures.* 4. *The recent achievements in Computer Science make us think about next computer generation.* Note: The verbs let and allow have similar meaning, but the verb allow is used with the passive form of the infinitive.	1.*They **advised** us to use this operational system.* 2. *He **wants** us to abolish files.* 3. *The specialists **expect** new generation of designers to get tired of stereotypes.* 4. *I **know** him to be a good programmer.* 5. *High level languages use words from natural languages and **allow** these words and mathematical symbols to be combined according to various rules.*

Note:
Complex Object is not used with the verbs **to hear, to see** and **to feel** when they have another meaning.
I feel that my father is right. (= I have the opinion or consider)
I see that you are not going to give up. (= I have the opinion or consider)
They hear that a new lecturer is coming to our department. (= They know)

The Complex Object with **Participle II**.

I want this work to be done = I want this work done
Examples:
I want this computer *to be repaired*. = I want this computer *repaired*.
He wants new technologies *to be developed*. = He wants new technologies *developed.*
Exersises
1. *Change the complex sentences into simple ones using complex objects.*
   A: I think that the flat is very cosy.
   B: I think the flat to be very cosy.
1. I think that a shower is a most important convenience.
2. I think that our water supply is not good.
3. I saw that he pressed the bell.
4. I did not expect that they would come in time.
5. I watched how he spoke on the phone.
6. He heard that the telephone rang.
7. I saw that he took out his latch-key.
8. She believed that he had stolen her money to pay his debts.
9. He wants that this work will be done.
10. He wants that this work will have been done by Friday

2. *Practise in using Comlpex Object after 'make'. Change the sentences according to the model.*
   A: His mother advised him to write a story.
   B: His mother made him write a story.
1. His father advised him to quit smoking.
2. His brother advised him to get a new job.
3. Mary's teacher advised her to take part in the writing contest.
4. Her parents advised her to move to Chicago.

3. *Open the brackets*.
1. I want (she) to be my wife.
2. My brother taught (I) to swim and dive.
3. They would like (we) to read aloud.
4. Bob advised (she) to stay for another week.

5. We expect (he) to arrive at noon.
6. I heard (you) open the door.
7. Dad always makes (I) go fishing with him every weekend.
8. Our parents expect (we) to stop quarreling.
9. Sara never lets (he) drive her car.
10. I saw (you) cross the street

4. *Open the brackets*
   1. A mouse lets a user (point) to any spot on a monitor.
   2. We know each device (perform) a precise task.
   3. People expect minicomputers (not require) generally air conditional environment.
   4. Have you known the distinguishing feature of microcomputers (be) their ability to process on a single microprocessor chip?
   5. Branching or decision-making aspects are the features of algorithms that sometimes make algorithmic models (be) more suitable than traditional mathematical models.
   6. We expect programs in high level languages (be) shorter than equivalent programs in low level languages.
   7. Some languages allow loops (be repeated) while some condition is true, or until a condition becomes true.
   8. Many languages allow expression of any degree of complexity (be evaluated) in one statement.
   9. The improvements in the technology of word processing will make us (look) at language and computing in a new light

5. Open the brackets. Translate the sentences.
   1. We have these tasks (solve).
   2. A young scientist has new principles of computers (develop).
   3. Technical specialists have more reliable security codes (work out).
   4. The students have high level languages (describe).
   5. We have a long list of calculations (perform).

Complex Subject
The Complex Subject is a syntactic structure which consists of a noun in the Common Case or a Pronoun in the Nominative Case and an Infinitive. It is used with certain verbs in the Passive or in the Active Voice. We use

an ordinary Infinitive if the action reported is parallel with the time of reporting: *Elvis Presley was said to be the king of rock and roll.* We use a perfect Infinitive if the action happened before the time of reporting: *The plane is supposed to have been hijacked*.

Complex Subject in the English language is used with certain verbs. These verbs can be divided into several groups. So, as a predicate in a sentence can be verbs that express:

1. Awareness, knowledge, *approval:* to know *(know),* to think *(think),* to state (say, to *claim),* to report *(report),* to say *(say),* to announce (notify).
   She is known to live in France. — It is known that she lived in France.
   The film festival was reported to take place in July this year. — Reports that the festival will be held in July this year.
   He was thought to study here. — I think that he is studying here.

2. *Assumption:* to expect *(expect),* to suppose (to *suggest),* to believe *(believe),* to consider (suppose to *believe),* to ask (ask).
   The student is expected to become a famous writer. — It is expected that the student will become a famous writer.
   The tickets were supposed to be sold in the afternoon. — Suggests that the tickets will be sold for dinner.

3. *Perception:* to see (to *see),* to hear *(hear),* to notice (observe).
   The car was seen to disappear. — Did you see how the car disappeared.
   She was seen to enter. — Did you see how she entered.

4. *Complex Subject* also used in English, after such phrases as *to be likely (probably),* to be unlikely *(unlikely),* to be certain *(surely),* to be sure (optional).
   She is likely to succeed. — Probably, it will be a success.
   The bag is not likely to have been stolen. — It is unlikely that the bag was stolen.

All of these verbs as predicates may stand at any time, but only in the passive (passive voice —Passive voice). There is a group of verbs that are used to design *Complex Subject* in English, but in the real (active — Active voice) pledge. This following *verbs:* to appear — appear to *appear;* to seem — *appear;* to happen — *happen;* to prove / to turn out — turn.
The second part of the movie appeared to be less interesting. — It turned out that the second part of the film is not that interesting.
He seems to be sleeping. — It seems that he was asleep.

In fact, the construction of *Complex Object Complex Subject,* and do not pose any difficulty, on the contrary, facilitate our speech, making it more similar to the English language, not the language of the native language. They are very popular and widely used.

1. *Translate into Russian*
   1. He was said to be one of the most promising nuclear physicists.
   2. (Apple) Mac is known to be the common name for Apple Macintosh range of computers.
   3. New phones are expected to revolutionize the way we communicate.
   4. This company was heard to produce specially written applications.
   5. Most hotels were found to use systems which have been converted for computers.
   6. DVD is known to hold complete movie and to be like CD in size and thickness.
   7. Human:machine equivalence is expected to appear by about 2015.
   8. In the near future shops are believed to be places where people try on clothes, not buy them.
   9. The number of the unemployed is reported to be increasing with every year.
   10. The student was seen to be studying the extracts from a program flowchart.
   11. A new program with 3D graphics was supposed to encourage young children to tell stories.
   12. These devices are considered to be very effective.
   13. The helium atom was found to have two electrons.
   14. I didn't know what I was expected to say to that, so I said nothing.
2. *Translate into English using Complex Object*.
   1. Известно, что марсианские (martian) каналы были открыты в 1877 году.
   2. Предполагают, что заседание закончится в десять часов.
   3. Полагают, что они знают об этом больше, чем хотят показать.
   4. Джим оказался храбрым мальчиком.
   5. Рочестер случайно встретил Джейн по дороге домой.
   6. Говорят, что он работает над своим изобретением уже несколько лет.
   7. Говорят, что эта статья переведена на все языки мира.

8. Вы, кажется, много читали до поступления в университет.

9. Как известно, Жуковский был прекрасным педагогом и лектором.

10. Никак не ожидали, что холодная погода наступит так

3. *Read the article and identify constructions with Complex Subject*

Fears for Lone Missing Climber Fears are growing here for a lone climber missing for the past 48 hours. Jamie Biddals, 32, from New Zealand, is known to have left Kathmandu alone six days ago but has not been seen since. He is thought to have only a small amount of food and he is believed to be wearing only lightweight climbing clothes. As for equipment, he is known to be carrying a small rucksack and a lightweight tent. He is said to have been heading for an old base camp. The weather has deteriorated during the last 48 hours, and he is thought to have been trying to get to the camp when a severe blizzard started. Jamie is considered to be one of the best climbers in the world but there are still fears for his safety in these conditions.

4. *Paraphrase the sentences using the Complex Subject.*

Example: We heard that a car stopped outside the door.

A car was heard to stop outside the door.

1. People consider a computer virus to cause harm to computer systems.

2. It has been announced that Professor Hopkins is arriving next week.

3. It is expected that we will have the right hardware to recreate human intelligence by 2020.

4. It is said that the most important aspect of a website is its navigation scheme.

5. It is known that WAP allows users to send e-mails and access information from the Internet on a mobile phone.

6. It is believed that computers will catch up with the power and speed of the human brain by 2050.

7. It was reported that the flood had caused a lot of damage to the country.

8. It was supposed that the children would learn how to move a file.

9. It has been found that mineral water is very good for the liver.

10. Scientists consider that electricity exists throughout space.

11. People think that computers have many remarkable powers.

5. *Translate the sentences into Russian. Pay attention to the*

Complex Subject.

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1. By around 2030 we are likely to have the technology to directly link our brain to the ultra smart computers.
2. The way we use machines today is sure to change very soon.
3. Computers are certain to be used to develop other faster computers.
4. We are likely to find out how the brain works and to recreate its operation using powerful computers.
5. But we are unlikely to program in human emotions, moral responsibilities and the uniqueness of the individual.
6. Printed books are still sure to be the best way to preserve knowledge, as paper lasts from 50 to 500 years. Most electronic storage media are obsolete in ten to twenty years.
7. By 2025 electronic publishing is certain to catch up with traditional publishing.
8. Don't worry. Everything is sure to turn out all right.
9. Future networks are more likely to have the entire system based on a single loop.
10. How likely are these predictions to come true?

Writing
Write sentences similar in meaning to each of these predictions with the Complex Subject. Use sure, likely, unlikely, certain:
Example: I don't think we will use cable connections in future. (unlikely)
We are unlikely to use cable connections in future.
1. Computers will be easily used to develop other computers. (likely)
2. I don't think we'll replace teachers with robots. (unlikely)
3. There's a chance we'll develop alternatives to silicon. (likely)
4. I really don't think we will have replaced the motor car before 2020. (unlikely)
5. I'm almost sure we'll replace CRT monitors in the next few years. (sure)
6. I'm definite we'll have more virtual personalities on the Web. (certain)
7. We might adopt Bluetooth as a standard for wireless applications. (likely)
8. Doctors may be able to operate on patients at a distance. (quite likely)

9. I'm sure we won't use magnetic tape. (certain)

Unit 10
Big Data
What do you know about Big Data? What kind of information can be processed using Big Data method?
Reading comprehension

1.Read the text "Five Reasons the Future of Big Data Requires Human-Machine Cooperation"
and match paragraph headings with paragraphs:
a.**Machines need direction.**
b. **Long-term flexibility**.
c. **Not all things are easily quantifiable.**(4)
d. **Automated data processing does not exclude human participation**
e. **Why Humans Are Still Necessary (and Why We Need Machines)**
f. **Human and machine biases.**

2 Which paragraph tells us about:.
a.inability of machines to see patterns and meaning in data?
b.the role of Elon Musk in creating human-machine interface?
c.saving money by making the right decisions?
d.the difficulty of choosing proper criterion for data processing?
e.the danger of using assumptions in data analysis?
f.doubts about human participation in data analysis?
g.ability of humans to ignore unnecessary data?

3. Put the sentences, summarizing the main idea of each paragraph, in the correct order:
a.The function of making decisions should belong to humans.
b.Though many companies are already using machines to manage data, they will still need humans.
c.Both humans and machines have their limitations in processing data.
d.Machines can't ask proper questions and save time in working with big amount of data.

e.Cooperation of humans and machines gives great flexibility.

f.There are some questions about the role of humans and machines in big data.

4 *Answer the questions on the text in your own words:*
a.How is the situation changing in Big Data management?
b.In what way are machines stronger than humans?
c.What are machines good at when working with Big Data?
d.Why is it difficult for machine to choose one option in some cases?
e.What is human's weak point in working with data?
f.Why should machines be taught certain patterns?
g.Why is it not necessary to embed machines into humans' brains?

5. *Summarize the main ideas of the text in 12-15 sentences using paragraph headings as a plan.*

Five Reasons the Future of Big Data Requires Human-Machine Cooperation

1._____

Collecting, analyzing, and interpreting data is becoming essential for more businesses and more individuals than ever before. Now that we have the automated tools to process this data, we can make better decisions—and more cost-efficiently as well. As more companies employ these tactics, competition rises, and it becomes even more imperative to take advantage of this efficiency. However, the real future of data management doesn't solely lie with machines—instead, it lies with human-machine interfaces and cooperation.

2._____

We already have machines that can beat human beings in games of pure logic—even ridiculously complex ones like Go—so, assuming machine learning algorithms get even better over the next several years, why would humans even be necessary in the collection and interpretation of big data? And if humans are somehow better at making these decisions, why bother creating the machines?

3._____

 Machines—or at least those we can foresee—are highly skilled at answering questions, and terrible at generating the questions that need to be asked. Big

data highlights this problem perfectly; imagine you have quadrillions of data points, collected from millions of people. In all likelihood, if you knew the right questions to ask, and had a machine to pick through the data, you could easily find the answer you seek. But machines don't see patterns or meaning in data; they can only fetch it, or combine it in ways instructed by humans. Accordingly, humans remain a necessary part of the equation.

4._____

 You should also realize that not all decisions are easily quantifiable. In some scenarios, you'll be presented with two options, one of which is inherently more cost-efficient, with no real downsides. But in others, the decision is not so clear. Take project portfolio management as an example; you can't use a single criterion, or even an unchanging aggregation of criteria, to prioritize one project over another. That's why it's helpful for machines to quantify and project what they can, but it's still necessary for humans to make the final call.

5._____

Humans alone aren't great at decision-making. When faced with objective values and data, we can't help but distort that information based on our own persistent cognitive biases. For example, if we plumb the data with an assumption already in mind—even if it's only subtle, and in the background—we'll end up finding and prioritizing any data that reinforces those assumptions. Machines can't do this, because they won't extend beyond the logical parameters set for them.

 AI has yet to exceed the general abilities of the human brain, but in specific applications, it can't be beat. Anything requiring mathematical calculations can be done faster by a machine than with a human attempting a manual approach. However, machines have limits as well; humans see complex sets of data and automatically filter out what's unnecessary, instinctively honing in on high-level patterns. In machines, those patterns have to be taught or discovered from the ground up, or else, they'll brute-force the calculations one at a time until they arrive at a conclusion; this is why Go was much harder for computer programs to master than chess. With both humans and machines having processing limitations, they need each other to keep advancing.

6._____

 Great thinkers have long speculated about the power of a machine-human interface, and some (like Elon Musk) are working hard to make it a reality.

We don't need to have machines embedded in our brains, but working together with human-machine interfaces gives us far more flexibility in future developments than abandoning tech or prioritizing tech usage exclusively.

Vocabulary activities

1. *Study the vocabulary list for this unit and try to single out the words related to IT. You might need to use a dictionary to check the meaning of some words:*
(to) interpret data, an automated tool, cost-efficient, (to) employ, imperative, (to) take advantage of, (to) be skilled at, (to) highlight, in all likelihood, (to) fetch, equation, quantifiable, inherent, a downside, (to) prioritize, (to) be faced with, (to) attempt, (to) reinforce, flexibility, (to) abandon

2. *Make up all possible collocations using the vocabulary list, for example: (to)be skilled at interpreting data…*

3. *Match the words with their definitions:*

1.(to) interpret data	a.(to) go and bring something
2.an automated tool	b.(to) give a job or to use
3.cost-efficient	c.a drawback or a weak point
4.(to) employ	d.(to) decide which point is more important
5.imperative	e.the one which can be measured or counted
6.(to) take advantage of	f.an ability to adapt to changes
7.(to) be skilled at	g.(to) leave
8.(to) highlight	h.an instrument capable of working without human control
9.in all likelihood	i.(to) explain information
10.(to) fetch	j.(to) come across something
11.equation	k.economical
12.quantifiable	l.necessary
13.inherent	m.(to) be able to do something professionally
14.a downside	n.(to) try
15.(to) prioritize	o.(to) stress or emphasize
16.(to) be faced with	p.(to) use a lucky opportunity

17.(to) attempt	q.most probably
18.(to) reinforce	r.a mathematical formula
19.flexibility	s.existing as an inseparable part of something
20.(to) abandon	t.(to) strengthen or support

4. *Paraphrase the sentences using the active vocabulary:*
a.This feature is an inseparable part of this design.
b.His main weak point is lack of organization.
c.You should be able to decide which aspects are more important than others.
d.He ordered the dog to go and bring the ball.
e.He wanted to stress that the project required time and commitment.
g.He wanted to try and solve that mathematical problem.
h.Most probably, the prospects are good.
i.It wasn't easy to explain this kind of information.
j.It was stupid not to use this lucky opportunity.
k.A real specialists should be able to do it professionally.
l.it was difficult for him to live the place where he had grown.
m.Suddenly he came across a very unusual feature.

5 *Finish the sentences using your own ideas:*
a.Such flexibility makes it possible to …
b.Though his attempt failed, …
c.If you abandon your bad habits…
d.In all likelihood, his talents …
e.Though this feature is not quantifiable, …
f.It is imperative that students …
g.If you are faced with a dilemma, …
h.Not all designs are cost-efficient, some …
i.You should employ this data, or …
j.If you abandon your illusions, you will see …
k.To become a good programmer you need to be skilled at …
l.If you don't learn to prioritize, …

Speaking

Search the Web for the information on other areas where human-machine interaction is vitally important and prepare a short (7-8 minutes) presentation on this topic.

Grammar
Reported Speech
When we report someone's words we can do it in two ways. We can use **direct speech** with quotation marks (*"I work in a bank"*), or we can use **reported speech** (*He said he worked in a bank*.)
In **reported speech** the tenses, word-order and pronouns may be different from those in the original sentence.
Present simple and present continuous tenses
- Direct speech: *"I travel a lot in my job"* Reported speech: *He said that he travelled a lot in his job.*
  The present simple tense (*I travel*) usually changes to the past simple (*he travelled*) in reported speech.
- Direct speech: *"Be quiet. The baby's sleeping."* Reported speech: *She told me to be quiet because the baby was sleeping.*
  The present continuous usually changes to the past continuous.

NB:
- *"I work in Italy"* Reported speech: *He told me that he works in Italy.*
  It isn't always necessary to change the tense. If something is still true now – he *still* works in Italy – we can use the present simple in the reported sentence
Past simple and past continuous tenses
- Direct speech: *"We lived in China for 5 years."* Reported speech: *She told me they had lived in China for 5 years.*
  The past simple tense (*we lived*) usually changes to the past perfect (*they had lived*) in reported speech.
- Direct speech: *"I was walking down the road when I saw the accident."* Reported speech: *He told me he'd been walking down the road when he'd seen the accident.*
  The past continuous usually changes to the past perfect continuous.
Perfect tenses
- Direct speech: *"They've always been very kind to me".* Reported speech: *She said they'd always been very kind to her.*

The present perfect tense (*have always been*) usually changes to the past perfect tense (*had always been*).

- Direct speech: *"They had already eaten when I arrived"* Reported speech: *He said they'd already eaten when he'd arrived.*

The past perfect tense does not change in reported speech.

Say -Tell

We use **say** in Direct speech. We also use **say** in Reported speech when **say** is not followed by the person the words were spoken to. We use **tell** in Reported speech when **tell** is followed by the person the words were spoken to.

Direct speech: She says to me, "I work for a chip company".

Reported speech: She tells me that she works for a chip company.

Reported speech: She says that she works for a chip company.

Expressions with **say**	**say good morning, say something, say one's prayers, say so**
Expressions with **tell**	**tell the truth, tell a lie, tell a secret, tell a story, tell the time, tell the difference, tell somebody one's name, tell somebody the way, tell one from another.**

1. Fill in say or tell in the correct form.

1. Can you _____ me what time the lecture starts?
2. She _____ she will never speak to him again.
3. I promise to _____ the truth, the whole truth and nothing but the truth.
4. The lecturer always_____ "good morning" to his students.
5. The old woman _____ her prayers and went to bed.
6. Sometimes it's hard to _____one program from another.
7. Who _____ you the computer was still under warranty?
8. Please, _____ me what you are doing with the files.
9. "I'd like you to add some new modules to the operating system", the director _____ to the systems programmer.
10. The student _____ us about safe ways of paying for Internet

shopping.

a. *Turn the following extract of the interview of Kenneth Cukier, into Indirect speech. Use the reporting verbs (say, tell, explain, add etc.) in Present Simple.*

Big data will transform the world, but issues around privacy and propensity need to be resolved, says Kenneth Cukier

i. **Can you tell us a little bit about your role as data editor for The Economist?**

The position is a new one, but it stems that the new wealth of data and new tools to process and visualise it means that we as journalists can tell stories in new ways. We can invert the form and make the data the story, while just using a judicious anecdote to illustrate the information. In this respect, The Economist can be said to have been practising data journalism for 170 years; we're known for our data-driven content like the Big Mac index to compare currencies.

-How do you characterise big data?

There is no concrete definition and that is probably a good thing since to define is also to limit. We can understand big data by its features, and the central one is this: we can do things with a huge corpus of data that we are unable to do with smaller amounts, to extract new insights and create new sources of value. This encompasses things like machine learning, in which we have self-driving cars and decent language translation. This is not because we have faster chips or cleverer algorithms, but because we have more data (and the tools to process it at a vast and affordable scale).

-In what ways is big data transforming the world?

We will go from a world that we understand by experiencing it on an individual level, to one we comprehend on a more universal level. By that, I mean that we tend to base decisions on small amounts of data that are usually just a simulacrum of the complex reality we are trying to deal with, and tailored to our cognitive limitations to make sense of it. Tomorrow, we will use big data to surpass our faith in our individual powers and instead place trust in the data (though not blind trust).

Take medicine. Today, doctors make diagnoses based on their judgement. Sounds reasonable? In time, this will probably be considered as barbaric as bloodletting. Why not use big data? We could enshrine the experience of all doctors, and of hundreds of millions of patients over decades, to identify

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the best treatments to achieve the best outcomes and spot hidden adverse drug side effects. After all, the sum of all medical knowledge isn't in the possession of any single physician. But if we aggregate vast troves of healthcare information, we may learn what works best, just as Amazon recommends books not based on the inklings of a literary critic but from correlating sales data. This will mark a revolution in how society uses information

-what will be your message to the audience at Big Data Week?

Big data is something very new and will touch all aspects of society. Whilst it helps to have the technical skills, the key to success will be in applying one's imagination, creativity, intellectual ambition and risk-taking – characteristics that are intrinsically human and cannot be reduced to number crunching.

Reported Commands/Requests/Suggestions

To report commands, requests, suggestions etc. we use a reporting verb (*advise ,ask ,suggest ,beg, order ,tell* etc.) followed by a *to-infinitive*, a *not to-infinitive* or an- *ing form* (after *sugges*t).

Direct speech	Reported speech
He says to me, "Avoid phoning in peak times". He says to me, "Don't give your password to anybody". He says, "Let's reinstall the sound drivers".	He advises asks me **to avoid** tells phoning in recommends peak times. He asks tells me **not to give** orders my password recommends to anybody. He suggests reinstalling the sound drivers.

David is a computing support officer. He is giving a user advice about the problem. Report his commands using reporting verbs in Present Simple.

1. Give me the service tag number.
2. Wait a moment.
3. Describe what the problem is.

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4. Don't be in a hurry.

5. Try to reinstall the sound drivers.

6. Contact us again if that doesn't cure the problem.

7. Quote this job number. It's E83095.And tell me your name, please.

8. Don't switch off without closing your PC.

9. Don't forget to keep in touch with us if there's still a problem.

Reported Questions

In *Reported Questions* we use affirmative word order and the question mark is omitted. To report a question we use:

a) **ask + WH-word** (who, what etc.) when the direct question begins with such a word

b) **ask + if/whether** when the direct question begins with an auxiliary verb(do,has,can etc.)

Pronouns, possessive adjectives change according to the context.

c) **do, does, did** in reported questions are omitted.

Indirect questions are different from **Reported questions**. We use Indirect questions when we ask for information, whereas we use Reported questions to report someone else's questions. Indirect questions are introduced with

Could you tell me …?

Do know …?

I wonder …

I want to know …

and their verb is in the affirmative

Change to reported questions .

1. He asked:"Do you live in the country Peter?"

He asked me

_____

_____

2. They inquired:" Did you see Charles yesterday morning"?

They inquired

_____

_____

3. She wanted to know:"Will we get there on time, John?"

She wanted to know

_____

—

4. The policeman wondered:"Don't you know the traffic regulations?"
The policeman wondered

_____

5. The commander asked:"Do our soldiers have enough weapons?"
The commander wanted to know

_____

6. The coach wanted to know:" Can you do your best boys?"
The coach wanted to know

_____

7. He asked:"Are we going to start work tomorrow?"
He asked

_____
_____

8. They inquired:"Have they ever been to America?"
They inquired

_____
_____

9. She wanted to know:" Is he staying with his family now?"
She wanted to know

_____
__

10. The residents asked:"Are you going to have our roads repaired,
mayor?"
The residents asked the mayor

_____

11. The watchmaker asked:"Did you buy this Swiss watch at my place"?
The watchmaker asked

_____

12. The instructor asked me:" have you ever worked with groups from
abroad?"
The instructor asked me

_____

13. She wanted to know:"Were you informed about the meeting
yesterday?"
She wanted to know

_____
—

14. The assistant asked:"Are you looking for something?"
The assistant asked
_____
__

15. The pilot asked:" Have you prepared the runway for our flight?"
The pilot asked
_____
_____

16. Sarah asked:"Do I have to sweep the floor after work?"
Sarah asked
_____
_____

17. They wanted to know:" Will we go for a walk if the weather is fine?"
They wanted to know
_____
_

18. The doctor wanted to know:"Have you had the symptoms for a long time?"
The doctor wanted to know
_____

19. The flight attendant asked:"Could you fasten your seat belts, please?"
The flight attendant asked
_____

20. Daddy wanted to know:"Are you going to be a lawyer Kevin?"
Daddy wanted to know _____

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