MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL TECHNICAL UNIVERSITY OF UKRAINE
«IGOR SIKORSKY KYIV POLYTECHNIC INSTITUTE»

FOREIGN LANGUAGE – ENGLISH: INFORMATION TECHNOLOGY (PART 1)

Recommended by Igor Sikorsky KPI Methodological Council
as a study e-book for bachelor's degree first-year students
of specialty 124 «System analysis»

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The Study Electronic Book
Foreign language – English:
Information technology (Part 1)

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ABSTRACT. This study e-book is recommended for work with bachelor's degree first-year students of the Institute for Applied System Analysis, Igor Sikorsky Kyiv Polytechnic Institute. The main goal of the publication is to develop English communicative skills in speaking, listening, reading, writing, as well as developing and improving translation skills. The book consists of six units and five appendixes which comprise real professional themes for teaching future specialists in the field of information technology. This book meets the requirements of the syllabus within the discipline «Foreign language».

CONTENTS

PREFACE

The e-book «Information technology for first-year students. Part 1» is recommended for bachelor's degree first-year English language classroom work as well as for students' self-study activities at the Institute for Applied System Analysis, specialty 124 «System analysis», NTUU «Igor Sikorsky KPI».

The e-book consists of six units, three self-assessment modules, grammar reference, list of useful vocabulary and five appendices. Each unit includes: lead-in, listening, reading, language in use, grammar, vocabulary, translation, speaking, and writing tasks and up-to-date authentic texts to develop all language skills. Information-rich cognitive material and a variety of lexical tasks will help to increase students' motivation to learn English during both practical classes and homework.

The authentic information for units has been taken from different printed and electronic sources, so the list of references is presented. Unfortunately, we have been unable to trace some articles and would appreciate any information which would enable us to do so. While developing the material we have shared a lot of experience with students, colleagues and friends. We would like to express our thanks to them all for their participation, suggestions and comments, and hope that you will also share that pleasure we had by working on the course.

We hope that this book will be practical and motivating for your students.

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UNIT 1. LIVING IN A DIGITAL AGE

Retrieved from https://bit.ly/3rujrDE

1. LEAD-IN

1.1. Discuss the following questions in pairs and share the information:

1. What gadgets do you use daily?
2. What are some good points about social networking?
3. What are the advantages and disadvantages of watching Smart TV?
4. What kind of goods or services have you bought online?
5. What do you know about artificial intelligence?
6. What is robotics?

1.2. Practice the pronunciation of English terms, translate them into Ukrainian and explain their meaning in English:

term	translation	meaning
digital revolution		
innovation		
agility		
technological advancements		
digitization		
automation		
disruptive technologies		

modified business models		
technological trends		

1.3. Complete the text with the words from the table:

science	particular	published	intelligence	expensive
interference	competition	incredibly	learning	advances

Companies including IBM, Microsoft and Google are all in 1._____to build reliable quantum computers. In fact, in September 2019, Google AI and NASA 2._____a joint paper that claimed to have achieved «quantum supremacy». This is when a quantum computer outperforms a traditional one at a 3._____task. Quantum computers have the potential to completely transform data 4._____. They also have the potential to accelerate the development of artificial 5._____, virtual reality, big data, deep 6._____, encryption, medicine etc. The downside is that quantum computers are currently 7._____difficult to build and sensitive to 8._____. Quantum computers have enormous upside. But are also 9._____and unstable. Despite current limitations, it's fair to expect further 10._____from Google and others that will help make quantum computers practical to use.

Retrieved from https://bit.ly/36CN1Nj

2. LISTENING

2.1. Work in teams (3-4 students). Discuss engineering and IT trends of this year using computer terms from task 1.2.

2.2. You will watch the video explaining the computer and communication engineering trends in 2021. Before you watch brainstorm and complete the chart. Try to predict what the video will be about.

	your ideas
1	
2	

3	
4	
5	

2.3. Watch the video and compare your answers in Task 2.2 with your groupmates:

link	QR code
https://www.youtube.com/watch?v=MxQRgH1t6BI	

2.4. Watch the video again and try to answer the questions:

1. Who is the presenter?
2. What was the presenter talking about?
3. What technical information or interesting facts would you add to the presenter's speech?

2.5. After watching the video mark the following sentences as TRUE or FALSE:

1	The potent blend of electronics with communication has transcended as the discipline of the digital world from mobile phones and computers to televisions and ultra modern satellites.	**True**	**False**
2	In computer science engineering the popular choice this year electronics and communication engineering was the first most offered course	**True**	**False**
3	The computer systems design industry is the workforce's largest employer	**True**	**False**
4	The eligibility criteria is simple with 100 aggregate marks in class	**True**	**False**

5	A recent collective survey conducted by Assocham and NEC corporations suggests that India's electronics market is presumed to reach 400 billion dollars by the year 2020	**True**	**False**
6	IT specialists are in demand in India nowadays	**True**	**False**

3. READING

3.1. Pronounce the following words and phrases, translate them into Ukrainian and memorize:

word / phrase	**translation**
cognition	
perception	
artificial intelligence	
speech recognition	
consumer	
machine learning	
bandwidth	
performance	
long-distance communication	
follow customer behaviour	
time-sensitive data	
human augmentation	

3.2. Work in pairs. Make up your own sentences in English with any 3-4 words or phrases from the task above. Write them down and ask your groupmate to translate them into Ukrainian.

3.3. Look through the passages and choose suitable titles for them out of the given ones. Three of them are extra titles:

1. Edge computing
2. Internet of behaviors

3. Quantum computing
4. 5G and enhanced connectivity
5. Artificial Intelligence
6. Cybersecurity
7. Blockchain
8. Human augmentation
9. Buying goods or services
10. Distributed cloud
11. Augmented reality and virtual reality

LATEST TECHNOLOGY TRENDS

Retrieved from https://bit.ly/3rujrDE

A It has made a lot of hype over the last decade. Still, it remains one of the leading emerging technology developments because its significant impacts on how we live, work, and play are still in their inception. AI is now well-known for its presence in image and speech recognition, ride-sharing apps, mobile personal assistants, navigation apps, and various other applications. Besides that, Artificial Intelligence is to investigate interactions to discover previously undetected connections and assess facility demand in real-time to allocate resources and identify dynamic patterns among consumers. Machine Learning, a subset of AI, is used in a wide range of industries, resulting in a surge in the market for skilled workers.

B Faster and more stable internet means more than only loading webpages faster and spending less time waiting for YouTube videos to load. From 3G onwards, each

advancement of mobile connectivity has opened up new internet use cases. As bandwidths expanded, 3G enabled online access and data-driven services on mobile devices; 4G enabled the increase of streaming video and music platforms; and 5G, likewise, would expand what is possible. 5G refers to networks that use cutting-edge technology, including augmented reality and virtual reality. They also threaten to render cable and fiber-based networks obsolete by requiring us to be tethered to a specific location. In a nutshell, 5G and other advanced, high-speed networks allow all of the other trends we've discussed to be accessed anywhere, at any time. Complex machine learning applications that require real-time access to Big Data sources can be automated and run in the field.

C It is a new technology that ensures low latency and high-speed data processing. Edge computing allows computations to be carried out closer to data storage systems, improving application performance. Cloud platforms' high bandwidth costs can act as a motivator for edge computing adoption. The technology aims to run fewer processes in the cloud and transfer them to places like the user's computer or an edge server. Bridging the gap between data and computation eliminates long-distance communication between the server and the client, resulting in increased process speed. Therefore, edge computing used to handle time-sensitive data stored in remote areas with minimal access to the central location. Cloud computing and IoT applications would benefit from the technology.

D If you've heard of the Internet of Things (IoT), you should know that the IoT extends to the Internet of behavior as well. The Internet of Things (IoT) is concerned with using data and insights to influence behavior. IoT devices are possible as massive databases for Internet of behavior (IoB) paradigms. Businesses will be able to follow customer behavior and use IoB to benefit their respective channels with the aid of IoB. For example, a health-tracking app may collect information about your physical activity routine, diet, sleep, and other habits. This information can be used to encourage more behavioral improvement, such as by creating personalized health plans.

E It is a form of computing that uses the power of quantum phenomena such as superposition and quantum entanglement, is the next noteworthy technology

trend. Because of its capability to instantly question, track, interpret, and act on data, regardless of source, this incredible technology trend also includes preventing the spread of the coronavirus and developing potential vaccines. Quantum computing is now being used in banking and finance to monitor credit risk, perform high-frequency trading, and detect fraud. Quantum computers are now several times faster than traditional computers, including those from well-known companies

F It is another recent mainstream technology trend. Many people believe that Blockchain is just about Cryptocurrency, which is not the case. Bitcoin and other Cryptocurrencies are just a part of Blockchain technology as a whole. Apart from Cryptocurrencies, it uses various other fields such as healthcare, supply chain and logistics, advertising, etc. It's a decentralized digital ledger that keeps track of any transaction through a global network of computers. Various businesses are searching for Blockchain platforms to build top-level business strategies, driving up the market for blockchain technology. Blockchain's amount of protection and transparency is the primary explanation for its tremendous rise in popularity.

G It does not seem to be cutting-edge technology, but it progresses at the same rate as other technologies. This is partly due to the constant emergence of new threats. Malicious hackers attempting to gain unauthorized access to data would not give up quickly, and they will continue to find ways to avoid even the most stringent protection measures. It's partly due to the adoption of modern technologies to improve defense. Since Cybersecurity will extend to guard against hackers as long as we have them, Cybersecurity will remain a popular technology.

H There is a broad term that encompasses innovations that seek to improve human abilities and productivity. Physical augmentation, such as prosthetics, AR lenses, and RFID tags infused inside humans, are all part of the field of human augmentation. This can aid in the enhancement of human cognition, perception, and action abilities. This is accomplished by sensing and actuation technology, information fusion and fission, and artificial intelligence.

Retrieved from https://bit.ly/2UIJgU8

3.4. Answer the questions to check your understanding of the text:

1. What is AI well-known for?
2. What is the difference between 3G and 5G internet connection?
3. What is edge computing used for?
4. Is it possible to follow customer's behaviour by means of the IoT?
5. What are the areas of our life where quantum computing can be used in?
6. What is cryptocurrency?
7. Why will cybersecurity remain a popular technology in the future?

3.5. Complete the following sentences with the ideas from the text:

1. Artificial Intelligence is now well-known for_____.
2. Faster and more stable internet connection means_____.
3. Edge computing used to handle_____.
4. The Internet of Things is concerned with using_____.
5. Quantum computing is now being used in_____.
6. Bitcoin is a decentralized digital ledger that_____.
7. Cybersecurity can extend to_____.

3.6. Consider the following statements whether they are TRUE or FALSE. If the statement is FALSE find the part of the text that gives the correct information:

1. Health-tracking application may collect information about your physical activity routine	**True**	**False**
2. Quantum computing is now being used in banking and finance to detect frauds only	**True**	**False**
3. Physical augmentation can aid in the enhancement of human cognition, perception, and action abilities.	**True**	**False**
4. Fast internet connection means more than only loading webpages faster	**True**	**False**
5. Machine Learning is not a subset of Artificial Intelligence	**True**	**False**

4. LANGUAGE IN USE

4.1. Find English equivalents to the following Ukrainian word expressions from the text:

expression in Ukrainian	English equivalent
1. розподіляти ресурси	
2. доповнена реальність	
3. продуктивність програми	
4. впливати на поведінку	
5. виявити шахрайство	
6. величезне зростання	
7. покращити захист	

4.2. Find synonyms from the text to the words in the table and translate them into Ukrainian

English phrase or word	synonym from the text	sentence
not discovered		
experienced workers		
live access		
fast networks		
to save data		
to affect		
to keep eye on		
to contain		
to defend		

4.3. Work in pairs. Make up your own sentences in English with any 3-4 synonyms from the task above. Write them down and ask your group mates to translate them into Ukrainian.

4.4. Imagine that you are preparing for the presentation on the topic «Living in a digital age». Explain the following terms to make them clear for your audience:

1. Artificial Intelligence
2. 5G and enhanced connectivity
3. Edge computing
4. Internet of behaviors
5. Quantum computing
6. Blockchain
7. Cybersecurity
8. Human augmentation

4.5. Match the terms with their definitions:

term	definition
1. artificial intelligence	A) is a growing list of records, called blocks, that are linked together using cryptography
2. 5G	B) is the exploitation of collective properties of quantum states, such as superposition and entanglement, to perform computation
3. edge computing	C) is a distributed computing paradigm that brings computation and data storage closer to the sources of data
4. quantum computing	D) is the fifth generation technology standard for broadband cellular networks
5. blockchain	E) is intelligence demonstrated by machines, as opposed to the natural intelligence displayed by humans or animals

4.6. Cover the left column of the table in task 4.5 and recall the terms.

5. GRAMMAR

5.1. You are going to watch the video on the topic «Irregular verbs». Before you watch, try to remember what rules from this grammar topic you know.

5.2. Watch the video and make notes. Use grammar reference if necessary.

link	QR code
https://www.youtube.com/watch?v=6UyxTn6Bxec	

5.3. Define if these verbs are REGULAR or IRREGULAR:

verb	regular	irregular
calculate		
enhance		
understand		
compute		
spend		
contain		
shut		
defend		
meet		
connect		

5.4. Read the text below and decide which option best fits each space. Pay attention on irregular verbs:

Elsewhere, German start-up UVIS 1._____a virus-killing UV light box that disinfects escalator handrails, leaving them 99.99% germ-free. Called ESCALITE, the product has already been snapped up by some of the world's leading escalator

companies and, like the aforementioned coatings, could play a major role in 2._____the spread of COVID-19 and other infectious agents.

Another UV light-based bacteria buster is this LED Desktop Disinfection Light, which 3._____between a computer screen and keyboard and automatically blasts the keys with UV light every hour to rid it of mould, bacteria, fungus and viruses. Each cleanse 4. _____five minutes and motion sensors ensure the light only comes on when users 5._____the keyboard to prevent potentially harmful UV exposure. 6. _____by accessory manufacturer Targus, the company plans to start selling the devices for $299 (£220) from April. It is also working on an antimicrobial mouse and keyboards.

No longer the stuff of science fiction, Minority Report-style touchless gesture recognition is being fine-tuned by a host of major organisations, from tech titans such as Apple and Microsoft to research universities, with COVID-19 7._____its widespread adoption. By way of example, Abu Dhabi Airport installed the technology in 53 lifts in June 2020 to help minimise the spread of the virus, and the trend soon caught on. In July, Norwegian airport operator Avinor partnered with tech company Amadeus to launch touchless travel across four airports, covering everything from check-in and baggage drop to security and boarding.

The coronavirus pandemic means most of 8._____wearing masks in shops and enclosed public spaces. But air wearables company AirPop has gone above and beyond the humble face mask and produced what is essentially a fitness tracker for lungs. The Active+ Halo Smart Mask tracks breathing, air quality and the mask filter's effectiveness via an app, while promising protection from pathogens such as coronavirus, airborne risks 9._____ dust storms, and man-made pollution such as factory pollution. While demand for face masks has soared because of the COVID-19 outbreak, AirPop actually came about six years ago when founder Chris Hosmer 10._____to design a mask for his young daughter, who was suffering from acute respiratory reactions.

Retrieved from https://bit.ly/2U4ITDl

	A	B	C	D
1	has invented	was inventing	have invented	invents
2	have prevented	has prevented	has being preventing	preventing
3	sat	sits	sited	sated
4	have taken	has took	takes	taked
5	was not using	are not using	were not using	are not used
6	produced	is producing	were producing	was produced
7	have accelerated	accelerates	accelerating	has accelerated
8	has been used	were used	used	are used to
9	included	has included	including	include
10	wanted	wants	was wanting	were wanting

6. TRANSLATION

6.1. Translate the following passage into Ukrainian, pay attention to the words and phrases in bold:

The Distributed Cloud technology trend **is poised** to take Cloud Computing to new heights. It is concerned with distributing public cloud resources to various geographical locations, processes, updates, delivery, and other relevant activities being handled centrally by the original public cloud provider. Instead of offering a **centralized solution**, it would assist in meeting the service needs of individual cloud locations separately. Meanwhile, companies would **undoubtedly benefit** from this technological trend by decreasing latency, reducing the risk of data loss, and lowering costs. Technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and others that involve processing large amounts of data in real-time will benefit from the introduction of Distributed Cloud technology. Augmented Reality and Virtual Reality are two popular tech trends that have exploded in popularity in recent years and **expected to continue** to do so in the coming years. When it comes to these two technologies, Virtual Reality (VR) is concerned with creating a realistic environment of the physical world using computer technologies, while Augmented Reality (AR) is concerned with enhancing the environment using **computer-generated elements**. They

operate in various fields, including gaming, transportation, education, healthcare, and many others. For example, Ed-Tech platforms are increasingly favoring Augmented Reality and Virtual Reality to improve students' **learning experiences**. In the year 2021, these will be the top technology developments you should all **be aware of**. You've already figured out that all of these tech trends connect in some way. The arrival of the 5G tech trend, for example, would have a positive effect on IoT, AR, and VR, among other things. As a result, you won't have to think about which **tech trend** is right for you because learning about these advancements would **broaden your awareness** and give you an advantage over the competition. Understanding these technological developments would undoubtedly provide you with more excellent career and business prospects!

Retrieved from https://bit.ly/3zlBY7I

6.2. Translate the following sentences into English:

1. Інновації в науці та техніці є важелем до загального прогресу людства.
2. Штучний інтелект вже використовується майже у кожній галузі життя суспільства.
3. Ті, хто купив крипто валюту на початку її впровадження, зараз має з цього зиск.
4. Кібербезпека має на меті уберегти суспільство від онлайн шахрайства.
5. Віртуальна реальність все частіше використовується в освіті.
6. За допомогою бездротового з'єднання можна підключити велику кількість пристроїв до вашого маршрутизатора.
7. Елементи розумних будинків можна все частіше зустріти в побуті.
8. Компанії-виробники побутової техніки домовились уніфікувати роз'єм для підключення пристрої до зарядних станцій.

7. SPEAKING

7.1. You are a participant of the international conference devoted to the innovations in information technologies and engineering. Choose and speak on one of the following topics:

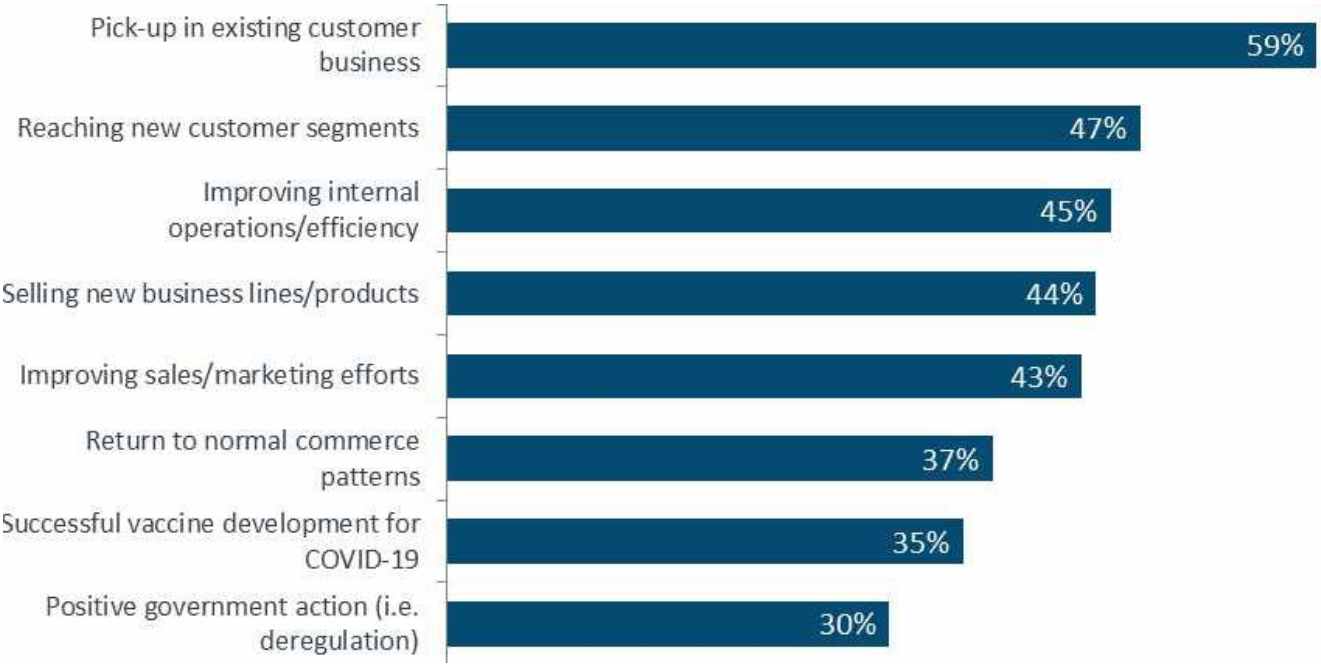
1. Artificial intelligence
2. 5G and enhanced connectivity
3. Edge computing
4. Internet of behaviors
5. Quantum computing
6. Blockchain
7. Cybersecurity

7.2. Work in pairs. Interview your groupmate using the questions below. List all of his or her ideas in the table. Swap the roles.

student 1	student 2
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.

1. How can we use artificial intelligence in education?
2. Why are people afraid of 5G technology?
3. What is the difference between edge computing and quantum computing?
4. What is Internet of behaviors?
5. Is it beneficial for humanity to use quantum computing?
6. What is Blockchain?
7. Why is cybersecurity so important?

7.3. With the help of this picture, describe the factors that drive positive growth in 2021. Use Appendix D if necessary.



8. WRITING

8.1. Write a summary to the text «Latest technology trends» in 100 words. Use Appendix B if necessary.

8.2. Write a short article for the IT magazine about modern trends in information technologies (about 100-120 words). Use Appendix C if necessary.

UNIT 2. COMPUTER ESSENTIALS

Retrieved from https://bit.ly/3rujrDE

1. LEAD-IN

1.1. Discuss the following questions in pairs and share the information:

1. What components does a standard computer configuration consist of?
2. What is a central processing unit?
3. What is the main function of a central processing unit?
4. What is a motherboard?
5. Is there a difference between desktop and laptop computer configurations?

1.2. Practice the pronunciation of English terms, translate them into Ukrainian and explain their meaning in English:

term	translation	meaning
component		
unit		
device		
microprocessor		
integrated		
performance		
superscalar		
software		

2. LISTENING

2.1. Work in teams (3-4 students). Discuss engineering and IT trends of this year using computer terms from task 1.2.

2.2. You will watch the video explaining the advantages of Intel Optane technology. Before you watch brainstorm and complete the chart. Try to predict what the video will be about:

	your ideas
1	
2	
3	
4	
5	

2.3. Watch the video and compare your answers in Task 2.2 with your groupmates.

link	QR code
https://www.youtube.com/watch?v=WwH5Q8ZFJvw	

2.4. Watch the video again and try to answer the questions

1. Who is the presenter?
2. What was the presenter talking about?
3. What technical information would you add to the presenter's speech?

2.5. After watching the video mark the following sentences as True or False:

1. Most SSDs are based on the technology named as NAND Flash	**True**	**False**
2. Intel Optane drive is based on 3D XPOINT technology	**True**	**False**

3. The level of latency on Intel Optane drive is higher than on other storage devices	**True**	**False**
4. According to the performance test Intel Optane drive is 5 times faster than the fastest SSD on the market	**True**	**False**
5. Random read speed time of the Intel Optane drive is up to 88000 IOPS	**True**	**False**
6. All storage devices are vulnerable	**True**	**False**

3. READING

3.1. Pronounce the following words and phrases, translate them into Ukrainian and try to memorize:

word / phrase	translation
general-purpose	
interconnected	
central processing unit	
integrated circuit	
microprocessor	
to improve performance	
simplified description	
instructions	
required software	
distinction	
cache memory	
peripheral devices	

3.2. Work in pairs. Make up your own sentences in English with any 3-4 words or phrases from the task above. Write them down and ask your groupmate to translate them into Ukrainian.

3.3. Look through the passages and choose suitable titles for them out of the given ones. Three of them are extra titles:

1. Input devices
2. Computer memory
3. Output devices
4. Historical overview
5. Control unit
6. Peripheral devices
7. Arithmetic logic
8. Types of displays

COMPUTER CONFIGURATION

Retrieved from https://bit.ly/3rujrDE

A A general-purpose computer has four main components which are interconnected by busses often made of groups of wires: the arithmetic logic unit, the control unit, the memory and the input and output devices (I/O). The control unit, ALU, registers and basic I/O are known as a central processing unit (CPU). Early CPUs were composed of many separate components but since the mid-1970s CPUs have been combined into a single integrated circuit called a microprocessor.

B The control unit manages various components of the computer, i.e., it reads and interprets the program instructions, transforms them into a series of control signals which activate other parts of the computer. In advanced computers, the control unit may change the order of instructions to improve performance. A key component,

common to all CPUs, is the program counter, a special memory cell that keeps track of the next instruction which must be read after the processed one. The main function of the control system is to identify the simplified description of the next instruction. Instructions that modify the program counter are known as «jumps».

C The arithmetic logic unit performs two types of operations - arithmetic and logic. The set of arithmetic operations that ALU supports is: to add and subtract, multiply or divide, trigonometry functions (sine, cosine) and square roots. Some of them can only operate on integers while others use floating point to represent real numbers. However, any computer that performs the simplest operations can be programmed to break down complex operations into simple steps. The ALU may also compare numbers and boolean values (true or false) and it depends on whether one is equal to, greater than or less than the other. Superscalar computers may contain multiple ALUs and, as a result, can process several instructions simultaneously.

D A computer memory can be described as a list of cells where numbers can be placed. The information stored in memory may represent characters (letters, numbers, symbols) and even computer instructions. In modern computers each memory cell is set up to store binary numbers in groups of eight bits. Modern computers have billions or even trillions of bytes of memory. The CPU contains a special set of memory cells called registers (their number depends on the type of CPU) that can be read and written into more rapidly than the main memory area. Registers are used for the most frequently required data to avoid accessing main memory every time the data is needed. The main memory of the computer consists of two types: random access memory (RAM) and read-only memory (ROM). It is called «random access» because the processor can find information in any cell or memory address with equal speed, instead of looking for the data in sequential order. ROM is pre-loaded with data and software and typically used to store the computer's initial start-up instructions. It contains a specialized program called BIOS that manages loading the operating system from the hard disk drive into RAM whenever the computer is turned on or reset. In embedded computers, which do not have disk drives, the required software may be stored in ROM and called firmware. Flash memory blurs the distinction between ROM and RAM, as it

stores the data when the power is turned off. It is typically much slower than conventional ROM and RAM, however, so its use is restricted to applications where high speed is unnecessary. In more sophisticated computers there may be one or more RAM cache memory chips which are slower than registers but faster than main memory. In general, computers with this type of cache are designed to move frequently required data into the cache automatically, often without programmer intervention.

E Peripheral devices are the means by which a computer exchanges information with the outside world. On a typical personal computer, peripherals include input devices, e.g., a keyboard and mouse, and output devices, such as a monitor and printer. Hard disk drives, floppy disk drives and optical disk drives can be both input and output devices. Computer networking is another form of I/O. A graphics processing unit might contain 50 or more tiny computers that perform the calculations necessary to display 3D graphics. Modern desktop computers contain many smaller computers that assist the main CPU in performing I/O.

Retrieved from https://bit.ly/3k9SQtV

3.4. Answer the questions to check your understanding of the text:

1. What is a microprocessor?
2. What is the function of the control unit?
3. What operations does the ALU perform?
4. What types of information can be stored in memory?
5. What is the function of registers?
6. What is the difference between RAM and ROM?
7. What output devices are mentioned in the text?
8. What is a firmware?

3.5. Complete the following sentences with the ideas from the text:

1. A general-purpose computer has four main components_____.
2. Control unit may change the order of instructions to_____.
3. Program counter keeps track of the next instruction which_____.

4. ALU supports the set of arithmetic operations, such as:_____.

5. The information stored in memory may represent_____.

6. The main memory of the computer consists of two types:_____.

7. Flash memory blurs the distinction between_____.

3.6. Consider the following statements whether they are TRUE or FALSE. If the statement is FALSE find the part of the text that gives the correct information:

1. The control unit manages various components of the computer.	**True**	**False**
2. ALU performs arithmetic (or, and) and logic (+, -, etc) operations.	**True**	**False**
3. The CPU differentiates between different types of information.	**True**	**False**
4. The main memory of the computer consists of two types.	**True**	**False**
5. RAM contains a specialized program called BIOS.	**True**	**False**
6. Laptop computer can operate without RAM	**True**	**False**

4. LANGUAGE IN USE

4.1. Find English equivalents to the following Ukrainian word expressions from the text:

expression in Ukrainian	English equivalent
1. загального призначення	
2. взаємопідключені	
3. пристрій виводу даних	
4. покращити продуктивність	
5. набір інструкцій	
6. оброблювати запит	
7. апаратне забезпечення	

4.2. Find synonyms from the text to the words in the table and translate them into Ukrainian:

English phrase or word	synonym from the text	sentence
created		
erase		
switch on		
device		
compose		
turn into		
unique		
manage		

4.3. Work in pairs. Make up your own sentences in English with any 3-4 synonyms from the task above. Write them down and ask your groupmates to translate them into Ukrainian.

4.4. Imagine that you are preparing for the presentation on the topic «Computer essentials». Explain the following terms to make them clear for your audience:

1. Input devices
2. Output devices
3. Arithmetic logic unit
4. Computer memory
5. Peripheral devices
6. Random access memory
7. Embedded computers

4.5. Match the terms with their definitions:

term	definition
1. multitasking	A) a group of circuits that performs the basic functions

	of a computer. The CPU is made up of three parts, the control unit, the arithmetic and logic unit and the input/output unit.
2. channel	B) a memory device that has had data written into it at the time of manufacture, and now its contents can only be read
3. random access memory	C) a storage medium that allows access to any location in any order
4. read only memory	D) a physical connection between two points that allows data to be transmitted
5. CPU	E) the ability of a computer system to run two or more programs at the same time
6. device	F) is a specific class of computer software that provides the low-level control for a device's specific hardware
7. firmware	G) a colloquial term encompassing desktops, laptops, tablets, smartphones a colloquial term encompassing desktops, laptops, tablets, smartphones

4.6. Cover the left column of the table in task 4.5 and recall the terms.

5. GRAMMAR

5.1. You are going to watch the video on the topic «Coordinating conjunctions». Before you watch, try to remember what rules from this grammar topic you know.

5.2. Watch the video and make notes. Use grammar reference if necessary

link	QR code
https://www.youtube.com/watch?v=G7qvcYcS3VM	

5.3. Work in pairs. Read the text below and highlight as many coordinating conjunctions as you can. Compare results with your partner.

For business, Intel introduced the 11th Gen Intel vPro platform, an unrivaled business platform delivering the industry's highest performance and world's most comprehensive hardware-based security. The new 11th Gen Intel Core vPro processors unveiled today are based on the world's best business processor for thin-and-light laptops and, when combined with the new Intel Core vPro platform, offer: Intel® Hardware Shield, providing the world's most comprehensive security deep in hardware for business and the industry's first silicon-enabled artificial intelligence (AI) threat detection to help stop ransomware and crypto-mining attacks. It is also equipped with Intel® Control Flow Enforcement Technology, ground-breaking technology to help shut down an entire class of attacks that long evaded software-only solutions4. Intel 10-nanometer (nm) SuperFin technology, delivering industry-leading performance, Intel® Iris® Xe graphics and the world's biggest Wi-Fi improvement in 20 years – with integrated Intel® Wi-Fi 6/6E (Gig+) that enables up to six times faster uploads and downloads in the office and nearly three times faster speeds at home versus standard Wi-Fi 55. Eight times6 better AI performance, enabling businesses new compute power to keep pace with the fast-changing software ecosystem, and up to 2.3 times faster creation and video editing compared to the previous generation. Up to 23% faster productivity than the competition when using apps like Office 365 and the best business collaboration experience, enabling more than 50% faster office productivity compared to the competition while on a video conference call. Intel also launched the Intel® Evo™ vPro® platform, the best laptop experience for business users. Laptop

designs verified on the Intel Evo vPro platform are stylish, thin and light and provide an amazing immersive visual experience. They also offer remarkable responsiveness, instant wake and real-world battery life. More than 60 new laptops from top manufacturers will be available this year, combining the security and manageability of vPro and the amazing on-the-go experiences of Intel Evo. Additionally, Intel announced Intel Evo Chromebooks, enabling a new class of premium Chromebooks.

Retrieved from https://bit.ly/3r3SQtV

5.4. Make up your own sentences in English using coordinating conjunctions in the table:

	conjunction word	**sentences in English**
1	for	
2	and	
3	nor	
4	but	
5	or	
6	yet	
7	so	

6. TRANSLATION

6.1. Translate the following passage into Ukrainian, pay attention to the words and phrases in bold:

DDR4 is the most **recent** JEDEC memory standard. It enables higher levels of performance along with lower **power consumption** and higher **reliability** than DDR3 does. JEDEC began working on the DDR4 specification in 2005, with the final specification published in September 2012. Samsung produced the first **prototype** DDR4 modules in late 2010 and released the **first sample** 16GB DDR4 module in July 2012. The first motherboards supporting DDR4 memory were released in August 2014, using Intel's X99 chipset. DDR4 modules use a Pseudo Open Drain (POD) interface (previously used in **high-performance** graphic DRAM) and run on a lower 1.2V

voltage (compared to 1.5V for DDR3). This enables DDR4 modules to consume about 40% less power overall than previous DDR3 modules, thus saving energy while also producing **less heat**. DDR4 also supports write Cyclic Redundancy Check (CRC) to improve system reliability. 288-pin DDR4 modules are 1mm longer and 1mm taller than 240-pin DDR3/DDR2 modules. This was **accomplished** by making the individual pins only 0.85mm wide, **versus** the 1mm wide pins used on previous modules. DDR4 modules also feature a slight curvature about halfway between each **edge** and the center notch, making the **outside pins** shorter than the pins nearer the center notch for easier installation.

Retrieved from https://bit.ly/3r3SQtV

6.2. Translate the following sentences into English:

1. Центральний процесор можна назвати «мозком» комп'ютера.
2. Тенденція до зростання об'єму оперативної пам'яті у сучасних комп'ютерах є постійною.
3. Підбираючи компоненти настільного персонального комп'ютера, необхідно зважати на рівень споживання енергії усіма пристроями, які знаходяться в системному блоці.
4. Коли комп'ютер вимикається, усі дані, що знаходяться в оперативно запам'ятовуючому пристрої зникають.
5. Наразі усі сучасні процесори є однаковими у ціні та якості.
6. Материнська плата є основним компонентом для підключення усіх інших пристроїв.
7. Збираючи комп'ютерну систему власноруч необхідно зважати на вольтажність усіх пристроїв.

7. SPEAKING

7.1. You are a participant of the international conference devoted to the innovations in information technologies and engineering. Choose and speak on one of the following topics:

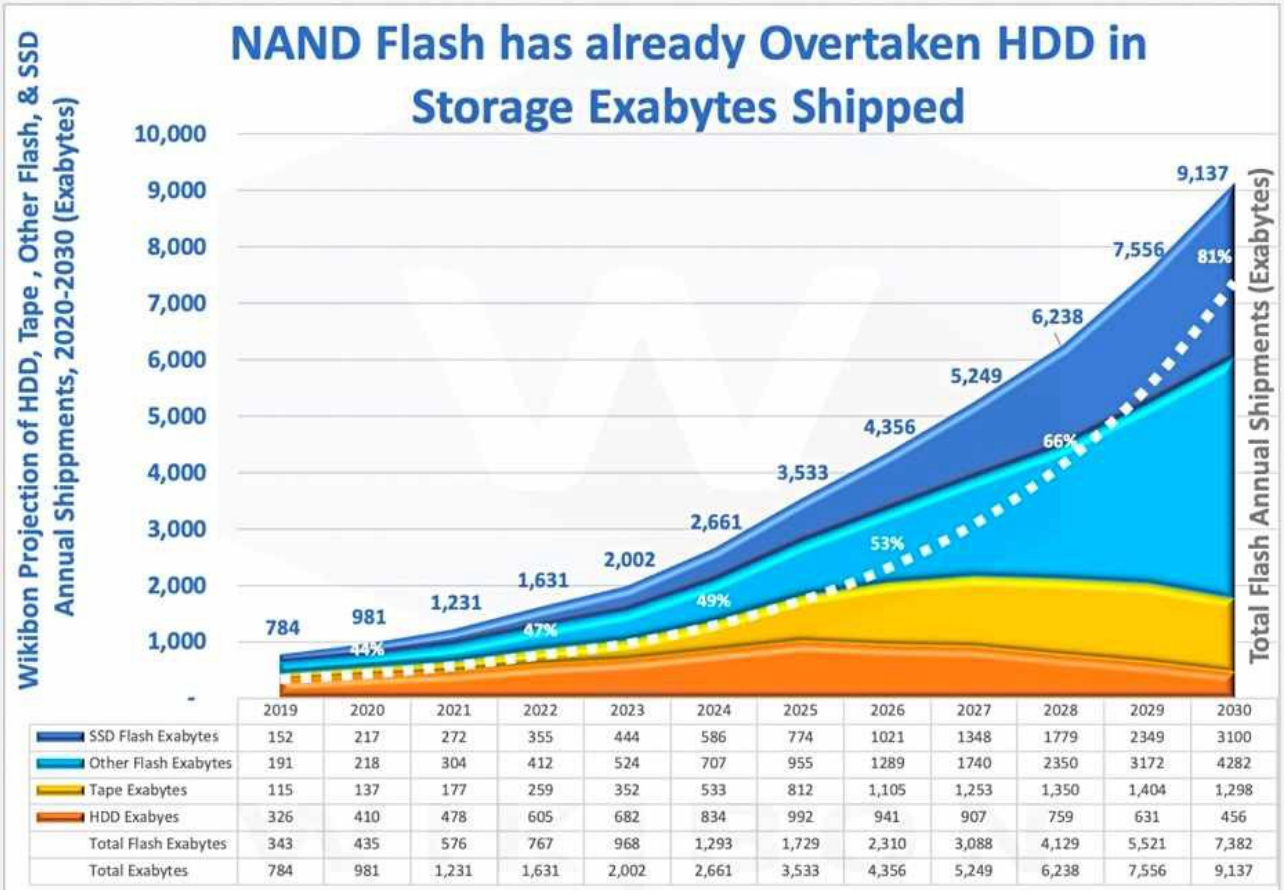
1. Essential parts of computer systems
2. DDR4 as recent JEDEC memory standard
3. 11th Gen Intel vPro platform
4. Intel® control flow enforcement technology
5. Disadvantages of integrated VGAs
6. Peripheral devices
7. Chromebooks versus MacBooks

7.2. Work in pairs. Interview your groupmate using the questions below. List all of his or her ideas in the table. Swap the roles.

student 1	student 2
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.

1. What is the difference between RAM and ROM?
2. Is it possible to overclock modern CPUs?
3. How to avoid overheating while using laptops?
4. What characteristics should a typical PC have to run modern online games?
5. Is there a difference between HDD and SSD?
6. Is it possible to combine SSD and HDD into one device?
7. What are the future prospects of SSDs?

7.3. With the help of this picture, describe the picture which illustrates the amount of NAND-based flash devices sold. Use Appendix D if necessary.



	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
SSD Flash Exabytes	152	217	272	355	444	586	774	1021	1348	1779	2349	3100
Other Flash Exabytes	191	218	304	412	524	707	955	1289	1740	2350	3172	4282
Tape Exabytes	115	137	177	259	352	533	812	1,105	1,253	1,350	1,404	1,298
HDD Exabyes	326	410	478	605	682	834	992	941	907	759	631	456
Total Flash Exabytes	343	435	576	767	968	1,293	1,729	2,310	3,088	4,129	5,521	7,382
Total Exabytes	784	981	1,231	1,631	2,002	2,661	3,533	4,356	5,249	6,238	7,556	9,137

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8. WRITING

8.1. Write a summary to the text «Computer configuration» in 100 words. Use Appendix B if necessary.

8.2. Write a short article for the IT magazine about modern trends in storage devices (about 100-120 words). Use Appendix C if necessary.

SELF-ASSESSMENT (UNITS 1-2)

1. Match 1–8 to a–h to make sentences:

1. An external drive	a. needs a product key.
2. A hard drive	b. is an audio device.
3. This window	c. turns off the computer.
4. A pair of headphones	d. boots from the optical drive.
5. A projector	e. has three tabs.
6. This computer	f. connects to the motherboard and stores data.
7. This switch	g. is for showing images and video.
8. To install software, he	h. connects to the computer using a USB port.

2 . Correct the mistakes in these sentences. <u>Underline</u> one incorrect word and write the correct word on the line:

9. Insert the cable from the socket. _____

10. Turn into the computer when you've finished. _____

11. To see the bottom of the window, drag the scroll button down. _____

12. Slide the 'save' button to save the file. _____

13. The power supply icon provides power to the internal components. _____

14. Disconnect the headphones on the computer after you've finished with them, please. _____

15. Click the 'minimise' button by make the window smaller. _____

16. Make sure your software has a 'help' menu to some people will need it. _____

3. . Complete these instructions with the words in the box :

connect	disconnect	internal	motherboard	partition	plug	push

It isn't difficult to add a new (17)_____ drive to a desktop computer. First, make sure the computer is off and (18)_____it from the electricity socket. Then (19) _____ the drive into a spare space as far as it will go. Next, find the SATA cable

that came with the drive and (20)_____one end of it into the SATA socket on the (21)_____and the other end into the drive. You'll also need to (22)_____a power cable. Then, when you switch on the computer, you just need to format the drive. You can also (23)_____it if you want to use different parts of it for different purposes.

4. Complete these sentences with *to*, *for*, *so* and *because*:

24. I back up my data_____security.
25. I use open source software _____ it's free.
26. You can double click on the title bar _____ maximise the window.
27. I use a video camera_____that I can show video to people.
28. You can use an external hard drive_____back up your data.
29. Drag the folder icon_____ move it to a new drive.
30. I bought a webcam_____that I can make video calls.

UNIT 3. BUYING A COMPUTER

Retrieved from https://bit.ly/3rujrDE

1. LEAD-IN

1.1. Discuss the following questions in pairs and share the information:

1. Are you computer literate?
2. Do you have a laptop or a desktop computer?
3. How many times have you upgraded your computer?
4. What are some of your favorite computer games?
5. If you could buy a new computer, what would you like to buy?
6. Which do you like better, a laptop computer or a desktop computer?

1.2. Practice the pronunciation of English terms, translate them into Ukrainian and explain their meaning in English:

term	translation	meaning
computer case		
motherboard		
display		
central processing unit		
random-access memory		
read-only memory		

equipment		
input device		

2. LISTENING

2.1. Work in teams (3-4 students). Discuss your compuer configurations using computer terms from task 1.2.

2.2. You will watch the video explaining what is inside of a typical PC. Before you watch brainstorm and complete the chart. Try to predict what the video will be about.

	your ideas
1	
2	
3	
4	
5	

2.3. Watch the video and compare your answers in Task 2.2 with your groupmates.

link	**QR code**
https://www.youtube.com/watch?v=ExxFxD4OSZ0	

2.4. Watch the video again and try to answer the questions:

1. Who is the presenter?
2. What was the presenter talking about?
3. What technical information would you add to the presenter's speech?

2.5. After watching the video mark the following sentences as True or False:

1. According to the video a typical conputer system consists of seven parts	**True**	**False**
2. Typicaly a power supply unit is located on the bottom of a computer case	**True**	**False**
3. Motherboard does not provide communication between computer components	**True**	**False**
4. Hard drives are made of spining disks	**True**	**False**
5. Integrated and standalone GPUs are equal in video output quality	**True**	**False**
6. Motherboard is the most important computer component	**True**	**False**

3. READING

3.1. Pronounce the following words and phrases, translate them into Ukrainian and try to memorize:

word / phrase	translation
general-purpose	
interconnected	
central processing unit	
integrated circuit	
microprocessor	
to improve performance	
simplified description	
instructions	
required software	
distinction	
cache memory	
peripheral devices	

3.2. Work in pairs. Make up your own sentences in English with any 3-4 words or phrases from the task above. Write them down and ask your groupmate to translate them into Ukrainian.

3.3. Look through the passages and choose suitable titles for them out of the given ones. Three of them are extra titles:

1. Peripherals
2. Video output
3. Durability test
4. General information about the device
5. CPU ant interfaces
6. Software
7. Price and performance
8. Types of printers

MACBOOK AIR

Retrieved from https://bit.ly/3rujrDE

A From underpowered to one of the fastest ultrathin laptops around, the new MacBook Air with M1 is the best Mac for most people. It takes a familiar design and turbocharges it with record-setting performance and all-day battery life. Along with those speed and endurance boosts, the new M1 chip brings iOS and iPadOS apps to

Mac for the first time ever. With M1, there is little reason to skip out on the MacBook Air. That said, if you need better-sustained performance, you might want to opt for the MacBook Pro with two Thunderbolt 3 ports.

B Where the MacBook Air is fanless, the MacBook Pro has a traditional cooling system so you can run demanding programs for hours without worrying about overheating. Most people will be fine with the Air, but power users should consider stepping up to the Pro. Like the MacBook Air, the MacBook Pro has an incredibly fast SSD and runs on Apple's gorgeous new Big Sur OS. What about the Intel-powered MacBooks that weren't updated to M1 yet? Well, they aren't completely irrelevant. So far, Apple only refreshed the MacBook Pro with two Thunderbolt 3 ports. If you need an additional pair of inputs, the company still sells the top-tier model with four Thunderbolt 3 connections. Again, it runs on aging Intel chips that don't get the same performance or endurance as the M1 CPU. Then there is the 16-inch MacBook Pro. Once the most powerful of the bunch, this monster doesn't look as mighty now that the MacBook Air and MacBook Pro were given such a speed boost. That doesn't mean it's not a good laptop. It has a great 16-inch panel, amazing speakers and the most modern design of the bunch. And despite running on Intel, the battery life is great. Our advice? If you need a laptop now, go with the MacBook Air or MacBook Pro with M1. If you can wait and need more power or ports, give Apple a few months to release new versions of the 16-inch MacBook Pro and potentially a new 14-inch MacBook Pro with Apple Silicon and additional Thunderbolt ports.

C The new MacBook Air is the best MacBook for most people. This latest model demonstrates the capabilities of Apple's M1 chip, which transforms the Air from an underpowered entry-level option to one of the fastest laptops on the market, period. It's a complete turnaround for a laptop that was just barely getting by each year. Best of all, the MacBook Air still costs only $999, and yet, you get unrivaled performance along with 14 hours and 41 minutes of battery life. This is a combination you'll only find on the very best Windows 10 laptops, and even they can't compete in head-to-head performance. So why buy the MacBook Air instead of the Pro? While the Pro has better-sustained performance, the MacBook Air is cheaper and is pin-drop silent

because it doesn't have a fan. And, of course, Apple's least expensive 13.3-inch model is the most portable, coming in at only 0.6 inches thick and 2.8 pounds. But now the MacBook Air is closer to parity with the MacBook Pro than ever before. It has similar speeds and battery life, the same 720p webcam, a comfortable Magic keyboard and two USB-C ports.

D Also, the 13.3-inch, 2560 x 1600-pixel Retina display on the M1 model was improved with P3 color coverage, making it more vibrant than the previous panel. More specifically, the MacBook Pro is more powerful than nearly every PC on the market, including some workstations. And despite cramming so much power into such a slim and sleek chassis, the Pro lasted for an outstanding 16 hours and 32 minutes on our battery test, which simulates real-world testing. But wait. The M1 does more than improve speeds and endurance. With an image processing unit, the webcam (sadly, still 720p) is better than before and since it runs on Apple's ARM-based architecture, iPad and iPhone apps are now available on Mac.

E Yep, you can run all your favorite iOS games and apps on your laptop now. Rounding out the numerous enhancements found in the latest MacBook Pro is Big Sur, the latest version of macOS. The largest update since OS X launched a decade ago, Big Sur is a beautiful redesign of the desktop OS. Everything else about the MacBook Pro should feel familiar. This is the same elegant design Apple has used for years and the Magic Keyboard is a pleasure to type on (and reliable, too!). While it earned our rare 5-star rating, the MacBook Pro has a few shortcomings. There are only two Thunderbolt 3 ports and the bezels around the display are thicker than those on competing models. You're also stuck at 16GB of RAM, although our benchmark tests show that limitation does little to stop this performance beast.

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3.4. Answer the questions to check your understanding of the text:

1. What is a Thunderbolt 3?
2. How many fans does the MacBook Air have?
3. What is the difference between MacBook Pro and MacBook Air?

4. Does MacBook Pro use HDDs?

5. Is MacBook Air a laptop or desktop comouter?

6. What is the resolution of MacBook Retina display?

7. Is MacBook Air equipped with a webcam?

8. What operating system is used on MacBook PCs?

3.5. Complete the following sentences with the ideas from the text:

1. The company still sells the top-tier model with_____.

2. While the Pro has better-sustained performance, the MacBook Air is _____.

3. Apple's least expensive 13.3-inch model is_____.

4. With an image processing unit, the webcam is_____.

5. The 13.3-inch, 2560 x 1600-pixel Retina display on the M1 model was improved with_____.

6. While it earned our rare 5-star rating, the MacBook Pro has_____.

7. The MacBook Air still costs only_____.

3.6. Consider the following statements whether they are TRUE or FALSE. If the statement is FALSE find the part of the text that gives the correct information:

1. The MacBook Air still costs $999	**True**	**False**
2. The MacBook Pro runs on Apple's Big Sur OS	**True**	**False**
3. Apple's Magic keyboard has one USB-C port	**True**	**False**
4. The MacBook Pro is equipped with fast SSD	**True**	**False**
5. The resolution of Apple's MacBook webcam is 360p	**True**	**False**
6. MacBook Pro is famous for its Retina display	**True**	**False**

4. LANGUAGE IN USE

4.1. Find English equivalents to the following Ukrainian word expressions from the text:

expressions in Ukrainian	English equivalent
1. роздільна здатність	
2. материнська плата	
3. твердотілий накопичувач	
4. жорсткий диск	
5. універсальна послідовна шина	
6. ресурс роботи батареї	
7. оновлене програмне забезпечення	

4.2. Find synonyms from the text to the words in the table and translate them into Ukrainian:

English phrase or word	synonym from the text	sentence
programs		
updated		
ports		
Hi-fi system		
16-inch display		
purchase		
available		
required programs		
get		

4.3. Work in pairs. Make up your own sentences in English with any 3-4 synonyms from the task above. Write them down and ask your group mates to translate them into Ukrainian.

4.4. Imagine that you are preparing for the presentation on the topic «Ideal computer configuration». Explain the following terms to make them clear for your audience:

1. Desktop computer
2. Laptop
3. Solid-state drive
4. Operating system
5. Display
6. Application
7. Cooling system

4.5. Match the terms with their definitions:

term	definition
1. display	A) is a computer program designed to carry out a specific task other than one relating to the operation of the computer itself, typically to be used by end-users
2. USB	B) is system software that manages computer hardware, software resources, and provides common services for computer programs
3. microprocessor	C) is a computer processor where the data processing logic and control is included on a single integrated circuit, or a small number of integrated circuits
4. operating system	D) is an industry standard that establishes specifications for cables and connectors and protocols for connection, communication and power supply (interfacing) between computers, peripherals and other computers
5. application	E) is an output device for presentation of information in visual or tactile form

4.6. Cover the left column of the table in task 4.5 and recall the terms.

5. GRAMMAR

5.1. You are going to watch the video on the topic «Correlative conjunctions». Before you watch, try to remember what rules from this grammar topic you know.

5.2. Watch the video and make notes. Use grammar reference if necessary.

link	QR code
https://www.youtube.com/watch?v=G7qvcYcS3VM	

5.3. Read the text below and highlight as many correlative conjunctions as you can. Check results with your partner.

For business, Intel introduced the 11th Gen Intel vPro platform, an unrivaled business platform delivering the industry's highest performance and world's most comprehensive hardware-based security. The new 11th Gen Intel Core vPro processors unveiled today are based on the world's best business processor for thin-and-light laptops and, when combined with the new Intel Core vPro platform, offer: Intel® Hardware Shield, providing the world's most comprehensive security deep in hardware for business and the industry's first silicon-enabled artificial intelligence (AI) threat detection to help stop ransomware and crypto-mining attacks. It is also equipped with Intel® Control Flow Enforcement Technology, ground-breaking technology to help shut down an entire class of attacks that long evaded software-only solutions4. Intel 10-nanometer (nm) SuperFin technology, delivering industry-leading performance, Intel® Iris® Xe graphics and the world's biggest Wi-Fi improvement in 20 years – with integrated Intel® Wi-Fi 6/6E (Gig+) that enables up to six times faster uploads and downloads in the office and nearly three times faster speeds at home versus standard

Wi-Fi 55. Eight times6 better AI performance, enabling businesses new compute power to keep pace with the fast-changing software ecosystem, and up to 2.3 times faster creation and video editing compared to the previous generation. Up to 23% faster productivity than the competition when using apps like Office 365 and the best business collaboration experience, enabling more than 50% faster office productivity compared to the competition while on a video conference call. Intel also launched the Intel® Evo™ vPro® platform, the best laptop experience for business users. Laptop designs verified on the Intel Evo vPro platform are stylish, thin and light and provide an amazing immersive visual experience. They also offer remarkable responsiveness, instant wake and real-world battery life. More than 60 new laptops from top manufacturers will be available this year, combining the security and manageability of vPro and the amazing on-the-go experiences of Intel Evo. Additionally, Intel announced Intel Evo Chromebooks, enabling a new class of premium Chromebooks.

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5.4. Make up your own sentences in English using correlative conjunctions in the table:

	conjunction word	**sentences in English**
1	both……. and	
2	whether……. or	
3	not only……. but also	
4	either……. or	
5	neither……. nor	
6	just……. so	
7	as……. as	
8	if……. then	
9	rather……. than	
10	no sooner……. than	
11	such……. that	

6. TRANSLATION

6.1. Translate the following passage into Ukrainian, pay attention to the words and phrases in bold:

The MacBook Air with Apple silicon is **a line of laptop computers** developed and manufactured by Apple Inc. since 2020. In the current product line, the MacBook Air is Apple's **entry-level** laptop, situated below the performance range MacBook Pro. Apple announced its first Apple silicon MacBook Air on November 10, 2020, a 13-inch model based on the Apple M1 system on a **chip**. On June 22, 2020, Apple CEO Tim Cook announced the Mac would transition away from Intel processors to Apple's own **in-house** designed processors that use the ARM64 architecture, branded as Apple silicon. On November 10, 2020, Apple announced an **updated** MacBook Air with an Apple-designed M1 processor, launched alongside an updated Mac Mini and 13-inch MacBook Pro as the first Macs with Apple's new line of **custom** ARM-based Apple silicon processors. The device uses a **fanless** design. It also adds support for Wi-Fi 6, Thunderbolt 3/USB4 and Wide color (P3). The M1 MacBook Air can only run one external display; the previous Intel-based model was **capable of** running two 4K displays. The FaceTime camera remains 720p but Apple advertises an improved image signal processor for higher quality video. The M1 MacBook Air has received positive reviews, with much of the **praise** going to the **capabilities** of the M1 chip. In his review for Engadget, Devindra Hardawar gave the MacBook Air a score of 94/100, praising the **performance** as «shockingly responsive» and **highlighting** the lack of fan noise and «excellent» keyboard and **trackpad** as among some of the pros. Other than that, he only lightly touched on the laptop's design and feel, citing the fact that it hadn't really changed much since the early 2020 MacBook Air. He did, however, praise the case as feeling «**sturdy as ever**». Writing for Wired, Julian Chokkattu bemoaned the fact that the Air only came with 2 USB-C ports, but praised the keyboard and battery life. He also lauded the fanless design, saying it was something he found himself «appreciating over and over again».

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6.2. Translate the following sentences into English:

1. Різниця між настільним та портативним комп'ютерами не значна, але вартість різниться значуще.
2. Вбудована материнська плата у портативних комп'ютерах має як недоліки, так і перевали.
3. Сучасні комп'ютери оснащуються як активною, так і пасивною системою охолодження.
4. Від якості монітора залежить комфорт роботи користувача.
5. Сучасні бездротові комп'ютерні миші та клавіатури надають користувачу більше свободи дій, але не підходять за своїми характеристиками тим, хто полюбляє грати у комп'ютерні ігри.
6. Інтерфейс Thunderbolt 3 використовується усіма пристроями компанії Apple.
7. Процесор M1 є одним з найпотужніших процесорів на ринку комп'ютерної техніки сьогодні.

7. SPEAKING

7.1. You are a participant of the international conference devoted to the innovations in information technologies and engineering. Choose and speak on one of the following topics:

1. General components of a computer system
2. New memory standards
3. Intel CPUs versus AMD ones
4. Desktops versus laptops
5. Gaming PCs
6. New interfaces in peripheral devices

7.2. Work in pairs. Your friend from the USA is going to buy a new laptop. He does not understand anything about computers. Translate the terms from the table below into English and try to recommend him the best computer configuration. Swap the roles.

Виробник:	Apple
Лінійка:	MacBook Air 13" Late 2020
Тип:	ноутбук
Конструкція:	класичний
Операційна система:	macOS Big Sur
Дисплей	
Діагональ, дюймів:	13,3
Тип матриці:	IPS 400 nits brightness, Wide color (P3), True Tone technology
Тип покриття:	глянцеве
Роздільна здатність:	2560x1600
Сенсорний:	Немає
HDR:	Немає
Частота оновлення, Гц:	60
Оснащення	
Процесор:	Apple M1
Базова тактова частота, ГГц:	600
Максимальна тактова частота	3204
Кількість ядер процесора:	8
Оперативна пам'ять, ГБ:	16
Максимальний обсяг ОП, ГБ:	16

Тип пам'яті:	LPDDR4x
Жорсткий диск, ГБ:	Немає
Твердотілий накопичувач, ГБ:	512
Оптичний привід:	Немає
Графічний адаптер:	Apple M1 GPU
Зовнішні порти:	2xThunderbolt 3, роз'єм для навушників
Картрідер:	Немає
Web-камера:	Є
Підсвічування клавіатури:	є
Пасивна система охолодження:	є
Сканер відбитку пальців:	є
Клавіатура з цифровим блоком:	Немає
Сертифікація Intel Evo:	Немає
Комунікації	
Мережевий адаптер:	Немає
Wi-Fi:	802.11 ax
Bluetooth:	5.0
3G / LTE:	Немає
Фізичні параметри	
Вага, кг:	1,29
Розмір, мм:	304.1x212.4x4.1-16.1
Матеріал корпусу:	Алюміній
Колір кришки:	золотистий
Колір корпусу:	Золотистий

Батарея	
Ємність, мАгод:	4382 мАг
Потужність, Вт*год:	49,9
Тип акумулятора:	Li-pol

8. WRITING

8.1. Your university magazine is running a competition to find the best article on the topic «Computer configuration». Write your article for the magazine in 100 words. Use Appendix B if necessary.

8.2. You live in a small university town. Last week, you drove to a big city about two hours away to buy a new laptop at a good price. You worked on the laptop all week and finished writing a long assignment that is due shortly. However, this week, the laptop doesn't even switch on. Write to the store. In your letter:

- tell the store where you live & what happened

- explain the problem with the laptop

- state what action you would like the store to take

UNIT 4. TYPE AND CLICK

Retrieved from https://bit.ly/3rujrDE

1. LEAD-IN

1.1. Discuss the following questions in pairs and share the information:

1. What input devices do you know?
2. What input devices do you prefer to work with?
3. What difficulties do you have when working with a keyboard?
4. Is there a difference between wireless and wired keyboards?
5. Have you ever used a joystick?

1.2. Practice the pronunciation of English terms, translate them into Ukrainian and explain their meaning in English:

term	translation	Meaning
vendor		
menu		
equipment		
layout		
arrangement		
numeric		
modified		
cursor		

2. LISTENING

2.1. Work in teams (3-4 students). Discuss all input and output devices that you remember.

2.2. You will watch the video about two portable keyboards. Before you watch brainstorm and complete the chart. Try to predict what the video will be about.

	your ideas
1	
2	
3	
4	
5	

2.3. Watch the video and compare your answers in Task 2.2 with your groupmates.

link	QR code
https://www.youtube.com/watch?v=vvHOxvCBVj4	

2.4. Watch the video again and try to answer the questions:

1. Who is the presenter?
2. What was the presenter talking about?
3. What technical information would you add to the presenter's speech?

2.5. After watching the video mark the following sentences as True or False:

1. The price for Logitech Filio Touch is 300 US dollars	**True**	**False**
2. Both keyboards have backlight	**True**	**False**
3. For a graphics designer it is more comfortable to use Apple	**True**	**False**

Magic Keyboard		
4. Logitech Filio Touch has a bumper going all the way around the tablet PC	**True**	**False**
5. It is more conveniant to use a stylus with Apple Magic Keyboard bumper	**True**	**False**
6. Users must buy stylus for extra charge	**True**	**False**

3. READING

3.1. Pronounce the following words and phrases, translate them into Ukrainian and try to memorize:

word / phrase	Translation
numeric keypad	
function keys	
USB connectors	
typing area	
enhanced	
layout	
engineering applications	
implement	
additional keys	
software vendors	
pop-up menu	
preset	

3.2. Work in pairs. Make up your own sentences in English with any 3-4 words or phrases from the task above. Write them down and ask your groupmate to translate them into Ukrainian.

3.3. Look through the passages and choose suitable titles for them out of the given ones. Four of them are extra titles:

1. Different types of mice
2. Laptop keyboards
3. Cursor-control keys
4. Definition of a keyboard
5. Developments of IBM
6. Keyboard stress test
7. Some improvements by Microsoft
8. Keyboards' indicators

DIFFERENT TYPES OF KEYBOARDS

Retrieved from https://bit.ly/3rujrDE

A Keyboard is one of the basic system components used to enter commands and data into the computer. IBM has created three keyboard designs for PC systems since the introduction of the original IBM PC. These designs have become de facto standard and are used by all PC manufacturers. The primary keyboard types are the following: 101-key Enhanced keyboard; 104-key Windows keyboard; 83-key PC and XT keyboard (obsolete).

B In 1986, IBM introduced the «corporate» Enhanced 101-key keyboard for the newer XT and AT models. The term «corporate» first appeared in IBM's PC, which was a RISC system designed for scientific and engineering applications. Keyboards

with this design were soon supplied with every type of system and terminal IBM sold; for this reason other companies began to use IBM's design, too. In fact, other companies, such as Digital Equipment Corporation (DEC) and Texas Instruments (TI), had already used designs similar to the IBM 101-key unit. The IBM 101-key units originally came in versions with and without the status-indicator LEDs (it depended on whether the unit was sold with an XT or AT system). Now, many types of keyboards are available including touch pads and programmable keys. A lot of keyboards include both the standard mini-DIN and USB connectors for maximum flexibility when attaching to newer systems. The 101-key keyboard layout can be divided into four sections: typing area, numeric keypad, cursor and screen controls, function keys. The cursor-control keys are arranged in the inverted T format that is now expected to be on all computer keyboards. Insert, Delete, Home, End, Page Up and Page Down keys are separated from the numeric keypad and located above the dedicated cursor-control keys. The function keys, arranged in groups of four, are located on the top of the keyboard. The Esc key is isolated in the upper-left corner of the keyboard. In addition, dedicated Print Screen/Sys Req, Scroll Lock and Pause/Break keys are provided for commonly used functions. Foreign-language versions of the Enhanced keyboard include 102 keys and a slightly different layout from the 101-key U.S. versions.

C When Microsoft released Windows 95, it also introduced the Microsoft Natural Keyboard, which implemented a revised keyboard specification that added three new Windows-specific keys to the keyboard. The Microsoft Windows keyboard specification outlines a set of additional keys and key combinations. The 104-key layout includes left and right Windows keys and an Application key. These keys are used for operating system and application-level keyboard combinations, similar to the existing Ctrl+Alt combinations. You don’t need the new keys to use Windows, but software vendors add specific functions to their Windows products that use the new Application keys (which provide the same functionality as clicking the right mouse button and bring up a context pop-up menu). The left and right Windows (WIN) keys open the Windows Start menu, which you can navigate with the cursor keys. Several WIN key combinations offer preset macro commands as well. For example, you can

press WIN+E to launch the Windows Explorer application. The Windows keyboard specification requires that keyboard makers increase the number of trilograms in their keyboard designs. A trilogram is a combination of three rapidly pressed keys that perform a special function, such as Ctrl+Alt+Delete. Many keyboard manufacturers have standardized 104-key keyboards that include these Windows-specific keys. Some manufacturers have added browser control or other keys to facilitate navigating web pages and launching various applications.

D The proliferation of laptop and notebook systems have a great impact on the keyboard design because it is obviously impossible to use the standard keyboard layout for a portable computer. Early laptop systems often used smaller-than-normal keys to minimize the size of the keyboard, which resulted in many complaints from users. Today, the keytops on portable systems are usually comparable in size to that of a desktop keyboard, although some systems include half-sized keytops for the function keys and other less frequently used keyboard elements. Of course, the most obvious difference in a portable system keyboard is the sacrifice of the numeric keypad. Most systems now embed the keypad into the standard alphabetical part of the keyboard. To switch the keys from their standard values to their keypad values, a user must press a key combination involving a proprietary function key, often labeled Fn. This is an extremely inconvenient solution, and many users abandon their use of the keypad entirely on portable systems. For a short time, IBM marketed systems with a keyboard that used a «butterfly» design. The keyboard was split into two halves that rested on the top of one another when the system was closed. When you open the lid, the two halves form a keyboard that is actually larger than the computer case. Ironically, the trend toward larger-sized displays in portable systems has made this arrangement unnecessary. Many manufacturers have increased the footprint of their laptop computers to accommodate 14.1" and even 15" display panels, leaving more than adequate space for a keyboard with full-size keys. However, even on the newest systems, there still isn't enough space for a separate numeric keypad.

Retrieved from https://bit.ly/3k9SQtV

3.4. Answer the questions to check your understanding of the text:

1. What is a keyboard?
2. What types of keyboards do you know?
3. What design became the standard for Intel-based PC system?
4. How can you connect a keyboard to your PC?
5. What is a trilogram?
6. What is the impact of the laptop and notebook systems proliferation?
7. What is the most obvious difference in portable system keyboards?
8. What do you know about the «butterfly» design?

3.5. Complete the following sentences with the ideas from the text:

1. IBM has created three keyboard designs for_____.
2. The term «corporate» first appeared in _____.
3. The IBM 101-key units originally came in versions with and without _____.
4. A lot of keyboards include both the standard mini-DIN and USB connectors for _____.
5. The cursor-control keys are arranged in_____.
6. The function keys, arranged in groups of four, are located on_____.
7. A trilogram is a combination of_____.

3.6. Consider the following statements whether they are TRUE or FALSE. If the statement is FALSE find the part of the text that gives the correct information:

1. Common keyboards include both the standard mini-DIN and USB connectors	**True**	**False**
2. One of the basic computer system components is a keyboard	**True**	**False**
3. IBM has created three keyboards designs for notebooks	**True**	**False**
4. A trilogram is a combination of two rapidly pressed keys	**True**	**False**
5. The cursor-control keys are arranged in the ordinary format	**True**	**False**

6. In most cases office keyboards do not have a keypad	**True**	**False**

3.8. Match the two halves of the sentences:

1	The Microsoft Windows keyboard specification outlines a set of	a	preset macro commands as well
2	The primary keyboard types are the following: 101-key Enhanced keyboard;	b	upper-left corner of the keyboard
3	Several WIN key combinations offer	c	used a «butterfly» design
4	For a short time, IBM marketed systems with a keyboard that	d	additional keys and key combinations
5	The Esc key is isolated in the	e	104-key Windows keyboard; 83-key PC and XT keyboard (obsolete)

4. LANGUAGE IN USE

4.1. Find English equivalents to the following Ukrainian word expressions from the text:

expressions in Ukrainian	**English equivalent**
1. фактично	
2. розташування клавіш	
3. виробники та постачальники	
4. оснащений індикаторами	
5. клавіші, які можна запрограмувати	
6. функціональні клавіші	
7. застосовувати на практиці	

4.2. Find in the text the words with the opposite meaning and translate them into Ukrainian:

English word	antonym from the text	Sentence
different		
older		
slowly		
yesterday		
down		
close		
disappear		
pop-down		
minimum		

4.3. Work in pairs. Make up your own sentences in English with any 3-4 antonyms from the task above. Write them down and ask your groupmates to translate them into Ukrainian.

4.4. Imagine that you are preparing for the presentation on the topic «Gaming input devices and manipulators». Explain the following terms to make them clear for your audience:

1. Function key
2. Numeric keypad
3. «Butterfly» keyboard design
4. Half-sized keytops
5. Windows-specific keys
6. Pop-up menu
7. Trilogram

4.5. Match the terms with their definitions:

term	Definition
1. font	A) the area at the top of the screen which allows access to the various menus
2. command	B) the input device that has keys arranged in a similar layout in a typewriter
3. trackball	C) a small picture that follows the mouse movement
4. function key	D) a symbol available on the keyboard
5. model	E) a network device used to input and output data (usually a basic computer)
6. pointer	F) an order which the computer can obey
7. menu bar	G) the shape, style and size of a particular typeface
8. keyboard	H) a stationary device that works like a mouse turned upside down
9. character	I) mathematical representation of some aspect of the real world
10. terminal	J) a key on a computer keyboard which causes a specific operation to take place

4.6. Cover the left column of the table in task 4.5 and recall the terms.

5. GRAMMAR

5.1. You are going to watch the video on the topic «Subordinating conjunctions». Before you watch, try to remember what rules from this grammar topic you know.

5.2. Watch the video and make notes. Use grammar reference if necessary.

link	QR code
https://www.youtube.com/watch?v=G7qvcYcS3VM	

5.3. Read the text below and highlight as many subordinating conjunctions as you can. Check results with your partner.

In the most technologically advanced countries the 21st century is the age of computers. It has been called the information age, the century of the knowledge explosion and the epoch of atomic power, but without the contribution made by computers these distinguishing aspects of our time would not have been fully developed. In almost every case in which computers and robots have replaced human beings the tasks involved are repetitive and mechanical. Thus, machines can perform these tasks more rapidly and efficiently than human beings can. In addition, there are many goods and services which would be totally unavailable without the intervention of machines. The high-speed transportation provided by jet airplanes is one of examples; space exploration is another one. The number of different computer applications is truly staggering. Today, there are more different programs than there are words in the English language. There are very few, if any, human activities that do not or could not use computers effectively. Supercomputers, which process information 100 million times faster than ordinary personal computers, have revolutionized the design of aircraft and automobiles. Instead of building expensive physical prototypes, engineers and designers can test designs through computer simulation, saving millions of dollars and thousands of hours. Yet, as Albert M. Erisman and Kenneth W.Neves of Boeing point out, the machines hold an exciting potential that remains to be realized to the benefit of both the industry and its customers. Supercomputers simulate large-scale and mesoscale. climate and weather changes; atmospheric physicists and climatologists are beginning to gain confidence in their ability to understand the forces that determine

climate. Their eventual success will have great scientific value and provide strong economic leverage in transportation, agriculture and other industries. As computer technology matures, systems will play an increasingly important role in education and in the acquisition and maintenance of professional skills.

Retrieved from https://bit.ly/3k9SQtV

5.4. Make up your own ten sentences in English using subordinating conjunctions in the table:

conjunction word	sentences in English
after	1.
although	2.
as far as	3.
by the time	4.
in order to	5.
if	6.
when	7.
before	8.
unless	9.
because	10.

6. TRANSLATION

6.1. Translate the following passage into Ukrainian, pay attention to the words and phrases in bold:

If you are dedicated to playing games on your PC, you may invest in a common keyboard and use it a few days. But if you really want to take your favorite games to the next level, a **gaming keyboard** can come in handy. Gaming keyboards are specifically designed to enhance your gaming **experience** and increase your wins. These types of keyboards are geared toward users who spend hours while playing computer games. In addition to having an **additional key block** to play, they are characterized by having extravagant formats, with lights, colored keyboard, more

resistant keys, and all kinds of designs. A large number of gaming keyboards usually include a **built-in joystick**, with which the user can smoothly and easily control various **axes** of movement, even simultaneously with the mouse, thus greatly improving the gaming user experience. Gaming keyboards are normally **ergonomically designed**, in order to provide **true comfort** in using it, especially considering that most video game lovers can spend long hours in front of the screen with their competitive games. **Keys Rollover –** this is the component that controls the number of keystrokes that a keyboard can register at a time. Common keyboards have 1 or 2 rollover keys. Therefore, if you press more than one at a time, the **extra keystrokes** are not able to record. On the other hand, a gaming keyboard is designed with a minimum of 5-key Rollover. This allows a gamer to make simultaneous keystrokes with ease. Each key is scanned separately by the **inbuilt keyboard** hardware, so each press is detected correctly, regardless of how many different keys you press at the same time. Most gaming keyboards are designed in such a way that users can reprogram the function of the keys according to their desire. By reprogramming the functions manually, then such function can perform **multiple functions** with a single touch. Obviously every gamer love led lights and gaming keyboards certainly take them to their products. Most gaming keyboards come with keys that are not only **LED-backlit** but also able to program with multiple color combinations. Playing in the dark is a whole new experience for gamers nowadays.

Retrieved from https://bit.ly/3hxig2O

6.2. Translate the following sentences into English:

1. Офісна клавіатура має багато відмінностей у порівнянні з мультимедійною клавіатурою.
2. Сучасні клавіатури мають функцію підсвічування клавіш, що є надзвичайно корисно, коли користувач працює вночі.
3. «Гарячі клавіші» дозволяють користувачу економити час під час введення команд або редагування тексту.
4. Механічні ігрові клавіатури більш гучні, ніж звичайні мультимедійні.

5. Купуючи нову клавіатуру, слід заздалегідь подбати про наявність інтерфейсів для її підключення.

6. Люди, які полюбляють грати у компютерні ігри, зазвичай надають перевагу механічним дротовим клавіатурам.

7. Найкращий спосіб заощаджити кошти – купувати комп'ютерну мишу та клавіатуру копмлектом.

7. SPEAKING

7.1. You are a participant of the international conference devoted to the innovations in pointing devices. Choose and speak on one of the following topics:

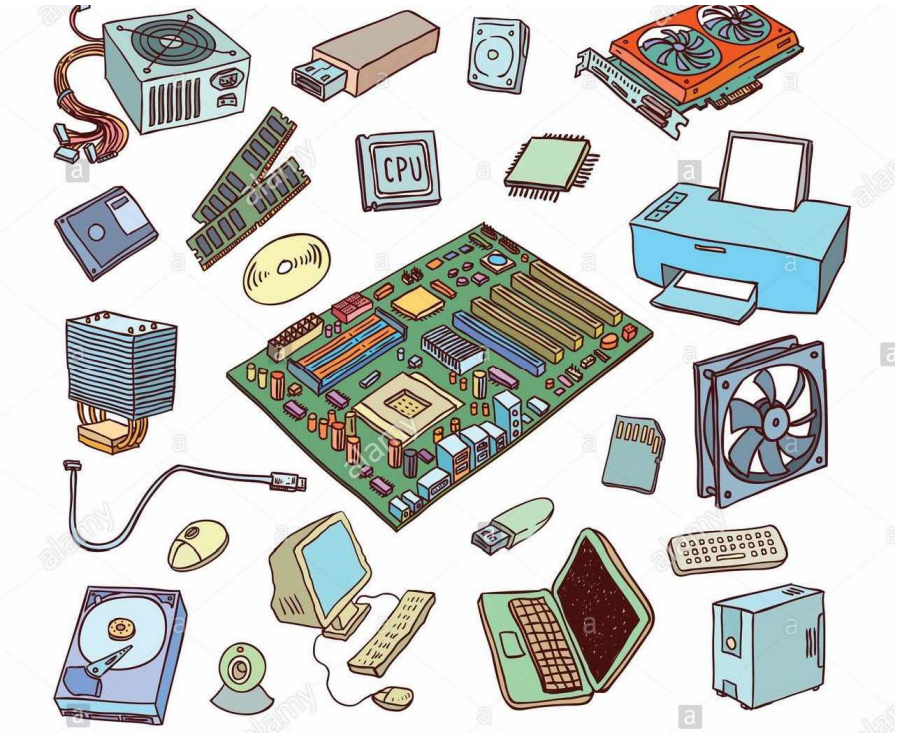
1. Keyboards for gamers
2. The advantages and disadvantages of laptop keyboards
3. Types of interfaces for connecting modern keyboards

7.2. Work in pairs. Your friend from the UK is going to buy a new keyboard. He does not understand anything about different types of keyboards. Translate the terms into English and try to recommend him the best keyboard using the information from the table below. Swap the roles.

Виробник:	SteelSeries
Тип:	Клавіатура
Призначення:	для ігор
Підключення:	Дротове
Інтерфейс комунікації з ПК:	USB
Колір корпусу:	Чорний
Тип клавіатури:	Мультимедійна
Тип клавіш:	Механічний

Кількість додаткових клавіш:	2
Наявність підставки під зап'ястя:	Є
Маніпулятор прокрутки:	Немає
Цифровий блок:	Є
Колір символів кирилиці:	Настроюється
Підсвічування клавіш:	є
Вбудований USB-порт:	Є
Аудіо-роз'єм:	Немає
Розміри, мм:	436,7x139,2x40,3
Вага, г:	0,9706877
Додатково:	Магнітні перемикачі OmniPoint

7.3. With the help of this picture, name all the computer components describe their functions. Use keywords or phrases from the unit.



Retrieved from https://bit.ly/3rujrDE

8. WRITING

8.1. Write a summary to the text «Different types of keyboards» in 100 words. Use Appendix B if necessary.

8.2. Write a short article for the IT magazine about gaming keyboards (about 100-120 words). Use Appendix C if necessary.

SELF-ASSESSMENT (UNITS 3-4)

1. Complete these word partnerships with the words in the box:

address (x2)	button	life	link	network	password	websites

1. a wireless _____
2. a web _____
3. enter a(n) _____
4. follow a(n) _____
5. browse _____
6. the recipient's _____
7. short battery _____
8. the refresh _____

2. Correct the mistakes in these sentences. <u>Underline</u> one or two incorrect word(s) and write the correct word(s) on the line:

9. The internet is a network where covers the world. _____
10. I'm knowing how to develop websites. _____
11. If we buy some tablets soon, we save money. _____
12. A GPS is a device that show your location. _____
13. Where's a document with the network information? I saved it in this folder. _____
14. He's the person which looks after the servers. _____
15. If you follow a link, you'll went to another web page. _____
16. With a tablets and the right software, you can access your data anywhere. _____
17. I install some software at the moment but I'll finish in a few minutes. _____

3. Match 18–24 to a–g to make sentences:

18. If you don't want to make mistakes while typing,
19. If you get an error message,

20. If you use a VPN,
21. If you want to look at web pages,
22. If you want to stream videos,
23. If your device has an accelerometer,
24. When you browse the internet,

a. give me a call.
b. it knows when you move it.
c. security is important.
d. use a spell checker.
e. you'll need a fast internet connection.
f. a browser is useful.
g. your messages will be more secure.

4. <u>Underline</u> the odd one out in each group:

25. 'back' button	bookmarks bar	browse	tab
26. check	forward	send	stream
27. browser	local area	virtual private	wireless
28. accelerometer	GPS	printer	screen
29. battery recharger	calculator	calendar	e-book reader
30. dot	number	slash	underscore

UNIT 5. CAPTURE YOUR FAVOURITE IMAGE

Retrieved from https://bit.ly/3rujrDE

1. LEAD-IN

1.1. Discuss the following questions in pairs and share the information:

1. Do you like taking pictures?
2. What kind of camera do you have?
3. Should pictures be posted on the internet without permission?
4. Do you always bring a camera wherever you go for vacation?
5. Are you a camera-shy?
6. Do you like taking photos of yourself?

1.2. Practice the pronunciation of English terms, translate them into Ukrainian and explain their meaning in English:

term	translation	meaning
light source		
dimension		
barcode		
pattern		
sensor		
resolution		
matrix		
interface		

2. LISTENING

2.1. Work in teams (3-4 students). Make a list of possible areas where 3D scanners can be applied in. Discuss with your groupmates their characteristics.

2.2. You will watch the video about the most innovative 3D scanners. Before you watch brainstorm and complete the chart. Try to predict what the video will be about.

	your ideas
1	
2	
3	
4	
5	

2.3. Watch the video and check your answers in Task 2.2.

Link	QR code
https://www.youtube.com/watch?v=q3wxOLNgmsE	

2.4. Watch the video again and try to answer the questions:

1. Who is the presenter?
2. What was the presenter talking about?
3. What technical information would you add to the presenter's speech?

2.5. After watching the video mark the following sentences as True or False:

1. Single scan time of SIMAX3D takes 6 seconds	**True**	**False**
2. The ARTEC SPIDER cannot be used for industrial design	**True**	**False**
3. The EINSCAN PRO 2X can scan ut to 15000 points per second	**True**	**False**

4. The EINSCAN SE provides high quality 3D data for 3D printers	**True**	**False**
5. The SOL 3D offers a unique combination of white light technology and laser triangulation	**True**	**False**
6. SIMAX3D costs 850 USD	**True**	**False**

3. READING

3.1. Pronounce the following words, translate them into Ukrainian and try to memorize:

word	translation
electromagnet	
image	
rotating drum	
intensity	
reflective	
transparency	
photodiode	
array	
reflect	
illuminate	
carrier	

3.2. Work in pairs. Make up your own sentences in English with any 3-4 words from the task above. Write them down and ask your groupmate to translate them into Ukrainian.

3.3. Look through the passages and choose suitable titles for them out of the given ones. One of them is extra title:

1. CIS scanner
2. Roller scanner
3. QR sode scanner

4. Film scanner
5. 3D scanner
6. Flatbed scanner
7. Planetary scanner

DIFFERENT TYPES OF SCANNERS

Retrieved from https://bit.ly/3rujrDE

The pantelegraph was an early form of facsimile machine transmitting over normal telegraph lines developed by Giovanni Caselli, used commercially in the 1860s, that was the first such device to enter practical service. It used electromagnets to drive and synchronize movement of pendulums at the source and the distant location, to scan and reproduce images. It could transmit handwriting, signatures, or drawings within an area of up to 150 × 100 mm. Édouard Belin's Belinograph of 1913, scanned using a photocell and transmitted over ordinary phone lines, formed the basis for the AT&T Wirephoto service. In Europe, services similar to a wirephoto were called a Belino. It was used by news agencies from the 1920s to the mid-1990s, and consisted of a rotating drum with a single photodetector at a standard speed of 60 or 120 rpm (later models up to 240 rpm). They send a linear analog AM signal through standard telephone voice lines to receptors, which synchronously print the proportional intensity on special paper. Let us consider the most commonly used types of scanners nowadays.

A This type of scanner is sometimes called a reflective scanner because it works by shining white light onto the object to be scanned and reading the intensity and color of light that is reflected from it, usually a line at a time. They are designed for scanning prints or other flat, opaque materials but some have available transparency adapters, which for a number of reasons, in most cases, are not very well suited to scanning film.

B Contact image sensor (CIS) scanning consists of a moving set of red, green and blue LEDs strobed for illumination and a connected monochromatic photodiode array under a rod lens array for light collection. Images to be scanned are placed face down on the glass, an opaque cover is lowered over it to exclude ambient light, and the sensor array and light source move across the pane, reading the entire area. An image is therefore visible to the detector only because of the light it reflects.

C This type of scanner is sometimes called a slide or transparency scanner and it works by passing a narrowly focused beam of light through the film and reading the intensity and color of the light that emerges. Usually, uncut film strips of up to six frames, or four mounted slides, are inserted in a carrier, which is moved by a stepper motor across a lens and CCD sensor inside the scanner. Some models are mainly used for same-size scans. Film scanners vary a great deal in price and quality. The lowest-cost dedicated film scanners can be had for less than $50 and they might be sufficient for modest needs. From there they inch up in staggered levels of quality and advanced features upward of five figures.

D Scanners are available that pull a flat sheet over the scanning element between rotating rollers. They can only handle single sheets up to a specified width (typically about 210 mm, the width of many printed letters and documents), but can be very compact, just requiring a pair of narrow rollers between which the document is passed. Some are portable, powered by batteries and with their own storage, eventually transferring stored scans to a computer over a USB or other interface.

E 3D scanning is the process of analyzing a real-world object or environment to collect data on its shape and possibly its appearance (e.g., colour). The collected data can then be used to construct digital 3D models. A 3D scanner can be based on many different technologies, each with its own limitations, advantages and costs. Many

limitations in the kind of objects that can be digitised are still present. For example, optical technology may encounter many difficulties with shiny, reflective or transparent objects.

F A planetary scanner (also called an orbital scanner) is a type of image scanner for making scans of rare books and other easily damaged documents. In essence, such a scanner is a mounted camera taking photos of a well-lit environment. Originally, such scanners were expensive and could only be found in archives and museums, but with the availability of cheap, high-resolution digital cameras, DIY planetary scanners have become affordable, and for instance are being used by volunteer scan providers for Project Gutenberg.

Retrieved from https://bit.ly/3B42mog

3.4. Answer the questions to check your understanding of the text:

1. What is a scanner?
2. Who is considered to be the creator of the pantelegraph?
3. What does CIS scanning process consist of?
4. What is the number of slides the film scanner can process at the same time?
5. What type of scanners can handle single sheets up to a specified width?
6. What type of scanners can scan real-world object?
7. What type of scanners is used to scan rare books?

3.5. Complete the following sentences with the ideas from the text:

1. It used electromagnets to drive and synchronize_____.
2. It could transmit handwriting, signatures, or drawings within_____.
3. Uncut film strips or four mounted slides are_____.
4. The lowest-cost dedicated film scanners can_____.
5. Some are portable, powered by batteries and_____.
6. A 3D scanner can be based on many different_____.
7. Originally, such scanners were expensive and could only be found in _____.

3.6. Consider the following statements whether they are TRUE or FALSE. If the statement is FALSE find the part of the text that gives the correct information:

1. DIY planetary scanners have become affordable	**True**	**False**
2. Optical technology may encounter many difficulties with shiny, reflective or transparent objects	**True**	**False**
3. CIS scanning consists of a moving set of black, green and blue LEDs	**True**	**False**
4. Planetary scanners are used in Project Gutenberg	**True**	**False**
5. The pantelegraph was commercially used for the first time in the 1960s	**True**	**False**
6. Pantelegraph is commonly used nowadays	**True**	**False**

4. LANGUAGE IN USE

4.1. Match each term with its proper definition:

term	definition
1. infrared cleaning	A) is a method of representing data in a visual, machine-readable form
2. barcode reader	B) is measured by the size of the dot of light emitted by the reader
3. cordless barcode scanner	C) is operated by a battery fit inside it and is not connected to the electricity mains and transfer data to the connected device like PC
4. scanner resolution	D) is an optical scanner that can read printed barcodes
5. barcodes	E) is a technique used to remove the effects of dust and scratches on images scanned from film

4.2. Cover the left column of the table in task 4.1 and recall the terms.

4.3. Find phrases from the text opposite to the words in the table and translate them into Ukrainian:

English phrase or word	antonym from the text
the same	
analog	
ruine	
expensive	
more than	
never	
transmitter	
disappear	

4.4. Work in pairs. Make up your own sentences in English with any 3-4 antonyms from the task above. Write them down and ask your group mates to translate them into Ukrainian.

4.5. What do the following abbreviations stand for? Use Appendics F if nessesary.

abbreviation	definition
DPI	
RGB	
USB	
3D	
LED	
CCD	
DIY	

5. GRAMMAR

5.1. You are going to watch the video on the topic «Passive voice». Before you watch, try to remember what rules from this grammar topic you know.

5.2. Watch the video and make notes. Use grammar reference if necessary.

link	QR code
https://www.youtube.com/watch?v=nRGLDD0BBdc&t=1s	

5.3. Read the text below and highlight as many passive voice constructions as you can. Check results with your partner.

Document scans are often processed using OCR technology to create editable and searchable files. Most scanners use ISIS or TWAIN device drivers to scan documents into TIFF format so that the scanned pages can be fed into a document management system that will handle the archiving and retrieval of the scanned pages. Lossy JPEG compression, which is very efficient for pictures, is undesirable for text documents, as slanted straight edges take on a jagged appearance, and solid black (or other color) text on a light background compresses well with lossless compression formats. While paper feeding and scanning can be done automatically and quickly, preparation and indexing are necessary and require much work by humans. Preparation involves manually inspecting the papers to be scanned and making sure that they are in order, unfolded, without staples or anything else that might jam the scanner. Additionally, some industries such as legal and medical may require documents to have Bates Numbering or some other mark giving a document identification number and date/time of the document scan. Indexing involves associating relevant keywords to files so that they can be retrieved by content. This process can sometimes be automated to some extent, but it often requires manual labour performed by data-entry clerks. One common practice is the use of barcode-recognition technology: during preparation, barcode sheets with folder names or index information are inserted into the document files, folders, and document groups. Using automatic batch scanning, the documents are saved into appropriate folders, and an index is created for integration into document-management systems. A specialized form of document scanning is book

scanning. Technical difficulties arise from the books usually being bound and sometimes fragile and irreplaceable, but some manufacturers have developed specialized machinery to deal with this. Often special robotic mechanisms are used to automate the page turning and scanning process.

Retrieved from https://bit.ly/3kpTO5d

5.4. Make up ten sentences in English using passive voice and terms below:

term	sentence
1. camera	
2. digitized	
3. TIFF format	
4. JPEG compression	
5. robot	
6. mechanism	
7. lens	
8. shutter	
9. widths	
10. software	

6. TRANSLATION

6.1. Translate the following passage into Ukrainian, pay attention to the words and phrases in bold:

A **barcode** or bar code is a method of representing data in a visual, machine-readable form. Initially, barcodes represented data by varying the widths and **spacings** of parallel lines. These barcodes, now commonly referred to as linear or **one-dimensional** (1D), can be scanned by special optical scanners, called barcode readers, of which there are several types. Later, two-dimensional (2D) variants were developed, using **rectangles**, dots, hexagons and other **patterns**, called matrix codes or 2D barcodes, although they do not use bars as such. 2D barcodes can be read using **purpose-built** 2D optical scanners. A mobile device with an **inbuilt** camera, such

as smartphone, can function as the latter type of 2D barcode reader using specialized application software. Barcodes are widely used around the world in many contexts. In stores, UPC barcodes are **pre-printed** on most items other than fresh produce from a grocery store. This speeds up processing at check-outs and helps track items and also reduces instances of shoplifting involving price tag **swapping**, although **shoplifters** can now print their own barcodes. Barcodes that encode a book's ISBN are also widely pre-printed on books, journals and other printed materials. Barcodes are widely used in the healthcare and hospital settings, ranging from patient identification (to access patient data, including medical history, drug allergies, etc.) to creating SOAP Notes with barcodes to medication management. They can also be used to **keep track** of objects and people; they are used to keep track of rental cars, airline luggage, nuclear waste, registered mail, express mail and parcels. Barcoded tickets (which may be printed by the **customer** on their home printer, or stored on their mobile device) allow the holder to enter sports arenas, cinemas, theatres, fairgrounds, and transportation, and are used to record the arrival and departure of vehicles from rental facilities etc. This can allow **proprietors** to **identify** duplicate or fraudulent tickets more easily. Barcodes are widely used in shop floor control applications software where employees can scan work orders and track the time spent on a job.

Retrieved from https://bit.ly/3i9qH3y

6.2. Translate the following sentences into English:

1. Перед оприлюдненням світлини у соціальних мережах, необхідно запитати про згоду у людини, яка є на цій світлині.
2. Сьогодні неможливо уявити наше життя без використання пристрою зчитування штрих-кодів.
3. Цифрові камери мають багато переваг над аналоговими, але професійні фотографи все одно надають перевагу саме аналоговим чорнобілим камерам.
4. Якщо у вас нема можливості використати офісний сканер, ви завжди можете скористатись можливостями вашого смартфону та відсканувати текст.

5. Процес сканування є надзвичайно складним та дорогим, коли ми говоримо про використання промислових сканерів.

7. SPEAKING

7.1. You are a participant of the international conference devoted to the innovations in photography. Choose and speak on one of the following topics:

1. 3D scanners
2. Advantages of digital cameras
3. How to read barcodes
4. How to customize your smartphone to take the best photos
5. Self-calibrating digital cameras

7.2. Work in pairs. Imagine you are interviewing a famous IT scientist. Try to interview your groupmate using the questions below. List all of his or her ideas in the table. Swap the roles.

student 1	student 2
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

1. What do you normally take photos with?
2. Do you ever use special features like panoramic photos or slo-mo videos?
3. Do you prefer taking photos of scenery or portraits of people?
4. Do you usually edit your photos?
5. Do you post photos on social media sites?

7.3. With the help of this picture, describe the main components of a digital camera. Use Appendix D if necessary.

Retrieved from https://bit.ly/3rujrDE

8. WRITING

8.1. Write a summary to the text «Different types of scanners» in 100 words. Use Appendix B if necessary.

8.2. Write a short article for the IT magazine about the best digital camera you have ever used (about 100-120 words). Use Appendix C if necessary.

UNIT 6. DISPLAY SCREENS AND ERGONOMICS

Retrieved from https://bit.ly/3rujrDE

1. LEAD-IN

1.1. Discuss the following questions in pairs and share the information:

1. What is a video graphics adaptor?
2. What types of video displays do you know?
3. What new technologies are used for displaying the output?
4. Is it possible to watch TV by means of a monitor?
5. What devices can you connect to your monitor?
6. What is refresh rate?

1.2. Practice the pronunciation of English terms, translate them into Ukrainian and explain their meaning in English:

term	translation	meaning
adaptor		
feature		
capture		
monochrome		
mode		
multimedia		
liquid		

sequence		
diode		
monitor		
curved		
brightness		
experience		
nit		

1.3. Complete the text with the words from the table:

1. fast-paced	2. monitors	3. brighter	4. ratio
5. aspect	6. competitive	7. curved	8. picture

The Gigabyte G27QC and G32QC are 1440p 165Hz gaming monitors with 1._____VA panels for a more immersive gaming experience, but a weaker performance when it comes to 2._____ gaming. The main difference between the two is obviously the screen size and therefore pixel density. The G27QC has 108 PPI, whereas the G32QC has 93 PPI. So, the 3._____will be sharper on the 27″ model, but the overall viewing experience is more immersive on the 32″ version due to the larger screen. Some users find 32″ 4._____ to be too big for desktop use though. The 32″ model can also get 5._____with a 350-nit peak brightness (400-nits for HDR), while the 27″ variant is rated at 250-nits, but can get a bit over 300-nits, depending on the unit. With both monitors, you get a high contrast 6. _ (3,000:1) and a wide ~90% DCI-P3 color gamut, which along with the curved screen, greatly improves the visual 7.____of the gaming experience. The monitors are equipped with the Aim Stabilizer MBR technology, which can remove ghosting to an extent, but the 1ms (GtG) response time of fast TN and IPS panels still provides better performance in fast-paced games. All in all, if you aren't all that into 8. _____ gaming and would instead get better visuals, the Gigabyte G27QC and G32QC are for you.

Retrieved from https://bit.ly/3hElKjS

2. LISTENING

2.1. Work in teams (3-4 students). Discuss different types of monitors using computer terms from task 1.2.

2.2. You will watch the video about the best 34" curved 144hz ultrawide monitor. Before you watch brainstorm and complete the chart. Try to predict what the video will be about.

	your ideas
1	
2	
3	
4	
5	

2.3. Watch the video and compare your answers in Task 2.2 with your groupmates.

link	QR code
https://www.youtube.com/watch?v=JWo34Cf4E3I	

2.4. Watch the video again and try to answer the questions:

1. Who is the presenter?
2. What was the presenter talking about?
3. What technical information would you add to the presenter's speech?

2.5. After watching the video mark the following sentences as True or False:

1. This monitor can be used just for gaming	**True**	**False**
2. The RTX 3080 has special magnetic feature for cables	**True**	**False**

management		
3. This monitor has 3 HDMI ports	**True**	**False**
4. The device has 5 menu buttons	**True**	**False**
5. The resolution of the RTX 3080 is 3440x1440	**True**	**False**
6. The monitor has built-in speackers	**True**	**False**

3. READING

3.1. Pronounce the following words and phrases, translate them into Ukrainian and try to memorize:

word / phrase	translation
panel type	
resolution	
refresh rate	
console	
frame rate	
pixel density	
viewing angle	
brightness	
contrast ratio	
compatible	
backlight	
adjustment	

3.2. Work in pairs. Make up your own sentences in English with any 3-4 words / phrases from the task above. Write them down and ask your groupmate to translate them into Ukrainian.

3.3. Look through the passages and choose suitable titles for them out of the given ones. Two of them are extra titles:

1. Image Quality

2. Design & Connectivity
3. Hi-Fi system
4. Innovative features
5. Alternatives
6. General overview
7. Gaming input devices

THE BEST GAMING MONITOR

Retrieved from https://bit.ly/3rujrDE

A Depending on region and availability, the alternate display might suit you better. We'll also mention if there are any upcoming or similar displays to keep in mind. Be sure to read the review below to familiarize yourself with what panel type, resolution, refresh rate and other features (such as HDR and VRR) best suit your preference, budget and PC rig or console. The 1920×1080 or 1080p resolution is the least demanding on your CPU and GPU, allowing you to maintain a high frame rate more easily. Whether you need a good budget 1080p gaming monitor or the absolute best one, we've got you covered!

B Besides not being demanding, another good thing about 1080p resolution is that it looks good on ~24″ sized screens. On the 24.5″ viewable screen of the EX2510, you get a decent pixel density of 90 PPI (pixels per inch). As a result, you get a decent amount of screen space and fairly sharp details and text. The same resolution on a 27″ monitor, for instance, would look considerably more pixelated, though some users wouldn't mind it. The BenQ EX2510 is based on an IPS panel by AU Optronics; it boasts ~99% sRGB gamut for accurate and rich colors and 178° wide viewing angles

which ensure that the image remains perfect regardless of the angle you're looking at it. Next, it has a peak brightness of 400-nits, meaning that it can get more than bright enough even in bright rooms. The contrast ratio amounts to 1,000:1, which is standard for IPS panel monitors. So, blacks won't be quite as deep as that of VA panels (with a ~3,000:1 contrast ratio). It's mainly in dark rooms that blacks appear a bit grayish in comparison to VA panels, but the image is still quite vibrant overall. Besides, VA panels have flaws of their own. IPS monitors are also affected by IPS glow, but its severity varies across different units of monitors, and it's usually manageable.

C The BenQ EX2510 has a fast 2ms GtG pixel response time speed for no visible trailing behind fast-moving objects – ideal for first-person shooters. AMD FreeSync is supported with a 48-144Hz VRR range for tear-free gameplay up to 144FPS, and the 'G-SYNC Compatible' mode works flawlessly with GeForce cards, even though the monitor is not certified by NVIDIA. In contrast, VA panel monitors at this price range have significantly slower response time speed, resulting in noticeable smearing in fast-paced games. Moreover, most units are affected by VRR brightness flickering.

The BenQ EX2510 also supports Blur Reduction; this technology uses backlight strobing to reduce perceived motion blur at a cost of picture brightness. Other features include various picture presets, Black eQualizer (improves visibility in darker scenes) and HDR via software-emulation.

D The monitor has a sturdy stand with height adjustment up to 130mm, +/- 20° swivel, -5°/20° tilt and 100x100mm VESA mount compatibility. Connectivity options include two HDMI 2.0 ports, DisplayPort 1.2, two 2.5W built-in speakers and a headphone jack.

E If you're not a fan of the design, we recommend the Acer XB253QGP. It's based on the same panel and offers basically identical image quality, features and performance, but it's usually ~$30 more expensive. There are a few more 24″ 1080p 144Hz IPS gaming monitors worth considering, such as the AOC 24G2, the LG 24GN650, the HP X24i, and the ASUS VP249QGP. However, these models are based on lower-quality IPS panels by BOE/Panda yet they can be more expensive – their prices often fluctuate too. To make things even more confusing, it's not always certain

which panel (BOE or Panda) you'll get with some models (such as the AOC 24G2 or the VP249QGP). The AOC C24G1A is a good VA panel alternative. However, despite its high contrast ratio and wide color gamut, smearing and VRR brightness flickering will repulse most gamers. So, only consider it if you're not sensitive to ghosting and screen tearing. If you can't afford or don't need a 144Hz gaming monitor, check out the ASUS VA24DQ (24″ 1080p 75Hz IPS FreeSync; $120) or the Acer SB220Q (22″ 1080p 75Hz IPS FreeSync; $90).

Retrieved from https://bit.ly/3hElKjS

3.4. Answer the questions to check your understanding of the text:

1. Does your gaming experience depend on the resolution a screen?
2. What is the viewing angle of the BenQ EX2510?
3. What is the peak brightness of the BenQ EX2510?
4. What is the standard contrast ratio for IPS panel monitors?
5. Do VA and IPS panels have the same backlights?
6. Is it necessary for a gaming monitor to support AMD FreeSync technology?
7. What are the connectivity options of the BenQ EX2510?

3.5. Complete the following sentences with the ideas from the text:

1. The 1920×1080 or 1080p resolution is_____.
2. 1080p resolution on a 27″ monitor would look_____.
3. The BenQ EX2510 is based on_____.
4. The contrast ratio amounts to_____.
5. AMD FreeSync is supported with _____.
6. Blur Reduction uses backlight strobing to reduce_____.
7. There are a few more 24″ 1080p 144Hz IPS gaming monitors worth considering, such as_____.

3.6. Consider the following statements whether they are TRUE or FALSE. If the statement is FALSE find the part of the text that gives the correct information:

1. The price of ASUS VA24DQ monitor is $90	**True**	**False**
2. Acer XB253QGP and BenQ EX2510 have identical image quality	**True**	**False**
3. BenQ EX2510 is based on an IPS panel	**True**	**False**
4. The peak brightness of BenQ EX2510 is 400-nits	**True**	**False**
5. BenQ EX2510 has 12ms GtG pixel response time speed	**True**	**False**
6. BenQ EX2510 has OLED matrix	**True**	**False**

4. LANGUAGE IN USE

4.1. Match each term with its proper definition:

term	definition
1. pixel density	A) is the time a system or functional unit takes to react to a given input
2. contrast ratio	B) is a screen technology for liquid-crystal displays (LCDs). It was designed to solve the main limitations of the twisted nematic field effect (TN) matrix LCDs which were prevalent in the late 1980s
3. backlight	C) is the number of times per second that a raster-based display device displays a new image
4. viewing angle	D) is an artifact that depicts visual perception, such as a photograph or other two-dimensional picture, that resembles a subject - usually a physical object - and thus provides a depiction of it
5. graphics processing unit	E) is the number of distinct pixels in each dimension that can be displayed
6. resolution	F) is a specialized electronic circuit designed to rapidly manipulate and alter memory to accelerate

	the creation of images in a frame buffer intended for output to a display device
7. image	G) is the angle at which a display can be viewed with acceptable visual performance
8. refresh rate	H) is a form of illumination used in monitors. As LCDs do not produce light by themselves - unlike, for example, cathode ray tube (CRT) displays - they need illumination (ambient light or a special light source) to produce a visible image
9. in-plane switching panel	I) is a property of a display system, defined as the ratio of the luminance of the brightest shade (white) to that of the darkest shade (black) that the system is capable of producing
10. response time	J) is a measurement of an electronic image device, such as a computer monitor or television display, or image digitizing device such as a camera or image scanner

4.2. Cover the left column of the table in task 4.1 and recall the terms.

4.3. Find synonyms from the text to the words in the table and translate them into Ukrainian:

English phrase or word	synonym from the text
screen	
to support	
number of	
similar	
pure colors	
enough	

to influence	
device	
controled	

4.4. Work in pairs. Make up your own sentences in English with any 3-4 synonyms from the task above. Write them down and ask your groupmates to translate them into Ukrainian.

4.5. What do the following abbreviations stand for? Use Appendics F if nessesary.

abbreviation	definition
HDR	
VRR	
GPU	
PPI	
RGB	
CRT	
IPS	
TFT	
VA	
HDMI	

5. GRAMMAR

5.1. You are going to watch the video on the topic «Modal verbs». Before you watch, try to remember what rules from this grammar topic you know.

5.2. Watch the video and make notes. Use grammar reference if necessary.

link	QR code
https://www.youtube.com/watch?v=Nk9nQwoCFig	

5.3. Read the text below and highlight as many modal verbs as you can. Check results with your partner:

The ASUS VG259QM can be the best 240Hz gaming monitor with an IPS panel; it may offer stunning motion clarity and responsiveness as well as gorgeous colors and wide viewing angles! What's more, it can be overclocked to 280Hz! Based on an IPS panel with a 400-nit peak brightness, a 1,000:1 static contrast ratio, and ~99% sRGB color gamut, the ASUS VG259QM provides you with vivid and striking colors! Keep in mind that in order to take advantage of 240Hz, you also may need adequately high frame rates. Ideally, you'll want at least 240FPS (or 280FPS if overclocked), but you'll need over 144FPS to justify buying a higher refresh rate display since 144FPS will look basically the same at 144Hz and 240Hz. It's also worth noting that the difference between 144Hz and 240Hz is not nearly as big as the difference between 60Hz and 144Hz. You can still feel it and you do get lower input lag, which will certainly appeal to serious competitive gamers eager to improve. The ASUS VG259QM can support AMD FreeSync with a 48-280Hz VRR range, and NVIDIA certified it as G-SYNC compatible. It also offers the exclusive ELMB-Sync technology, which allows you to use MBR and FreeSync at the same time. However, since you cannot adjust response time overdrive, you'll be able to get a decent performance out of it only if you can maintain 200FPS+. Regardless of its ELMB-Sync technology, the monitor can run incredibly smooth at 280Hz, and you may get excellent colors and viewing angles on top of that for a very good price! The design of the monitor is also exceptional with full ergonomic support including up to 130mm height adjustment, -5°/33° tilt, 90° pivot, +/- 90° swivel and 100x100mm VESA mount

compatibility. Connectivity options include two HDMI 2.0 ports (up to 240Hz), a single DisplayPort 1.2 socket, a headphone jack and two 2W built-in speakers.

Retrieved from https://bit.ly/3hElKjS

5.4. Make up your own sentences in English using modal verbs above:

modal verb	sentence
shall	
would	
should	
ought to	
must / mustn't	
may	
might	
can	
could	
have to / has to	
don't have to / doesn't have to	

6. TRANSLATION

6.1. Translate the following passage into Ukrainian, pay attention to the words and phrases in bold:

The LG 27GP850 and the 32GP850 are the best 1440p 144Hz IPS gaming monitors with a rapid 1ms GtG pixel **response time speed**. LG's GP850 monitors feature Nano IPS panels that boast a wide 98% DCI-P3 **color gamut** (~135% sRGB) for more saturated and vibrant colors, especially when it comes to reds and greens. Further, they offer an sRGB **emulation mode** that allows you to clamp the gamut down to ~100% sRGB should you prefer more accurate colors for SDR content. Other panel-related specifications include a ~1,000:1 **contrast ratio**, a 400-nit **peak brightness**, 178° wide **viewing angles**, and dithered 10-bit color depth support. AMD FreeSync is supported (with certified G-SYNC compatibility by NVIDIA) with a 48-165Hz VRR

range over DisplayPort and a 48-165Hz range over HDMI. The fast 1ms GtG response time speed ensures that there's no visible **trailing** behind fast-moving objects, making it ideal for competitive FPS gaming. Other features include **pre-calibrated** picture modes, an emulated sRGB mode for color-critical work, MBR, Black Stabilizer, crosshairs and advanced **picture adjustments** such as gamma, color temperature, etc. The 27″ model can support MBR and VRR simultaneously, but the 32″ variant lacks this ability and can only run these technologies separately. In order to take full advantage of the monitor, make sure to use the Fast overdrive preset as «Faster» introduces a lot of overshoot. The monitors feature **ergonomic** stands with -5°/15° tilt, 90° pivot, 110mm height adjustment and VESA m**ount compatibility**, but no swivel to the left/right option while connectivity options include two HDMI 2.0 ports, DisplayPort 1.4, a **headphone jack** and a dual-USB 3.0 hub. Both monitors are also available as the LG 27GP83 and the LG 32GP83B. They are the same displays, but without the 180Hz **overclocking** ability, MBR, and USB hubs for $50 – $100 less. If you're looking for something just as fast but cheaper, check out the LG 27GL83A. It's from the older series and has a lower maximum **refresh rate** of 144Hz, but a fast 1ms GtG **response time speed**. As for the cheaper 32″ model, check out the Gigabyte M32Q. It goes for ~$500 and offers a USB hub, **integrated** KVM switch, Aim Stabilizer Sync (VRR + MBR), and 170Hz OC. In case you want a better 32″ 1440p 144Hz+ IPS gaming monitor, check out the ASUS PG329Q with DisplayHDR 600 and Adobe RGB **color gamut**, but at ~$700, there are many other monitors worth considering too.

Retrieved from https://bit.ly/3zlBY7I

6.2. Translate the following sentences into English:

1. Користувачі, які полюбляють грати в комп'ютерні ігри, зазвичай обирають монітори з найнижчим часом відгуку.
2. Наявність вбудованих у монітор гучномовців не є обов'язковою.
3. Сучасні монітори підтримують роздільну здатність екрану 8К.

4. Діагональ екрану та видима область екрану – це різні терміни, які маркетологи використовую на свою користь, збиваючи з пантелику не досвідчених користувачів.

5. Сучасна матриця монітора це запорука чіткого та яскравого зображення.

6. Рівень яскравості монітору істотно впливає на якість відображення зображення.

7. Деякі сучасні монітори можуть підключатись до смартфону для передачі відео сигналу між пристроями виводу інформації.

8. Вбудований ТВ тюнер дозволяє дивитись телебачення на вашому моніторі.

7. SPEAKING

7.1. Imagine you are a participant of the international conference devoted to the innovations in information technologies and engineering. Choose and speak on one of the following topics. Use keywords or phrases from the unit:

1. VRR performance
2. High contrast ratio or wide color gamut – what is more important?
3. Advantages of the FreeSync technology
4. Micro-stuttering on new monitors
5. IPS versus OLED
6. How to customize your home monitor
7. Self-calibrating monitors

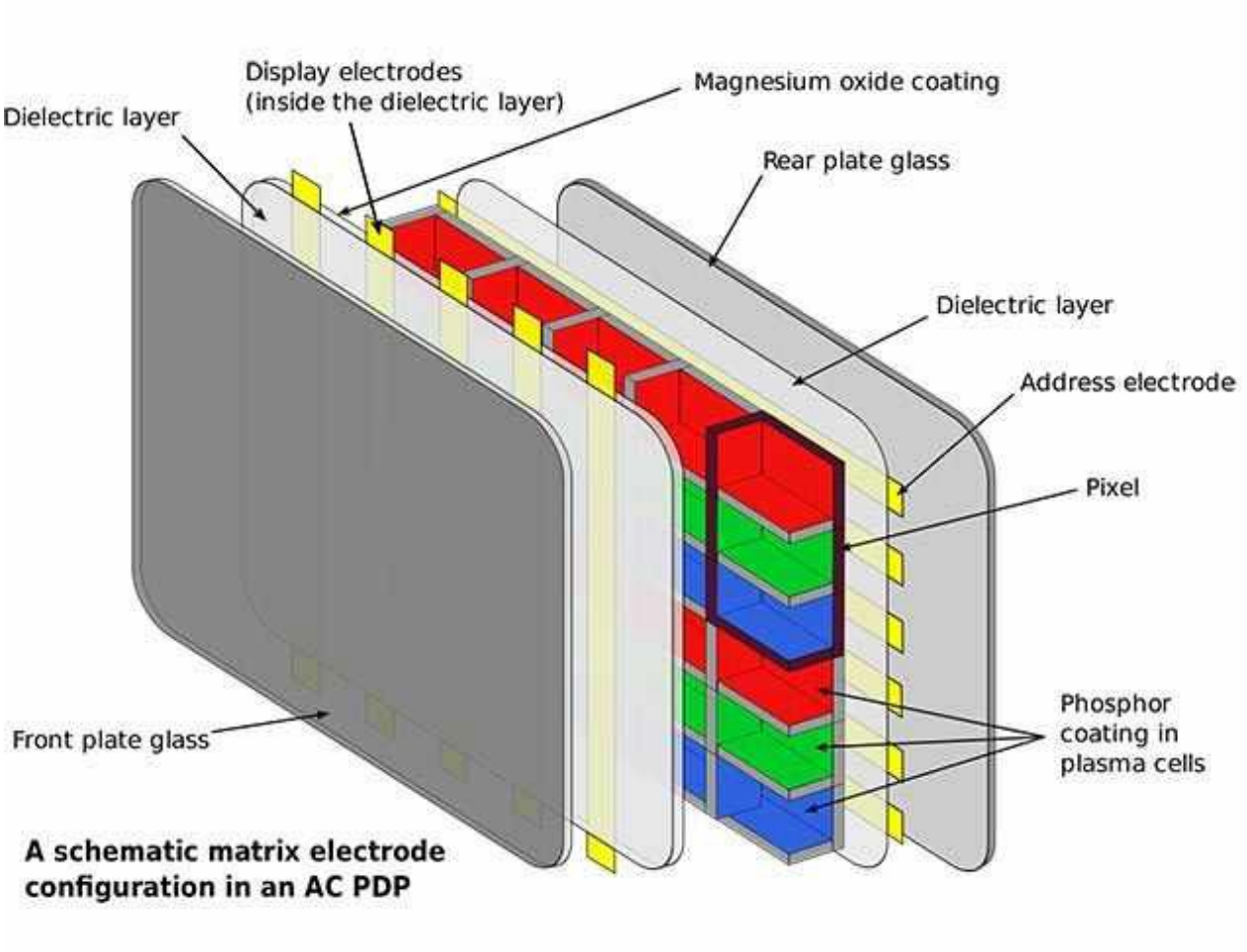
7.2. Work in pairs. Imagine you are interviewing a famous IT scientist. Try to interview your groupmate using the questions below. List all of his or her ideas in the table. Swap the roles.

student 1	student 2
1.	1.
2.	2.
3.	3.

4.	4.
5.	5.

1. What is a borderless monitor?
2. What is a full HD monitor?
3. What is the best monitor for business?
4. How to setup dual monitors?
5. Are curved monitors better?
6. How refresh rate can affect your gaming experience?
7. What inpur or output devices can be connected to a monitor?

7.3. With the help of this picture, describe a schematic matrix electrode configuration in an AC PDP. Use Appendix D if necessary.



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8. WRITING

8.1. Write a summary to the text «The best gaming monitor» in 100 words. Use Appendix B if necessary.

8.2. Write a short article for the IT magazine about the best computer monitor you have ever used (about 100-120 words). Use Appendix C if necessary.

SELF-ASSESSMENT (UNITS 5-6)

1. Complete these word partnerships with the words in the box:

by	database	in	key	permissions	record	smoothly	tablet

1. type_____a formula
2. retrieve a(n) _____
3. multiply _____
4. primary _____
5. query a(n) _____
6. set _____
7. run _____
8. graphics _____

2. Use the words in brackets to complete these sentences. You may need to change or add some words:

9. We can print a list of customers from the database by_____. (run / report)
10. Back everything up_____. (before / reinstall the OS)
11. I was working on some new software when_____. (my computer / crash)
12. I checked the memory but I_____. (not check / hard drive)
13. Could you give me a call after_____? (repair / the computer)
14. Please check the logs while_____. (you / in / server room)
15. Don't forget to unplug the peripherals after_____. (use / computer)

3. Write the words that match these definitions:

16. something you put on your head to listen and speak to other people over the internet _____
17. a problem that happens when paper gets stuck in a printer _____
18. a word for the «–» symbol in formulae _____

19. a database object that makes it easy to enter data _____
20. a line of cells from top to bottom of a worksheet in a spreadsheet_____
21. remotely install new software on a group of computers _____
22. a word for the «/» symbol in formulae _____
23. a device that prints, scans and copies _____

4 Correct the mistakes in these sentences. Underline one or two incorrect word(s) and write the correct word(s) on the line:

24. He founded a problem with his computer. _____
25. Yesterday afternoon he visit a client. _____
26. You checked the spreadsheet carefully? _____
27. After starting a new OS install, you should back up your computer. _____
28. A stylus is an output device. _____
29. If you divide eight by four, you get thirty-two._____
30. There is a problem with the formula in query B2 of the spreadsheet._____

GRAMMAR REFERENCE

UNIT 1. Irregular verbs

Verbs, in theory, are pretty straightforward. But, not everybody would be able to provide a definition, even if they know how to use them within a sentence. There's also a tendency amongst people to stick to certain verbs that they know, and pushing themselves to use new ones becomes a bit of a challenge. In the interest of giving you some variety, we'll take a look at what exactly a verb is, we'll use some examples for you to see how they function as part of a sentence, and we'll provide you with some lists of verbs by different categories so you can find some that might help you mix things up a little in your writing.

The English language has a large number of irregular verbs. In the English language, most verbs (regular verbs) are turned into the past tense by adding '-ed' to the end of a base form of the verb.

Regular verb examples:

Cook → Cooked

Walk → Walked

Talk → Talked

Finish → Finished

Irregular verbs (or irregular past tense verbs) are common verbs in English that do not follow the simple system of adding «d» or «ed» to the end of the word to form the past tense (the past simple and/or the past participle)

Irregular verbs examples:

Do – did – done

Draw – drew – drawn

Drink – drank – drunk

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UNIT 2. Coordinative conjunctions

Most people think of coordinating conjunctions when they hear the word conjunction. Coordinating conjunctions consist of seven words. These words connect words, phrases, or clauses of equal grammatical importance.

Coordinating Conjunctions List

There are seven coordinating conjunctions. You can use the mnemonic FANBOYS to help you remember them.

F is for «for»

A is for «and»

N is for «nor»

B is for «but»

O is for «or»

Y is for «yet»

S is for «so»

Each coordinating conjunction serves different purposes when used. For instance, «or» introduces change while «so» emphasizes a word, phrase, or clause. «So» can also indicate a result or consequence will be forthcoming. You utilize «and» when you wish to link two things together. «But» introduces contrast into a sentence. «Nor», on the other hand, brings forth an alternative negative idea. «Nor» responds to an already presented negative concept. Finally, the word «yet» introduces a contrasting thought. It follows logically after an alternative idea.

How to Use Coordinating Conjunctions

These examples show you how to use these conjunctions in a sentence.

I visit the planetarium every Tuesday afternoon, for I enjoy viewing the stars.

I visit my mother and the ice cream man in central park.

I don’t go for the ambiance nor the stirred fried rice.

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UNIT 3. Correlative conjunctions

Correlative conjunctions work in pairs. Each word of the couple resides in a different area of the sentence. For correlative conjunctions to function properly, you must introduce both terms into the sentence. The word couples connect equal sentence parts. For instance, if you use a noun after the word «both» you will need to place a noun after «and» as well. This helps add structure to a sentence.

Correlative Conjunctions List

Below are some correlative pairs you can use to structure your sentences. Some of these pairs are more common than others.

- Both / and
- Whether / or
- not only / but also
- either / or
- neither / nor
- just / so
- the / the
- as / as
- if / then
- rather / than
- no sooner / than
- such / that
- so / that

How to Use Correlating Conjunctions

Listed below are examples of how correlating conjunctions function. Note how these pairs work together to shape the meaning of the sentence.

- *I didn't know **whether** you'd like sea bass **or** lobster.*
- *She is not thinking **as** logically **as** she can.*
- *I stole **not only** the hubcaps **but also** the tires.*

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UNIT 4. Subordinative conjunctions

Subordinating conjunctions link dependent clauses to independent clauses. A dependent clause cannot operate as a complete sentence: however, an independent clause can. Hence, dependent clauses add extra information to a sentence. Subordinating conjunctions establish a relationship between two clauses. You can use these conjunctions to suggest cause and effect or to set up a contrast. «Because» is one conjunction that demonstrates a cause and effect relationship. The words «although» and «though» introduce a contrast of ideas. These conjunctions can appear at the beginning of a sentence when a dependent clause appears before an independent clause. You can find «because» at the beginning of a sentence in a dependent clause. Teachers often tell their students that sentences cannot begin with words like «because». Teachers do this to prevent young students from writing incomplete sentences. It leads some students in later life to think starting a sentence with a conjunction like «because» is wrong; however, subordinate conjunctions like «because» can successfully begin a sentence.

Subordinating Conjunctions List

- after
- although
- as
- as if
- as long as
- as much as
- as soon as
- as far as
- as though
- by the time
- in as much as
- inasmuch
- in order to

- in order that
- in case
- lest
- though
- now that
- now since
- now when
- now
- even if
- even
- even though
- provided
- provide that
- if
- if then
- if when
- if only
- just as
- where
- wherever
- whereas
- where if
- whether
- since
- because
- whose
- whoever
- unless
- while
- before

- why
- so that
- until
- how
- since
- than
- till
- whenever
- supposing
- when
- or not
- what

How to Use Subordinating Conjunctions

Find examples of how to use some of the subordinating conjunctions below.

- ***Because*** *of the dog bite, I always feared being next to canines.*
- *This will make sense* ***if*** *you read the first chapter*
- ***Until*** *you wear a silk dress, you'll never know what you are missing.*
- *I grab a coffee* ***when*** *I go running.*
- ***As*** *I climb the mountain, I know my legs will hurt tomorrow.*

In the above example sentences the subordinating conjunctions «because», «until», and «as» sit at the beginning of their respective sentences. This proves the myth about subordinating clauses being unable to start sentences false.

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UNIT 5. Passive Voice

The passive voice, put simply, is when something that is done by the subject of the sentence is done by the object instead. Let's break that down a little more though. A subject of a sentence is typically the noun that does the verb. In the passive voice though, the object does the verb instead. The object in a sentence is usually the thing that receives the action. But in the passive voice, it is doing the 'doing' not having something done to it. Confused? Perhaps looking at the differences between active and passive voices will help. We'll also use examples to make it a little clearer. When writing in the passive voice, the subject no longer does an action but rather becomes acted upon. For example, the sentence «John threw the ball» would become «The ball was thrown by John». In many cases, English professionals frown upon the use of the passive voice but it certainly does have its uses.

The Difference Between Active and Passive Voice

Active voice is essentially just the opposite of passive voice. The subject does the «doing», the object has it done to it. Still confused? We're not surprised. Let's look at some examples to clear it up though. The following sentence is written in the active voice: Dave completed his homework. In this case, Dave is the subject, completed is the verb, and the homework is the object that was completed. Now, if you wrote that sentence in the passive voice, it would look something like this: The homework was completed by Dave. In this case, the homework is the object that is doing the doing, completed is of course still the verb, but Dave, the subject, is now having the verb done to him. Both are grammatically correct, but the active voice example is slightly more powerful in its message because it is clear who is doing what. Another example might look like this in the active voice: Kelly reached for the soap. Again, Kelly is the subject, reached is the verb that she is doing, and soap is the object that was reached for. To turn it into the passive voice, it would have to look like this: The soap was reached for by Kelly. The difference is easy enough to understand when you look at examples. But just remember, the active voice has the subject doing something to the object, and the passive voice has the object doing something to the subject.

When to Use the Passive Voice

If the active voice is more powerful in its message, then it should always be used, right? Wrong actually. The passive voice can be used effectively in certain scenarios. If, for example, the subject was unknown or was someone you wanted to keep hidden, then the passive voice works quite well. If you were writing a crime novel for example, but you didn't want to reveal the killer just yet, you might say something like "The gun was reached for by the dark figure" as it creates a little more suspense.

The passive voice is also a great way to put emphasis on the subject at the end of the sentence. Something like «The shots had been fired by Tim» creates a more tense atmosphere than using the active voice alternative «Tim fired the shots». Some sentences in English are simply always presented in the passive voice too. «The book was written by…» is just one example of when passive voice is almost always favored over the active voice.

The passive is used:

(1) When the agent (= the person who does the action) is unknown, unimportant, or obvious from the context.

(2) To make more polite or formal statements.

(3) When the action is more important than the agent, as in processes, instructions, events, reports, headlines, news items, and advertisements.

(4) To put emphasis on the agent.

When not to Use the Passive Voice

As a general rule, the active voice is almost always preferred in English, because it is a much more concise and clear way of expressing what happened. In speech especially, active voice is used mostly because it simply makes sense to focus on keeping what you say as short and clear as it can be. Other than for stylistic reasons in writing, passive voice should rarely be used, because the passive voice is just so open to confusion or misinterpretation on behalf of the reader or listener.

Using the Passive Voice in Writing

As we've already suggested, passive voice is certainly something that shouldn't be completely disregarded in writing. Whilst there are many reasons to avoid it in

speaking, the passive voice has a place in writing stylistically, because even though the meaning might not always be clear, the reader does have the benefit of being able to read the sentence back again to understand what you are trying to say if they were confused initially. The passive voice is one of the best ways in writing to build suspense in a scene and leave the reader guessing until the last possible second about who exactly did what.

In terms of tone, passive voice can actually create quite an impartial tone in your writing. This is especially important in academic work, where you are supposed to present the findings of other people to be considered by the reader. Passive voice is a helpful trick that you can use sparingly to create more distance between yourself and your objective piece of work. «A relationship was found between the amount of chocolate that children ate, and whether or not they had been active that day by numerous studies (Jones and Jones 2020; Johnson and Johnson, 2021)» is an example of passive writing in academic essays. To say «Numerous studies found a relationship between…» just isn't quite as impartial or objective.

Passive Voice Misuse

The most common misuse of passive voice is in sentences where the subject ought to be doing the verb, because the sentence loses its impact if it is written in the passive voice. If you are trying to recount a story in a novel about a character's downfall «He defeated me» in the active voice, sounds much better than «I was defeated by him», because the passive voice just lessens the impact of an emotional sentence. Because there is often confusion involved around the passive voice, you should also never use it when clarity is important in a piece.

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UNIT 6. Modal verbs

Modal verbs are verbs that act very differently to the one's you might be thinking of such as «work», «play», «eat», etc. This is because modal verbs don't actually describe action, instead they provide information about the function of the verb that is to follow. Modal verbs always come before a traditional verb, but they explain the modality of the verb. That sounds pretty confusing, so let's just break down what exactly modality is! In English, modal verbs are a small class of auxiliary verbs used to express ability, permission, obligation, prohibition, probability, possibility, advice. This is just what the modal verbs can help explain further for the verb that follows. These include:

- Ability
- Permission
- Obligation
- Prohibition
- Probability
- Possibility
- Advice

These will be better understood in the examples that follow later, but it's important that you know them now.

Examples of Modal Verbs

Thankfully, modal verbs are easier to understand with examples, because there is actually quite a shortlist of these uniquely behaving verbs. Below is a list of modal verbs in the strictest sense (there are examples of modal auxiliary verbs, but for now they don't need to be looked at because our focus today is on modal verbs). Here they are:

- Can
- Could
- May
- Might

- Must
- Shall
- Should
- Will
- Would

All of these modal verbs must come before a verb to help express at least one of the modality examples listed above. In some cases, though they can be used to express more than one modality, but you'll see more on that in the following section. So, let's take a look at some example sentences and highlight how the modal verb is expressing modality and adding more information to the verbs that follow them.

Examples Sentences Containing Modal Verbs

Read the following examples and explanations carefully. The function and meaning behind modal verbs are best understood through sentence examples, rather than explanation, because you can see for yourself how the modal verb is impacting upon the verb to make the meaning behind the sentence clearer. We don't have enough room to look at every modal verb, but we can give you some examples so that you can see how different modalities are being expressed, and then you will be able to spot them for yourself in future. Let's take a look.

Can

«I can run» – is an example of the modal verb «can» impacting upon the verb «run». Here the modality that it is expressing is ability, because the individual is stating that they are able to run.

«Can I borrow your trainers?» – this sentence shows the modal verb «can» impacting upon the verb «borrow». But, you may notice that the modality is different. This time the modality expressed is permission, because the individual is seeking permission to borrow.

«Running can make you ache» – again, «can» is impacting upon a new verb, «make». The modality expressed this time is possibility, because the individual is stating that it is possible that running can make you ache.

Could

Often «could» can be used to replace can to express modality in a slightly different way. Look at the first example for can again – if you changed «I can run» to «I could run» you are still expressing ability, but you are now expressing past ability instead. Try replacing could in the other two sentences too. You'll notice that it can still be used to seek permission, and express possibility, but it just sounds slightly different and may be interpreted slightly differently by the reader or listener.

May

«I may swim tomorrow» – «may» is being used here to express both possibility and probability. Because it could be both possible and probable that the individual swims tomorrow.

«May I swim tomorrow?» – in this instance we have simply moved the positioning of the words to create a new sentence. In this case the individual is seeking permission, so the modality expressed is permission again.

Might

In much the same was as could related to can, might relates to may. Try changing may in the above sentences, you'll notice that might and may are interchangeable and both can be used to express probability, possibility, and permission.

Must

«You must raise your hand before you speak» – the modal verb «must» is being used to express the modality of obligation by impacting upon the verb «raise». The speaker is telling somebody what they are obliged to do, so must is being used to show that raising your hand is an obligation.

«You must not speak out of turn» – in this sentence by adding the word «not» between the modal verb and the verb «speak», the modality that is being expressed is prohibition, because the speaker is telling somebody what they are prohibited from doing.

Should

«You should sing more often» – this sentence is used to express the modality of advice. This is because the modal verb «should» is being used to indicate that somebody is giving the advice to sing more to somebody else.

«I should visit my mother» – interestingly, should can also be used to express the modality of obligation, but in a slightly weaker sense than «must» above. Here the speaker is stating that they «should» visit their mother, which hints at an obligation, but not whether or not they will meet that obligation.

There are many other examples of modal verbs expressing different modalities towards different verbs, but hopefully this guide has gone some way to helping you understand modal verbs enough for you to go and use them, identify them, and understand their purpose in a sentence.

Retrieved from https://bit.ly/2UMvPTb

VOCABULARY REFERENCE

A

account	/ˈəkaʊnt/	N. A registration for a user of a network system. It is used for controlling access to the system	обліковий запис
address bus	/əˈdres bʌs/	N. The set of conductors that carry the memory address signals between different parts of a computer system	адресна шина
algorithm	/ˈælgərɪðm/	N. A set of precise rules or instructions for solving a problem	алгоритм
analogue signal	/ˈænəlɒg ˌsɪgnəl/	N. A type of signal that can take any value between a maximum and a minimum	аналоговий сигнал
anti-virus	/ˌæntɪ ˈvaɪrəs/	N. A computer program or set of programs used to detect, identify and remove viruses from a computer system	антивірус
applet	/ˈæplət/	N. A very small self-contained computer program	мережева прикладна програма
application	/ˌæplɪˈkeɪʃn/	N. See applications program	прикладна програма
architecture	/ˈɑːkɪtektʃə(r)/	N. The general specification of a system	архітектура
artificial intelligence	/ˌɑːtɪfɪʃl ɪnˈtelɪdʒəns/	N. An area of computing concerned with developing computer programs that perform tasks that can normally only be done using human intelligence	штучний інтелект
asynchronous	/ˈeɪˌsɪŋkrənəs/	Adj. Not synchronised, i.e. occurring at irregular intervals	асинхронний, не синхронний
authentication	/ɔːˌθentɪˈkeɪʃn/	N. A process that checks the identity of a user or an object	аутентификация

B

back up	/bæk ˈʌp/	V. To store a copy of data on a storage device to keep it safe	Виконувати резервне копиювання.Повернати базу даних у стан перед збоєм
backbone	/ˈbækbəʊn/	N. The main transmission path handling the major data traffic connecting different LANs together	Магістральний кабель, опорна мережа
bandwidth	/ˈbændwɪdθ/	N. The range of frequencies that can be transmitted over a communications channel	Пропускна здатність
barcode	/ˈbaːkəʊd/	N. A sequence of vertical parallel lines used to give items a unique identification number	Штрих-код
batch mode	/ˈbætʃ məʊd/	N. A process in which all the data is collected and processed together in a batch rather than one at a time as they become available	Пакетний режим
binary	/ˈbaɪnərɪ/	N. A number system that only uses two digits, i.e. 1 and 0	двійковий
bit	/bɪt/	N. A small unit of storage capacity. One of the eight binary digits that make up a byte. The term comes from an abbreviation of binary digit	Біт

bookmark	/ˈbʊkmɑːk/	V. To store a link to a webpage to make it easier to find in the future	Закладка
boot	/buːt/	V. To copy a part of the operating system into memory to allow a computer to start up	(початкове) завантаження
bridge	/brɪdʒ/	N. A hardware and software combination used to connect the same type of networks or to partition a large network into two smaller ones	Міст (апаратно-програмний пристрій)
broadband	/ˈbrəːdbænd/	Adj. Able to carry signals transmitted over a wide range of frequencies	Широкополосна передача
browser	/ˈbraʊzə(r)/	N. A program used for displaying webpages	Веб-браузер (засіб перегляду веб-сторінок в мережі Інтернет)
buffering	/ˈbʌfərɪŋ/	N. A process of temporarily storing data from a fast Source so that it can be fed at a steady rate to a slower system	буферизація
bug	/bʌg/	N. A fault in a system	Помилка (в програмі), збій
bus	/bʌs/	N. A set of conductors that carry signals between different parts of a computer	Шина
byte	/baɪt/	N. A unit of storage capacity. A byte is made up of eight bits and stores one character, i.e. a letter, a number, a space or a punctuation mark	байт

C

cache	/kæʃ/	N. Fast memory used to temporarily store frequently-used data to allow it to be accessed more quickly	Кеш-пам’ять
cathode ray tube	/ˌkæθəʊd rei ˈtjuːb/	N. A display device that uses an electron gun to fire a beam of electrons at a phosphor-coated screen	Електроно-променева трубка (ЕПТ)
central processing unit	/ˌsentrəl ˈprəʊsesiŋ juːnit/	N. The electronic processor at the centre of a computer. The term is sometimes used to refer to the combination of the processor and the main memory	Центральний процесор
channel	/ˈtʃænəl/	N. A path for the transmission of data	Канал, канал зв’язку
chat room	/ˈtʃæt ruːm/	N. A virtual space on a website where online discussions organized around specific interests are held in real-time by users typing text messages	Чат форум
checksum	/ˈtʃeksʌm/	N. A calculated value that is stored with data to detect any errors that may occur when the data is copied or transmitted	Контрольна сума
chip	/tʃip/	N. Common name for a microchip. An electronic integrated circuit in a small package	Мікросхема
client	/ˈklaiənt/	N. A network computer used for accessing a service on a server	клієнт
clock	/klok/	N. Electronic circuits used to control the timing of signals and synchronise different parts of a computer system	Генератор синхроімпульсів, тактовий генератор,

			годинник
cluster	/ˈklʌstə(r)/	N. A term used in data mining meaning a group of data that has similar features or is based on a limited data range	Кластер
coaxial cable	/ˈkəʊæks/	N. A type of shielded cable for carrying signals. It is often used with radio frequency and video signals	Коаксіальний кабель
code	/kəʊd/	N. A piece of program text written in a programming language	Код програми
compatible	/kəmˈpætəbl/	Adj. Able to operate on the same type of system or run the same software	Сумісний
compiler	/kəmˈpailə(r)/	N. A program that converts the whole of a program into machine code before the program is used	Компілятор
compress	/kəmˈpres/	V. To reduce to a much smaller size	Стискати, ущільнювати (дані)
computer	/kəmˈpju:tə(r)/	N. A general purpose machine that can be programmed to process data in a variety of ways	Комп'ютер
computer language	/kəmˈpju:tə ˌlæŋgwidʒ/	N. A language used for writing computer programs	Мова програмування
computer-aided design	/kəmˌpju:tər ˌeidid diˈzain/	N. The process of designing using a computer program computer-aided manufacture	Автоматизоване проектування
computer-aided manufacture	/kəmˌpju:tər ˌeidid mænjəˈfæktʃə(r)	N. The process of manufacturing goods using a computer	Автоматизоване (комп'ютерізоване) виробництво
configure	/kənˈfigə(r)/	V. To adjust the settings	Конфігурувати, задати конфігурацію
control bus	/kənˈtrəʊl bit/	N. The set of conductors that carry the control signals between the Control Unit and other parts of a computer	Шина керування
corrupt	/kəˈrʌpt/	V. To damage in such a way that prevents normal use	Руйнувати, ушкоджати, псувати
crack	/kræk/	V. To break into a computer system in order to steal information or cause damage	Зламувати
crash	/kræʃ/	V. To fail suddenly and completely usually referring to the failure of a hard disk	Фатальний збій
cursor	/ˈkɜ:sə(r)/	N. A symbol on the monitor screen that indicates the point on the screen that is being used	Курсор
cybernetics	/ˌsaibəˈnetiks/	N. The study of control and communication in animals and machines. It is used in the design of robots	Кібернетика

D

data	/ˈdeitə/	N. The information processed by a computer	Дані
database	/ˈdeitəbeis/	N. A type of applications program used for storing information so that it can be easily searched and sorted	База даних (БД)
debug	/ˌdi:ˈbʌg/	V. To find and fix faults in a program or system	Налагодження

decipher	/diˈsaifə(r)/	V. To change coded information into normal text	Расшифровувати, дешифрувати
decode	/ˌdiːˈkəʊd/	V. To decide what a program instruction means	Декодувати
decompress	/ˌdiːkəmˈpres/	V. To remove the compression, i.e. to expand to its original size	Распаковувати
decrypt	/ˌdiːˈkript/	N. To recover the original text from an encrypted message	Розшифровувати
default	/diˈfoltˌ -fɔːlt/	N. An initial setting that can be changed by the user	Значення за умовчанням
denial of service attack	/diˌnaiəl əv ˈsɜːvis əˌtæk/	N. A type of computer crime that involves swamping a server with large numbers of requests	Відмова надійшовшого запиту
desktop	/ˈdesktop/	N. The main graphical user interface background screen that displays icons for other programs	“Робочий стіл”
desktop PC	/ˈdesktop/	N. A personal computer that is designed to be used on an office desk	Настільний комп’ютер
development life cycle	/diˈveləpmənt ˈlaifˌsaikl/	N. The phases a software product goes through from when it is first thought of until it becomes obsolete. This typically includes: requirements analysis, design construction, testing (validation), installation, operation, maintenance and retirement	Розробка усіх стадій програмного продукта
digital	/ˈdidʒitəl/	Adj. An electronic system that has only two states, e.g. off or on	Цифровой
directory	/dəˈrektəri, di-, dai-/	N. A storage area used for grouping files so that they can be easily located. A directory is sometimes called a folder	Каталог
disk drive	/ˈdisk draiv/	N. A storage device for reading from and writing to disks	Дисковод
domain name	/dəˈmein neim/	N. An identifier used on the Internet in place of the numerical Internet address. It identifies the host, the type and the country code, e.g. holyrood.ed.ac.uk	Доменне ім’я
dot-matrix printer	/dot ˈmeitrix ˌprintə(r)/	N. A printer that prints by hammering pins onto an inked ribbon	Матричний принтер
download	/daʊnˈləʊd/	V. To copy a file from a server to a client computer in a network	Завантажувати, зкачувати
driver	/ˈdraivə(r)/	N. A systems program that controls a peripheral device	Драйвер
duplex	/ˈdjuːpleks/	Adj. Able to transfer data in both directions, i.e. can send and receive data	Подвійний, двосторонній

E

earphone	/ˈiəfəʊn/	N. Sound output device that fits into the ear of the user	Навушник
editor	/ˈeditə(r)/	N. A computer program for making changes to test in computer programs or data	Редактор
electronic publisher	/elekˌtronik ˈpʌbliʃə(r)/	N. An organisation that produces e-books	Електронне видавництво
email address	/ˈiːmeil əˌdres/	N. The unique address code used to contact someone using electronic mail	Адрес електронної пошти

email attachment	/ˈi:meil əˌtætʃmənt/	N. A file that is attached to an email message	Додаток (до електронного листа)
encapsulation	/enˌkæpsjʊˈleiʃn/	N. A key feature of object-oriented programming that bundles data and program instructions into modules called objects	інкапсуляція
encode	/ˌenˈkəʊd/	V. To write information in a coded form	Кодування
encrypt	/ˌenˈkript/	V. To transform data into coded form to make it secure	Шифрувати
ethernet	/ˈi:θənet/	N. A widely-used local area network standard that broadcasts packets of data that are addressed to particular devices on the network. Each device on the network reads the address and passes it on to the correct device	Мережа Ethernet
execute	/ˈeksikju:t/	V. To perform a computer operation by processing a program instruction	Виконувати
expansion card	/ikˈspænʃn kɑ:d/	N. An electronic circuit board used for adding facilities to a computer	Плата розширення
expert system	/ˈekspɜ:t ˌsistəm/	N. An artificial intelligence program that collects and uses human expertise to allow non-experts to solve specialised problems	Експертна система (ЕС)
extensible markup language	/ikˌstensəbl ˈmɑ:k ʌp ˌlæŋgwidʒ/	N. A metalanguage that allows developers to create their own set of customised tags that identify the meaning and structure of data. It is used for creating files that are program-independent, platform-independent and able to be used with different languages	Розширювана мова розмітки

F

fault tolerance	/fɔ:lt ˌtɔlərəns/	N. A computer's ability to recover from hardware errors	Відмовостійкість
fetch	/feʧ/	V. To go and get the next instruction or piece of data from memory	Вибирати слідуючу команду чи частину даних із пам'яті
field	/fi:ld/	N. A section of a database where an item of data is stored.	Поле.
file	/faıl/	N. A computer program or data stored on a storage device	Файл.
file transfer protocol	/ˌfaıl ˌtrænsfə: ˈprəutəkɔl/	N. An Internet service that allows users to transfer files from one computer to another.	Протокол передачі файлів.
firewall	/ˈfaıəwɔ:l/	N. A combination of hardware and software used to control the data going into and out of a network. It is used to prevent unauthorised access to the network by hackers	Брандмауер
floppy disk drive	/ˈflɔpı draıv/	N. A common magnetic storage device that reads and writes data on a floppy disk. Also known as a diskette drive	Накопичувач на гнучких магнітних дисках
flowchart	/ˈfləuʧa:t/	N. A kind of diagram used by programmers to show the logical steps in the design of a system	Блок-схема
folder	/ˈfəuldə(r)/	N. See directory	Папка, каталог, директорія

frame	/freɪm/	N. A section of a webpage that acts as an independent browser window. Clicking on a link in one frame can cause a webpage to be displayed in another frame, e.g. A menu in one frame can provide links to webpages that are displayed in another frame.	Фрейм, кадр
freeware	/ˈfrɪ: wɛə(r)/	N. Computer programs that are made available to anyone who wants to use them at no cost to the user	Вільні програмні засоби
frequency band	/ˈfrɪ:kwənsɪ bænd/	N. A set of frequencies that are used together to provide a path for the transmission of signals	Полоса частот
full-duplex	/ˈful ˌdju:pleks/	Adj. Able to transfer data in both directions simultaneously, i.e. data can be transmitted and received at the same time	Повнодуплексний

G

games console	/ˈgeɪmz ˌkɔnsəul/	N. An electronic device used for playing computer games	Ігрова консоль (приставка)
gateway	/ˈgeɪtweɪ/	N. An interface that enables dissimilar networks to communicate such as two LANs based on different topologies or network operating systems	Шлюз
general-purpose language	/ˌʤenrəl ˌpə:pəs ˈlæŋgwɪʤ/	N. A computer language that can be used to write different types of programs	Універсальна мова
gigabit	/ˈgɪgəbɪt/	N. A unit of storage capacity equal to 1 073 741 824 bits	Гігабіт
gigabyte	/ˈgɪgəbaɪt/	N. A unit of storage capacity equal to 1 073 741 824 bytes	Гігабайт
gigahertz	/ˈgɪgəhə:ts/	N. A unit of frequency equal to one thousand million hertz (cycles every second)	Гігагерц
global positioning system	/ˌgləubl pəˈzɪʃnɪŋ ˌsɪstɪm/	N. A system that determines the user's location by comparing radio signals from several satellites	Система глобального позиціонування
graphic equaliser	/ˌgræfɪk ˈɪ:kwəˌlaɪzə/	N. An electronic device that uses slider controls to adjust the frequency response of an audio system	Еквалайзер
graphical user interface	/ˌgræfɪkl ˈɪntəfeɪs/	N. The part of an operating system that allows the user to interact with a computer using graphic images and cursor	Графічний інтерфейс

H

hacker	/ˈhækə/	N. A skilled programmer who attempts unauthorised access to a network system	Хакер
handheld computer	/ˈhændheld/	N. A small portable computer that can be held in one hand	Кишеньковий комп'ютер
hard disk drive	/ha:d dısk draıv/	N. A common magnetic storage device that reads and writes data on metal disks inside a sealed case	Накопичувач на жорсткому диску
hardware	/ˈha:dwɛə(r)/	N. The physical components of a computer system	Апаратне забезпечення

header	/ˈhedə(r)/	N. The first section of a message that contains information about the content and transmission of the message including the sending and destination addresses	Заголовок
headphone	/ˈhedfəun/	N. Sound output device that fits over the ears of the user	Навушники
help-desk	/ˈhelpdesk ˌ ˈhelplaın/	N. A telephone service for helping users solve problems that occur on computer systems	Інформаційно-довідкова служба
high-end package	/ˌhaı ˈend ˌpækıʤ/	N. A set of computer programs with a wide variety of complex features	Пакет програм з широкими функціональними можливостями
high-level language	/ˌhaı ˌlevl ˈlæŋgwıʤ/	N. A programming language closer to human language than low-level computer languages such as machine code or assembly language	Мова високого рівня
homepage	/ˈhəumpeıʤ/	N. The main start page of a website	Початкова (головна) сторінка
host	/həust/	N. A computer that provides a service on a network / a program that carries a virus	Хост, головний комп'ютер
hub	/hʌb/	N. An electronic device at the centre of a star network topology	Концентратор
hyperlink	/ˈhaıpəlıŋk/	N. A text or image in the webpage that causes a related webpage to be displayed or another program to be started when the user clicks on the hyperlink using the mouse	Гіперссилка
hypertext markup language	/ˌhaıpətekst ˈmaːkʌp ˌlæŋgwıʤ/	N. A page description language that has a set of tags that can be inserted into a document to make it act as a webpage. The tags determine how the document is displayed on the screen and marks the position of hyperlinks	Мова розмітки гіпертексту

I

I/O	/aı ˈəɔ/	N. Abbreviation for input/output	Ввід/вивід
icon	/ˈaıkɔn/	N. A small picture used in a WIMP system to represent a program folder or file	Піктограма, іконка
i-frame	/ˈaı freım/	N. The common name for an intra frame in an MPEG compressed file	Внутрішній кадр
image editor	/ˈımıʤ ˌedıtə(r)/	N. A computer program that allows the user to make changes to images	Редактор зображень
information technology	/ˌınfəˌmeıʃn tekˈnɔləʤı/	N. The study and practice of techniques or use of equipment for dealing with information	Інформаційна технологія
input device	/ˈınput dıˌvaıs/	N. A piece of equipment used for putting data into a computer	Вхідний пристрій, пристрій вводу
instruction	/ınˈstrʌkʃn/	N. One line of a computer program	Інструкція
interactive	/ıntərˈæktıv/	Adj. Allows two-way communication so that user can respond or interact with the system	Інтерактивний, діалоговий
interface	/ˈıntəfeıs/	N. The hardware or software that connects two systems and allows them to communicate with each other	Інтерфейс

Internet protocol	/ˌɪntənet ˈprəutəkɔl/	N. The basic set of standards for enabling computers to communicate over the Internet	Протокол Internet
Internet service provider	/ˌɪntənet ˈsə:vɪs prəˌvaɪdə/	N. An organization that provides Internet connections for a fee	Поставщик послуг Інтернет
Internet	/ˌɪntənet/	N. The connection of computer networks across the world	Інтернет
intranet	/ˈɪntrənet/	N. A computer network that is internal to an organization that uses the TCP/IP protocol in the same way as the Internet	Внутрішня мережа
iteration	/ɪtəˈreɪʃn/	N. A process that is repeated as a long as certain conditions remain true	Ітерація; цикл

J

JavaScript	/ˈʤa:vəskrɪpt/	N. A scripting language that allows simple programs to be embedded into HTML documents	Мова сценаріїв, створена на основі мови Java
JPEG	/ˈʤeɪ peg/	N. Abbreviation for joint photographic experts group the comittee that devised a common standard for image file format and compression	Об'єднана група експертів в області фотографії
JUMP command/instruction	/ˈʤʌmp kəˌma:ndˌ ɪnˌstrʌkʃn/	N. A programming instruction that causes a program to change its normal sequence	Команда переходу
junk email	/ʤʌŋk ˈɪ:meɪl/	N. Unwanted and unsolicited email that is normally advertising or trying to sell something	Спам

K

kernel	/ˈkə:nəl/	N. The lowest level layer at the core of an operating system. It deals with allocating hardware resources to the rest of the operating system and the application programs	Ядро (операційної системи)
keyboard	/ˈkɪ:bɔ:d/	N. The main electronic input device that has keys arranged in a similar layout to a typewriter	Клавіатура
keyword	/ˈkɪ:wə:d/	N. A word used to categorise documents or records in a file. Keywords can be used by a search engine to find relevant links on the Internet	Ключове слово
knowledge base	/ˈnɔlɪʤ beɪs/	N. A collection of information that can be easily modified, revised and manipulated to enable the user to solve particular problems	База знань

L

language processor	/ˈlæŋgwɪʤ ˌprəusesə(r)/	N. Software that performs computer language translation	Мовний процесор
laptop computer	/ˈlæptɔp/	N. The largest type of portable computers	Найбільший тип портативних комп'ютерів

laser printer	/ˈleɪzə ˌprɪntə(r)/	N. A printer that prints using tone powder and laser light on a photosensitive drum	Лазерний принтер
line size	/ˈlaɪn saɪz/	N. The amount of data transferred each time there is a transfer between the main memory and cache memory	Довжина строки
link	/lɪŋk/	N. A common term used for a hyperlink, i.e. the connection of a webpage to another webpage or file	Ссилка, лінк
Linux	/ˈlaɪnʌks/	N. A clone of the Unix operating system created by Linux Torwalds for use on personal computers	Операційна система Linux
Linux distribution	/ˈlaɪnʌks dɪstrɪˌbjuːʃn/	N. The Linux-user term for a complete operating system kit complete with the utilites and applications needed to make it do useful things, e.g. command interpreters, programming tools, text editors, typesetting tools and graphical user interfaces	Дистибутив Linux
load	/ləud/	V. To copy a program from a storage device into the computer's memory	Завантажувати, скачувати
local area network	/ˌləukl ˌɛərɪə ˈnetwəːk/	N. Computers connected together over a small area such as company department	Локальна мережа
log on	/lɔg ˈɔn/	V. To connect to a network system account normally using a password	Вхід в мережу
logic circuit	/ˈlɔdʒɪk ˌsəːkɪt/	N. A digital electronic circuit that compares two or more inputs and gives an output according to a particular rule of logic	Логічна схема
look-up table	/ˈluk ʌp ˌteɪbl/	N. A method by which a program uses two set of related records to find a required value. It is quicker than calculating the value using a formula but takes up more memory space	Таблиця пошуку
low-level language	/ˌləu levəl ˈlæŋgwɪdʒ/	N. A computer language such as maschine code or assembly language that is closer to the form that a computer understands than to that of a human language	Мова низького рівня

M

machine code	/məˈʃiːn kəud/	N. A computer language that consists entirely of a combination of 1s and 0s	Машинний код
magnetic tape	/mægˌnetɪk ˈteɪp/	N. A magnetic storage mediun in the form of a thin plastic ribbon wound on a reel or a cassette. It is commonly used for backing up data	Магнітна стрічка
mail client	/ˈmeɪl ˌklaɪənt/	N. An email program that connects to an email server to send and receive email	Поштовий кліент
mailmerge	/ˈmeɪlməːdʒ/	N. A wordprocessing facility that causes a mailing list to be automatically combined with a standard letter to produce a separate copy of the letter addressed to each person on the mailing list	(Автоматичне) створення стандартих листів
main memory	/ˌmeɪn ˈmeməri/	N. The electronic memory that holds the programs and data being used	Основна пам'ять, основний запам'ятовуючий пристрій
mainframe computer	/ˈmeɪnfreɪm/	N. The largest and most powerful type of computer. It is operated by a team of professionals	Мейнфрейм

markup language	/ˈma:kʌp ˌlæŋgwɪʤ/	N. A set of tags that can be inserted into a document to indicate its layout and appearence	Мова гіпертекстової розмітки, мова HTML
megabyte	/ˌmegəbaɪt/	N. A unit of storage capacity equal to 1 048 576 bytes	Мегабайт
megahertz	/ˈmegəhə:ts/	N. A unit of frequency equal to 1 million cycles every second.	Мегагерц
memory	/ˈmeməɪ/	N. The electronic part of a computer system that is used for temporarily storing the programs and data that are being used by the processor	Пам'ять; запам'ятовуючий пристрій
menu	/ˈmenju:/	N. A list of options displayed on a computer screen	Меню
menu bar	/ˈmenju: ba:(r)/	N. A row of the icons on a display screen that open up menus when selected	Рядок меню
message-integrity scheme	/ˌmesɪʤ ɪnˈtegrɪtɪ skɪ:m/	N. A system that allows the receiver of a message to detect whether someone has tampered with the message in transit	Схема перевірки цілісності повідомлення
metadata	/ˈmetədeɪtə/	N. Data about data in the document	Метадані
metalanguage	/ˈmetəlæŋgwɪʤ/	N. A language from which you can create other languages	Мета-мова
microchip	/ˈmaɪkrəuʧip/	N. An electronic integrated circuit in a small package	Чіп, мікрокристал
microcomputer	/ˈmaɪkrəukəmˌpju:tə/	N. A personal computer. Smaller and less powerful than a mainframe or a minicomputer	МікроЕОМ, мікрокомп'ютер
microprocessor	/ˌmaɪkrəuˈprəusesə(r)/	N. The main electronic chip in a computer. It can be through of as the 'brain' of the computer because it does the main processing and controls the other parts of the computer. It is sometimes called CPU.	Мікропроцесор
microwave	/ˈmaɪkrəuweɪv/	N. A high-frequency electromagnetic wave used in data communication systems	Мікрохвиля
mobile phone	/ˌməubɪl ˈfəun/	N. A wireless telephone that operates over a wide area	Мобільний телефон
mouse	/maʊs/	N. A common cursor control input device used with a graphical user interface. It commonly has two or three button switches on top and a ball underneath that is rolled on a flat surface.	миша
mouse pointer	/ˈmaʊs ˌpɔintə(r)/	N. A cursor image in the shape of an arrow that is controlled by a mouse and is used for pointing and selecting icons on the screen.	Курсор миші
multimedia	/ˌmʌltiˈmi:diə/	N. The combination of text, graphic, animation, sound and video.	мультимедіа

N

network computer	/ˈnetwɜ:k kəmˌpju:tə(r)/	N. A computer designed using the industry specification from Oracle and Sun Microsystems (or a low-cost basic personal computer that can have an Intel processor or another type of processor and can use a Java-based operating system.	Мережевий комп’ютер
neural network	/ˈnjʊərəl ˌnet(wɜk)/	N. An artificial intelligence system that is capable of developing rules from given input so that it learns how to deal with more complex input.	Нейронна мережа

node	/nəʊd/	N. A network terminal or point where a computer is connected to a network.	Вузол (мережі)
notebook computer	/nəʊtbʊk/	N. A portable computer that is about the same size as a piece of writing paper.	Ноутбук
numeric keyboard	/nju:ˌmerik ki:bɔ:d/	N. The section of a computer keyboard [hat includes keys for entering numerical digits 10-9] and mathematical operators	цифрова клавіатура

O

object-oriented programming	/ˈɒbdʒekt ˌɔ:rientid ˈprəʊgræmiŋ/	N. A type of programming where programs are made from combinations of predefined modules that can be used over and over again.	об'єктно-орієнтоване програмування (ООП)
office application / suite	/ˈɒfis æpliˌkeiʃnˌ ˌswi:t /	N. A computer program or set of programs that are used in a typical office, e.g. a wordprocessor, spreadsheet and database.	програма office
offline	/ɒfˈlain/	Adj. Disconnected from a computer system or the Internet.	поза мережею, автономний режим
online	/ɒnˈlain/	Adj. Connected to a computer system or the Internet.	у мережі, неавтономний режим
open Source	/ˌəʊpən ˈsɔ:s/	Adj. Part of a system of software development where anyone is free to take a copy of the source code and extend develop or fix bugs in it.	відкритий вихідний код
operating system	/ˈɒpəreitiŋ ˌsistəm/	N. The set of programs that control the basic functions of a computer and provides communication between the application programs and the hardware.	операційна система
optical character recognition	/ˌɒptikl ˌkæriktə rekəgˈniʃn/	N. A process that enables a computer to scan and recognise printed characters using the reflection of light.	оптичне розпізнавання символів
optical fiber	/ˌɒptikl ˈfaibə(r)/	N. A common name for glass fiber cable used in high speed networks. It enables data signals to be transmitted using laser light	оптоволокно, світлопровід
output	/ˈaʊtpʊt/	N. The processed data or signals that come out of a computer system.	вивід

P

packet-switching	/ˈpækit ˌswitʃiŋ/	N. A method of transferring data across a network by dividing it into packets and transferring the packets individually from node to node then putting the packets together again when they arrive at the destination.	комутація пакетів
page-description language	/ˌpeidʒ disˈkripʃn læŋgwidʒ/	N. A type of programming language that uses tags to define the layout of a document, e.g. HTML is a page-description language used to design webpages.	мова опису сторінок

pane	/peɪn/	N. A subsection of a graphical user interface window.	панель
password	/ˈpɑːswɜːd/	N. A secret code used to control access to a network system.	пароль
payload	/ˈpeɪləʊd/	N. The part of a virus that carries out the threat such as displaying a slogan on the screen	частина вірусу, що завдає шкоду
peripheral	/pəˈrɪfərəl/	N. A piece of equipment that is connected to the central processing unit of a computer system.	периферійний пристрій
personal computer	/ˌpɜːsənl kəmˈpjuːtə(r)/	N. A computer designed to be used by one person at a time.	персональний комп'ютер
physical layer	/ˈfɪzɪkl ˌleɪə(r)/	N. The part of a network communications system that encodes the packets into the medium that will carry them and sends the packets along that medium.	фізичний рівень (мережі)
platform	/ˈplætfɔːm/	N. A distinctive type of computer system that needs software to be written specifically for it, e.g. PC, Apple Mac, etc.	платформа
polymorphism	/ˌpɒlɪˈmɔːfɪzm/	N. A key feature of OOP programming by which different objects can receive the same instructions but deal with them in different ways.	поліморфізм
port	/pɔːt/	V. To convert for use in another operating system or computer platform.	переносити
portable computer	/ˈpɔːtəbl/	N. A computer that is small and light enough to he carried from place to place. It can usually be powered by batteries.	портативний комп'ютер
presentation layer	/ˌprezənˈteɪʃn ˌleɪə(r)/	N. The part of a network communications system that ensures the message is transmitted in a language that the receiving computer can interpret.	представницький рівень
printed circuit board	/ˌprɪntɪd ˈsɜːkɪt bɔːd/	N. An electronic board that holds and connects the components of an electronic circuit.	друкована плата
printer	/ˈprɪntə(r)/	N. A common output device used for printing the output of a computer on paper.	принтер
private key	/ˌpraɪvət ˈkiː/	N. Secret code known only to the owner that is used for encrypting and decrypting messages	закритий ключ
procedural language	/prəˈsiːdʒərəl ˌlæŋgwɪdʒ/	N. A computer programming language that enables programs to be written using sections of code known as procedures. Each procedure performs a specific task.	процедурна мова
processor	/ˈprəʊsesə(r)/	N. The part of a computer that processes the data	процесор
program	/ˈprəʊgræm/	N. A set of instructions written in a computer language that control the behaviour of a computer.	програма
programming language	/ˈprəʊgræmɪŋ ˌlæŋgwɪdʒ/	N. A computer language used for writing computer programs.	мова програмування
protocol	/ˈprəʊtəkɒl/	N. A set of agreed standards.	протокол
public-key cryptography	/ˌpʌblɪk kiː krɪpˈtɒgrəfɪ/	N. A method of coding messages using public and private keys to prevent others from reading them.	Криптографія з відкритим ключем
pull-down menu	/ˌpʊl daʊn ˈmenjuː/	N. A list of choices that appear below a menu title on a display screen when the user clicks on the menu title using a mouse.	меню, що розкривається

R

random access memory	/ˌrændəm ˈækses ˌmeməri/	N. A type of memory that can be accessed in any order. RAM is the main electronic memory of a personal computer and is used for storing the programs and data being used.	Оперативна пам’ять
raw data	/rɔ: ˈdeitə/	N. Data that has not been processed.	Неопрацьовані дані
reboot	/ˌri:ˈbu:t/	V. To restart a computer operating system.	Перезавантажувати
record	/ˈrekɔ:d/	N. A section of a database made up of related database fields. Запис	
reliable stream service	/riˌlaiəbl ˈstri:m ˌsɜ:vis/	N. A data management system provided by the TCP protocol to ensure that data is transferred across a network correctly. It structures and buffers the data flow, looks for responses, and takes action to replace missing data blocks.	Надійна служба передачі даних
resolution	/ˌrezəˈlu:ʃn/	N. A measure of the quality of a display screen in terms of the amount of graphical information that can be shown on the screen. This partly depends on the number of dots that make up the image.	Роздільна здатність
restore	/riˈstɔ (r)/	V. To put data back into its original location.	Відновлювати
ripper	/ˈripə(r)/	N. A program that extracts songs from a CD and turns them into WAV files.	Програма конвертування звукових форматів
router	/ˈru:tə(r)/	N. An electronic device that links different networks or parts of a network. It determines the path that a signal should take to reach its destination.	Маршрутизатор
rule	/ru:l/	N. The name given to patterns found in data when using neural networks.	Правило
scanner	/ˈskʌnə(r)/	N. An optical input device that uses the reflection of light to copy text or graphics into a computer.	Сканер
scrollbar	/ˈskrəʊlbɑ:(r)/	N. The part of a graphical user interface window that allows the user to move through a document by clicking or dragging with the mouse.	Смуга прокрутки
search engine	/ˈsɜ:tʃˌendʒin/	N. A program designed to find information on the World Wide Web according to data entered by the user. Search engines are usually accessed from special websites.	Пошуковий механізм
sector	/ˈsektə(r)/	N. A formatted section of a circular magnetic track used for storing data on a disk.	Сектор
seek time	/ˈsi:k taɪm/	N. The amount of time taken by a disk drive to find a particular track on a disk.	Час пошуку
segment	/ˈsegmənt/	N. A subdivision of data created by a network communications transport layer for which a checksum is generated.	Сегмент
serial number	/ˈsiəriəl ˌnʌmbə(r)/	N. A number that uniquely Identifies a product.	Серійний номер
serial port	/ˈsiəriəl pɔ:t/	N. The small connector at the back of the system unit of a personal computer that is used to connect a serial device such as a serial mouse or a modem. Two serial ports labelled C0M1 and COM2 are usually provided on a PC.	Послідовний порт
server	/ˈsɜ:və(r)/	N. A main computer that provides a service on a network.	Сервер

shareware	/ˈʃeəweə(r)/	N. Software that is distributed freely and only paid for if the user decides to keep it.	Умовно-безкоштовне ПЗ
shell	/ʃel/	N. A graphical user interface for an operating system.	(програмна) Оболонка
simple mail transfer protocol	/ˌsɪmpl meil ˈtrænsfɜ: ˌprəʊtəkɒl/	N. A set of standards for sending email from an email client and transferring email between server computers on the Internet.	Простий протокол передачі пошти
simulation	/ˌsɪmjʊˈleɪʃn/	N. A programmed virtual environment that imitates real or planned system.	Симулятор
site map	/ˈsait mæp/	N. A web page that is used to show the overall layout of a website.	Карта сайту
skin	/skɪn/	N. A computer program that is used to change the interface of another program, e.g. to change the screen display on an MP3 player program.	Програма зміни інтерфейсу
smart phone	/ˈsmɑ:t fəʊn/	N. A telephone that contains an embedded processor and memory and can process data, e.g. translate English into German, Japanese and French in real time.	Телефон із вбудованим процесором та пам'яттю
software	/ˈsɒftweə(r)/	N. The programs and data used in a computer.	Програмне забезпечення
soundcard	/ˈsaʊndkɑ:d/	N. The electronic circuit expansion board in a computer that is used to process audio signals and connect to and control a microphone loudspeaker or headphone.	Звукова плата
source code	/ˈsɔ:s kəʊd/	N. Programming code that has to be processed by a compiler or translator to make object code for use in a computer.	Вихідний текст
spam	/spæm/	N. Unsolicited email sent lo large numbers of people indiscriminately usually advertising or trying to sell a product.	Спам, „мережеве сміття"
speaker	/ˈspi:kə(r)/	N. Common term for a loudspeaker. An output device for providing sound output	Динамік ПК
spectrum analyser	/ˈspektrəm ˌænəlaɪzə(r)/	N. An instrument that plots a graph of frequency parameters for a complete frequency band.	Спектральний аналізатор
spoofing	/ˈspu:fiŋ/	N. A computer crime that involves tricking a user into revealing confidential information such as an access code or a credit card number.	Одержання доступу шляхом обману
spreadsheet program	/ˈspredʃi:t/	N. A type of application program with an array of cells that is used for calculating formulas.	Електронна таблиця
standalone	/ˈstændələʊn/	Adj. Not connected to a network.	Не підключений до мережі, автономний
status bar	/ˈsteɪtəs bɑ:(r)/	N. A narrow band displayed across the bottom of a window in a Microsoft Windows application to display useful information for the user, e.g. number of pages in a document.	Рядок стану
storage device	/ˈstɔ:ridʒ dɪˌvaɪs/	N. A piece of equipment used for reading from and writing to a storage medium.	Пристрій для збереження даних

storage medium	/ˈstɔ:ridʒ ˌmi:diəm/	N. A material used for storing programs and data.	Носій даних
streaming	/ˈstri:mɪŋ/	N. A process of downloading and storing the next part of a data signal while the first part is being used. In this way the data signal, e.g. an audio or video is fed to the slower destination device at a steady rate.	Потокова передача даних
supercomputer	/ˈsu:pəkəmˌpjute(r)/	N. The most powerful type of mainframe computer	Супер-ЕВМ, суперкомп'ютер
supervisor program	/ˈsu:pəvaɪzə(r)/	N. The most important program in the operating system. It is resident and controls the entire operating system. It loads other operating system programs into memory when they are needed.	Диспетчер (програм), управляюча програма
system bus	/ˈsɪstəm bʌs/	N. The sets of connectors that carry signals between system components such as the processor and memory in a computer	Системна шина
systems analysis	/ˈsɪstəmz əˌnæləsɪs/	N. The study of a system to determine how it can be computerised	Системний аналіз
systems program / software	/ˈsɪstəmz ˌprəʊgræm, sɒftweə(r)/	N. A program or set of programs that is used to control the basic functions of a computer system, e.g. operating system programs	Системна програма, програмне забезпечення

T

tag	/tæg/	N. A label used in a markup language such as HTML. It is attached to a piece of text to mark the start or the end of a particular function.	Мітка
tape	/teɪp/	N. A magnetic storage medium commonly used for storing backup files	стрічка; магнітна стрічка
taskbar	/ˈtɑ:skbɑ(r)/	N. A Microsoft Windows desktop component that indicates what programs are currently being used and allows the user to switch between them	панель задач
teller machine	/ˈtelə məˌʃi:n/	N. A machine used for taking payments in large shops and supermarkets	банківський автомат
terabit	/ˈterəbɪt/	N. A unit of storage capacity equal to 1 009 511 627 776 bits	терабіт, одиниця інформації, дорівнює 1 009 511 627 776 бітам
terminal	/ˈtɜ:mɪnəl/	N. A network device used to input and output data (usually a basic computer)	термінал, мережний пристрій, використовуваний до даних введення й виведення
text editor	/ˈtekst ˌedɪtə(r)/	N. A computer program for editing basic data or program text, i.e. like a basic word processor	текстовий редактор
thin client	/ˈθɪn ˌklaɪənt/	N. A low cost centrally-managed basic computer with a keyboard and display screen processor and memory but no CD-ROM drive, floppy disk drive or expansion slots, e.g. a NetPC or a network computer (NC)	«тонкий» клієнт (мало функціональний, малопотужний мережний клієнт-

			термінал)
throughput	/ˈθruːpʊt/	N. The amount of data that passes through a system in a given period of time	пропускна здатність
topology	/təˈpɒlədʒɪ/	N. The physical layout of a network	топологія (мережі), загальна схема з'єднань
track	/træk/	N. A formatted circular magnetic storage area on a computer disk	доріжка
traffic	/ˈtræfɪk/	N. The volume of signals or data that passes through a network system	трафик, робоче навантаження ліній зв'язку
transmission control protocol	/trænˌˈmɪʃn kənˌtrəʊl ˈprəʊtəkɒl/	N. A set of standards for the delivery of error-free data in communications between computers. It comes into operation once a data packet is delivered to the correct Internet address and application port. It manages the communication exchanges and provides reliable stream service by structuring and buffering the data flow looking for responses and taking action to replace missing data blocks	протокол TCP
Trojan horse	/ˈtrəʊdʒən/	N. A technique used in a computer crime that involves adding concealed instructions to a computer program so that it will still work but will also perform prohibited duties. In other words it appears to do something useful but actually does something destructive in the background	Троянскій кінь
troubleshoot	/ˈtrʌblʃuːt/	V. To find and fix faults in a system	виявлення несправностей
twisted-pair cabling	/ˌtwɪstɪd ˈpeə(r)/	N. A common type of network cable that uses two wires twisted together to reduce interference from external signals	„кручена пара”
typesetting	/ˈtaɪpsetɪŋ/	N. Preparation for printing	набор тексту

U

undo	/ˌʌnˈduː/	V. To restore a file to the condition it was in before the last change was made	скасовувати
uniform resource locator	/juːnɪfɔːm rɪˈzɔːs ləʊˌkeɪtə(r)/	N. The unique address of a webpage	уніфікований покажчик інформаційного ресурсу
uninterruptible power supply	/ˌʌnɪntəˌrʌptəbl ˈpaʊə səˌplaɪ/	N. A battery backup system that automatically provides power to a computer when the normal electricity source fails	джерело безперебійного споживання, ДБС
update	/ˌʌpˈdeɪt/	V. to bring up to date,i.e. to change into the latest version	модернізувати, перетворити, удосконалити
upgrade	/ˌʌpˈgreɪd/	V. To add components to improve the features or performance of a system	модернізувати, удосконалювати

upload	/ˌʌpˈləʊd/	V. To copy a file from a client computer to a server in a network	завантажувати у вилучений комп'ютер
upstream	/ˈʌpstrɪːm/	N. The signal path for receiving communications from a client computer to a server in a network	зворотний потік
user	/ˈjuːzə(r)/	N. The person using a computer	Користувач
user datagram protocol	/juːzə ˌdeɪtəgræm ˈprəʊtəkɒl/	N. A set of standards for creating a data address in a TCP/IP message. It is used to indicate what application the message is supposed to contact and provides the final routing for the data within the receiving system	протокол UDP передачі дейтаграмм користувача
user-authentication system	/juːzər ɔːˌθentɪˈkeɪʃn ˌsɪstəm/	N. A system that identifies users. This can be done using digital certificates	користувальницька-розпізнавальна система
utility program	/juːˈtɪlətɪ/	N. A program included with an operating system that can perform useful common routine tasks or housekeeping operations, e.g. formatting disks or copying files	програма-утиліта

V

verify	/ˈverɪˌfaɪ/	N. To check for accuracy	контролювати; перевіряти; звіряти
video memory	/ˈvɪdɪəʊ ˌmeməɪ/	N. The memory used to store graphics data on a graphics card	відеопам’ять
videoconferencing	/ˌvɪdɪəʊ ˈkɒnfərənsɪŋ/	N. A form of communication over a network that uses video cameras so that the people taking part can see and hear each other	видеоконференц-связь
virtual reality	/ˌvɜːtʃʊəl rɪˈælətɪ/	N. A simulated three-dimensional environment that surrounds the user and is generated by a computer	віртуальна реальність
virus	/ˈvaɪrəs/	N. A program written with the purpose of causing damage or causing a computer to behave in an unusual way	вірус
visualisation technology	/ˌvɪʒʊəlaɪˌzeɪʃn tekˈnɒlədʒɪ/	N. Systems and devices used to create a virtual reality environment	технологія візуалізації
voice synthesis	/ˈvɔɪs ˌsɪnθəsɪs/	N. The generation of a human-sounding voice using electronic circuits	синтез мови

W

wallpaper	/ˈwɔːlpeɪpə(r)/	N. The background graphics on a Microsoft Windows desktop	обої, малюнок на робочому столі Windows
wavetable system	/ˈweɪvteɪbl ˌsɪstəm/	N. A system used in some soundcards for more accurately creating the sound of real musical instruments by reproducing a wide frequency range from a small number of original samples	хвильовий табличний синтезатор
webserver	/ˈweb ˌsɜːvə(r)/	N. A server computer that stores and provides access to websites	веб-сервер, інтернет-сервер

web page	/ˈwebpeɪdʒ/	N. A hyperlinked document in a web network system	веб-страница
website	/ˈwebsaɪt/	N. A set of related pages on the World Wide Web	сайт
window	/ˈwɪndəʊ/	N. A rectangular screen area containing a program folder or file in a WIMP system	Зовнішній графічний інтерфейс операційної системи
wirelessly	/ˈwaɪələslɪ/	Adj. Using radio signals without the need for connecting wires or cables	бездротовий
wordprocessor	/ˌwɜːdˈprəʊsesə(r)/	N. A type of computer application program used for typing and editing tent documents	текстовий процесор
workstation	/ˈwɜːksteɪʃn/	N. A powerful desktop computer used by power users for work that requires a lot of processing, e.g. graphic design	робоча станція; дисплейний термінал
World Wide Web	/ˌwɜːld ˌwaɪd ˈweb/	N. An information service on the Internet that allows document pages to be accessed using hyperlinks	"Всесвітня павутина", Мережа
write-back cache	/ˈraɪt bæk ˌkæʃ/	N. A buffer storage system where the processor writes changes only to the cache and not to main memory. Cache entries that have changed are flagged as'dirty' telling the cache controller to write their contents back to main memory before using the space to cache new data	кэш зі зворотним записом
write-through cache	/ˈraɪt θruː ˌkæʃ/	N. A buffer storage system where the processor writes directly to both the cache and main memory at the same time	кэш із прямим записом

APPENDIXES

Appendix A. LIST OF IRREGULAR VERBS

Infinitive	**Past Simple**	**Participle II**	**Participle I**
Arise	Arose	Arisen	Arising
Be	Was/Were	Been	Being
Become	Became	Become	Becoming
Begin	Began	Begun	Beginning
Bend	Bent	Bent	Bending
Blow	Blew	Blown	Blowing
Break	Broke	Broken	Breaking
Breed	Bred	Bred	Breeding
Bring	Brought	Brought	Bringing
Build	Built	Built	Building
Burn	Burnt/Burned	Burnt/Burned	Burning
Burst	Burst	Burst	Bursting
Buy	Bought	Bought	Buying
Catch	Caught	Caught	Catching
Choose	Chose	Chosen	Coosing
Come	Came	Come	Coming
Cost	Cost	Cost	Costing
Cut	Cut	Cut	Cutting
Deal	Dealt	Dealt	Dealing
Do	Did	Done	Doing
Draw	Drew	Drawn	Drawing
Drive	Drove	Driven	Driving
Fall	Fell	Fallen	Falling
Feed	Fed	Fed	Feeding
Feel	Felt	Felt	Feeling

Fight	Fought	Fought	Fighting
Find	Found	Found	Finding
Forbid	Forbade/Forbad	Forbidden	Forbidding
Foresee	Foresaw	Foreseen	Foreseeing
Forget	Forgot	Forgotten	Foregetting
Forgive	Forgave	Forgiven	Forgiving
Freeze	Froze	Frozen	Freezing
Get	Got	Got/Gotten	Getting
Give	Gave	Given	Giving
Go	Went	Gone/Been	Going
Grow	Grew	Grown	Growing
Hang	Hung/Hanged	Hung/Hanged	Hanging
Have	Had	Had	Having
Hear	Heard	Heard	Hearing
Hide	Hid	Hidden	Hiding
Hit	Hit	Hit	Hitting
Hold	Held	Held	Holding
Hurt	Hurt	Hurt	Hurting
Keep	Kept	Kept	Keeping
Know	Knew	Known	Knowing
Lay	Laid	Laid	laying
Lead	Led	Led	Leading
Learn	Learnt/Learned	Learnt/Learned	Learning
Leave	Left	Left	Leaving
Let	Let	Let	Letting
Light	Lit	Lit	Lighting
Lose	Lost	Lost	Losing
Make	Made	Made	Making
Mean	Meant	Meant	Meaning

Meet	Met	Met	Meeting
Melt	Melted	Molten/Melted	Melting
Misunderstand	Misunderstood	Misunderstood	Misunderstanding
Offset	Offset	Offset	Offsetting
Output	Output/Outputted	Output/Outputted	Outputting
Overcome	Overcame	Overcome	Overcoming
Overlay	Overlaid	Overlaid	Overlaying
Pay	Paid	Paid	Paying
Put	Put	Put	Putting
Read	Read	Read	Reading
Rebuild	Rebuilt	Rebuilt	Rebuilding
Ride	Rode	Ridden	Riding
Rise	Rose	Risen	Rising
Run	Ran	Run	Running
Say	Said	Said	Saying
See	Saw	Seen	Seeing
Seek	Sought	Sought	Seeking
Sell	Sold	Sold	Selling
Send	Sent	Sent	Sending
Set	Set	Set	Setting
Shake	Shook	Shaken	Shaking
Shoot	Shot	Shot	Shooting
Show	Showed	Shown	Showing
Shut	Shut	Shut	Shutting
Sit	Sat	Sat	Sitting
Speak	Spoke	Spoken	Speaking
Speed	Sped/Speeded	Sped/Speeded	Speeding
Spend	Spent	Spent	Spending
Spin	Span/Spun	Spun	Spinning

Split	Split	Split	Splitting
Spoil	Spoilt/Spoiled	Spoilt/Spoiled	Spoiling
Stand	Stood	Stood	Standing
Stick	Stuck	Stuck	Sticking
Strip	Stript/Stripped	Stript/Stripped	Stripping
Sweep	Swept/Sweeped	Swept/Sweeped	Sweeping
Take	Took	Taken	Taking
Teach	Taught	Taught	Teaching
Tell	Told	Told	Telling
Think	Thought	Thought	Thinking
Throw	Threw	Thrown	Throwing
Understand	Understood	Understood	Understanding
Undertake	Undertook	Undertaken	Undertaking
Wear	Wore	Worn	Wearing
Win	Won	Won	Winning
Wind	Wound	Wound	Winding
Withdraw	Withdrew	Withdrawn	Withdrawing
Work	Worked/Wrought	Worked/Wrought	Working
Write	Wrote	Written	Writing

Appendix B. HOW TO WRITE A SUMMARY

Summarizing means giving a concise overview of a text's main points in your own words. A summary is always much shorter than the original text. Writing a summary does not involve critiquing or analyzing the source - you should simply provide a clear, objective, accurate account of the most important information and ideas, without copying any text from the original and without missing any of the key points.

When to summarize

There are many situations in which you might have to summarize an article or other source:

- As a stand-alone assignment to show you've understood the material.
- To keep notes that will help you remember what you've read.
- To give an overview of other researchers' work in a literature review.

When you're writing an academic text like an essay, research paper, or dissertation, you'll engage with other researchers' work in a variety of ways. Sometimes you might use a brief quote to support your point; sometimes you might paraphrase a few sentences or paragraphs. But it's often appropriate to summarize a whole article or chapter if it is especially relevant to your own research, or to provide an overview of a source before you analyze or critique it. In any case, the goal of summarizing is to give your reader a clear understanding of the original source.

Follow the 4 steps outline below to write a good summary

Step 1: Read the text

You should read the article more than once to make sure you've thoroughly understood it. It's often effective to read in three stages:

- Scan the article quickly to get a sense of its topic and overall shape.
- Read the article carefully, highlighting important points and taking notes as you read.
- Skim the article again to confirm you've understood the key points, and re-read any particularly important or difficult passages.

There are some easy tricks you can use to identify the key points as you read:

- Start by reading the abstract - this already contains the author's own summary of their work, and it tells you what to expect from the article.
- Pay attention to headings and subheadings—these should give you a good sense of what each part is about.
- Read the introduction and the conclusion together and compare them: what did the author set out to do, and what was the outcome?

Step 2: Break the text down into sections

To make the text more manageable and understand its sub-points, break it down into smaller parts. If the text is a scientific paper that follows a standard empirical structure, it is probably already organized into clearly marked sections, usually including an introduction, methods, results, and discussion. Other types of articles may not be explicitly divided into sections. But most articles and essays will be structured around a series of sub-points or themes. Try writing a word or phrase in the margin next to each paragraph that describes the paragraph's content. Then you can see at a glance what each part of the article focuses on. If several paragraphs cover similar or related topics, you may group them together in sections.

Step 3: Identify the key points in each section

Now it's time go through each part and pick out its most important points. What does your reader need to know to understand the overall argument or conclusion of the article? Keep in mind that a summary does not involve paraphrasing every single paragraph of the article. Your goal is to extract the essential points, leaving out anything that can be considered background information or supplementary detail. In a scientific article, there are some easy questions you can ask to identify the key points in each part:

Introduction	What research question or problem was addressed? Are there any hypotheses formulated?

Methods	What type of research was done? How was data collected and analyzed?
Results	What were the most important findings? Were the hypotheses supported?
Discussion/conclusion	What is the overall answer to the research question? How does the author explain these results? What are the implications of the results? Are there any important limitations? Are there any key recommendations?

If the article takes a different form, you might have to think more carefully about what points are most important for the reader to understand its argument. In this case, pay particular attention to the thesis statement - the central claim that the author wants us to accept, which usually appears in the introduction - and the topic sentences that signal the main idea of each paragraph.

Step 4: Write the summary

Now that you know the key points that the article aims to communicate, you need to put them in your own words. To avoid plagiarism and show you've understood the article, it's essential to properly paraphrase the author's ideas. Do not copy and paste parts of the article, not even just a sentence or two. The best way to do this is to put the article aside and write out your own understanding of the author's key points. Let's take a look at an example. Below, we summarize this article, which scientifically investigates the old saying "an apple a day keeps the doctor away." An article summary like the above would be appropriate for a stand-alone summary assignment. However, oftentimes, you'll want to give an even more concise summary of an article. For example, in a literature review or research paper, you may want to briefly summarize this study as part of a wider discussion of various sources. In this case, we can boil our summary down even further to include only the most relevant information. When summarizing as part of a larger text, it's essential to properly cite the source of the

summary. The exact format for citing depends on your citation style, but it usually includes an in-text citation and a full reference at the end of your paper.

Step 5: Check the summary against the article

Finally, read through the article once more to ensure that:

- You've accurately represented the author's work
- You haven't missed any essential information
- The phrasing is not too similar to any sentences in the original.

If you're summarizing lots of articles as part of your own work, it's often a good idea to use a plagiarism checker to double-check that your text is completely original and properly cited. Just be sure to use one that's safe and reliable.

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Appendix C. HOW TO WRITE ARTICLES FOR MAGAZINES

Magazine writing is a craft that stands apart from the kind of writing you might encounter in a newspaper, journal, essay, or full-length book. Even within the broader landscape of magazine writing, many subgenres demand different styles and skills - you'll approach a long feature article differently than you would a human interest story; tackling an investigative exposés requires a different skill set than writing reviews and cultural criticism. So while your approach to magazine writing will vary depending on the publication and the nature of the article itself, you'll still need to master the skills that set magazine writing apart from other types of writing. If you aspire to write for magazines, you'll have to adapt to a medium that's been rapidly transformed by digital technology. Many of today's magazines are primarily consumed online, either in web browsers or in apps like Apple News. Some famous weekly magazines now come out monthly or even quarterly. On the other hand, new online publications sprout up constantly and many are seeking new writers who have a great story idea to pitch. Here are some writing tips to help you break into the world of magazine writing.

Target your pitches carefully. Freelance writers typically have to pitch stories via a query letter before being given an assignment. Be judicious when you pitch to editors. Anna Wintour isn't going to publish a dissection of the Cincinnati Bengals' run defense in the pages of Vogue, so don't waste her time with a query letter on the topic. Even if your pitch isn't accepted, by engaging with a magazine you've begun a relationship with its staff, and you always want to impress them at every encounter. Make sure you follow a publication's submission guidelines when you approach them with article ideas.

Become a specialist. Today's media world values specialization. ESPN's Brian Windhorst was well-versed in all professional sports, but he strategically chose to hone in on basketball when he began penning articles for ESPN: The Magazine. He credits it for his rise within that company (even though the magazine itself no longer exists). If you have specialized know how in a particular discipline (such as medicine, music, or mobile computing), lean into it. The best stories you pitch will likely tap into your

personal experience and specific knowledge base. Specialization can help you break through as a new writer.

Do more research than you think you need. It's always better to have more sources, quotes, and statistics than you can use in your story. Often times a magazine writer's document of notes will be longer than the first draft of their story. If you have a great article planned, the urge to start writing immediately can be intense. But before you begin, make sure you are truly overloaded with the substantive facts that will populate your story.

Consider the magazine's target audience. A magazine's most important relationship is with its readers. If you meet those readers on their terms, you could have a long career in magazine journalism. For instance, if you're writing pop astronomy articles for national magazines like Wired or Discover, you cannot weigh down your prose with technical jargon that interferes with your storytelling. On the other hand, if you're writing for trade magazines in the telescope industry, you should absolutely pepper your article with tech specs. It's what your readers want.

Keep track of personnel changes among magazines. Editors frequently leave one magazine and join a new one. Your connection to such people is ultimately more important than the company they work for. Even if you think you have the perfect story for Rolling Stone but you don't know anyone there and you do know the managing editor at Pitchfork, you'll have a much better shot with the latter. Study a magazine's masthead and article bylines to learn who's working there. Online resources like LinkedIn can also provide this information.

Be flexible. Flexibility is one of the greatest writing skills a journalist can be endowed with. Even with the greatest degree of planning, the writing process can lead journalists in strange directions. You may find that your planned 1,000 word article needs 10,000 words to do its subject justice. Conversely, you may find that what you thought would be a voluminous feature should be far more succinct. Writing is hard work even when everything goes as planned. If your story demands a different approach from what you'd originally expected, embrace flexibility. It will make the revision process all the more pleasant. Retrieved from https://bit.ly/36AfWC0

Appendix D. HOW TO DESCRIBE A PICTURE

Do:

Look at your picture carefully and take a few moments to think before you start talking.

Talk for all the time you are given. If you have one minute to do the task, use every second.

Practise the useful language below so you can explain which part of the picture you are talking about.

Don't:

Panic if you don't know the words for all the things in the picture. You don't need to know all the words for everything in the picture if you know what to say when you don't know an exact word.

Get distracted and start talking about something else. Focus on the photo or picture.

Panic if your mind goes blank. Take a deep breath, look at the picture and start again.

If you are asked to describe a photo or a picture in the exam, here is some language you can use:

What is in the picture?

In the picture I can see ...

There's / There are ...

There isn't a ... / There aren't any ...

Say what is happening with the present continuous

The man is ...ing

The people are ...ing

It's raining.

Where in the picture?

at the top/bottom of the picture ...

in the middle of the picture ...

on the left/right of the picture ...

next to

in front of

behind

near

on top of

under

If something isn't clear

It looks like a ...

It might be a ...

He could be ...ing

Maybe it's a ...

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Appendix E. ABBREVIATIONS

A

AIO - All-In-One printers

API - Application Program Interface

ASCII - American Standard Code for Information Interchange

B

BD - Blu-ray Disc

BIOS - Basic Input/Output System

BBS - Bulletin Board System

C

CAD - Computer Aided Design

CCFL - Cold Cathode Fluorescent Lamp

CD - Compact Disk

CD-R - Compact Disc Recordable

CD-ROM - Compact Disk Read Only Memory

COBOL - Common Business-Oriented Language

CPU - Central Processing Unit

CRT - Cathode Ray Tube

D

DBMS - Data Base Management System

DRAM - Dynamic Random Access Memory

DVI - Digital Video Interface

DVD - Digital Versatile Disk

DVD-RAM - Digital Versatile Disk Random Access Memory

DVD-ROM - Digital Versatile Disk Read Only Memory

DOS - Disk Operating System

E

EPROM - Erasable Programmable Read Only Memory

EPFL - École Polytechnique Fédérale de Lausanne

EGA - Enhanced Graphics Adapter

G

GB - gigabyte

H

HDD - Hard Disk Drive

HDMI - High Definition Multimedia Interface

HDTV - High Definition Television

I

IBM - International Business Machines

IC - Integrated Circuit

I/O - Input/Output

ISSCC - International Solid-State Circuit Conference

L

LCD - Liquid-Crystal Display

LAN - Local Area Network

M

MB - Megabyte

MDA - Monochrome Display Adapter

MFD - Multifunction Devices

MMC - Main Memory Controller

MRAM - Magnetic Random Access Memory

O

OLED - Organic Light Emitting Diode

OS - Operating System

P

PC - personal computer

PCI - Peripheral Component Interface

PDA - Personal Digital Assistant

PDP - Plasma Display Panel

PPM - Pages Per Minute

PROM - Programmable Read Only Memory

R

RAM - Random Access Memory

RDRAM - Rambus Dynamic Random Access Memory

RGB - Red Green Blue

ROM - Read Only Memory

RPM - Revolutions Per Minute

S

SASD - Structured Analysis, Structured Design

SDRAM - Synchronous Dynamic Random Access Memory

SRAM - Static Random Access Memory

SVCD - Super Video Compact Disks

SVGA - Super Video Graphics Array

T

TDD - Telecommunications Device for the Deaf

TFT - Thin-Film Transistor

TTY - teletypewriter

TV - television

U

USB - Universal Serial Bus

V

VCD - Video Compact Disk

VDU - Visual Display Unit

VGA - Video Graphics Adaptor

VRAM - Video Random Access Memory

VR - Virtual Reality

W

WORM - Write Once, Read Many

WYSIWYG - What You See Is What You Get

ACRONIMS

A.D.	Anno Domini	нашої ери
a.m.	ante meridiem	До обіду
a priori		Завчасно, незалежно від досвіду
B.C.	Before Christ	До нашої ери
circa		Приблизно, біля
e.g.	Exempli gratia	наприклад
Etc.	Et cetera	І так далі
i.e.	Id est	Тобто
In situ		На місці
N.B.	Nota bene	Примітка, відмітка
p.m.	Post meridiem	Після обіду
Pro et con	Pro et contra	За і проти
Terra incognita		Незнайома область
Vers, vs	versus	Проти
Vice versa		В залежності від (чогось)
viz		А саме

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