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НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ УКРАЇНИ
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АНГЛІЙСЬКА МОВА В СФЕРІ ІНФОРМАЦІЙНИХ ТА КОМП'ЮТЕРНИХ ТЕХНОЛОГІЙ

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Навчальний посібник призначений для навчання англійської мови студентів третього курсу комп'ютерних спеціальностей вищих навчальних закладів.

Мета посібника – розширити коло актуальних тем, та урізноманітнити комплекс вправ основного курсу англійської мови, які складають основу розвитку навичок професійно-орієнтованої комунікації.

Навчальний посібник призначено для практичних занять та складається з 6 розділів, у кожному з яких подано текст та вправи до нього; вправи на удосконалення навичок аудіювання; завдання для перекладу з англійської мови українською і навпаки; вправи на закріплення граматичного та лексичного матеріалу, завдання для розвитку усного та писемного мовлення. У додатки винесено методичні рекомендації, граматичний довідник, словник аббревіатур, перелік ключових термінів та список посилань.

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ПЕРЕДМОВА

Основною метою навчання англійської мови студентів технічних спеціальностей є володіння іноземною мовою в обсязі, необхідному для ситуативного та професійного спілкування з метою одержання інформації. В процесі досягнення цієї мети студенти мають одержати достатній рівень комунікативної компетенції, яку складають мовленнєві вміння, сформовані на основі мовних, комунікативно-пізнавальних, мовленнєвих навичок загальнотехнічного характеру, включаючи навички перекладу загальнотехнічних текстів, реферування та анотування загальнотехнічних текстів, а також підготовку до подальшої самостійної роботи з мовним матеріалом для забезпечення освітніх запитів і гармонійного поєднання навчального процесу та наукової діяльності.

Навчальний посібник складено згідно з вимогами Програми навчальної дисципліни «Іноземна мова професійного спрямування» для студентів технічних спеціальностей і охоплює нормативний граматичний матеріал, розширений діапазон специфічної лексики, термінологію та широкий спектр актуальних тем, що пов'язані з навчанням та майбутньою професією.

Основна мета посібника – розвиток англомовної комунікативної компетентності. Навчальний матеріал дібрано з метою розширити коло актуальних тем та урізноманітнити комплекс вправ основного курсу англійської мови, які складають основу розвитку навичок професійно-орієнтованої комунікації.

Посібник побудовано за тематичним принципом та складається з шести розділів. Розділи ідентичні в структурному відношенні та містять тексти, які дають змогу опанувати основи загальнотехнічної термінології профільних дисциплін та отримати навички перекладу; вправи до тексту, які спрямовані на розвиток усного та письмового мовлення; вправи з сучасної граматики англійської мови; а також завдання, що сприяють удосконаленню навичок

аудіювання. Аудіоматеріали використано з відкритого інформаційного ресурсу YouTube. Щоб уникнути переобтяженості кожного розділу, граматичний матеріал у довіднику подано в кінці посібника у вигляді таблиць і схем. У кінці кожного розділу пропонуються творчі завдання за темою, спрямовані на закріплення вивченого матеріалу. Навчальний посібник призначено для аудиторного та позааудиторного вивчення навчального матеріалу.

Посібник є додатковим матеріалом, опрацювавши який, студенти зможуть покращити усі навички мовленнєвої діяльності. Зокрема, широкий спектр вправ та творчих завдань у вигляді монологів, діалогів, полілогів допоможуть удосконалити навички професійно-орієнтованої комунікації.

UNIT 1: DIGITAL CITIZENSHIP

Lead in

Task 1

Answer the questions:

- Who is a digital citizen?
- What is a digital footprint?
- How much do you know about your digital footprint? Visualize it as in the example:

- List your favorite digital activities (apps, websites, images, texting, posting, researching etc.)

- If you spend more time on a website or in a social network/messenger, make that part bigger

- If you have posted online/shared/sent a photo or message, these are examples you can include and make those parts bigger too.



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Task 2

Think of the words related to the topic for each letter. Share your ideas with your groupmates and complete the missed letter-lines. Do not forget to add new words and phrases while working on the unit.

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

Listening

Task 3

You will watch the video explaining the main reasons to care about your digital footprint. Before you watch brainstorm and complete the chart.

Reasons to care about your digital footprint	
Your ideas	Video
1	1
2	2
3	3
4	4

Task 4

Watch the video and check your answers in Task 3.



©Internet
Society

[link](#)

Task 5

Mark the following sentences as True or False.

1. Our digital footprints are seldom monetized by organizations with which we have relationship and which we can control. **True** **False**

2. If you stay logged into Twitter, Facebook, or Google, they're tracking your visits to any webpage with a Like, Tweet, or +1 button only when you click on that button. **True** **False**
3. Your digital footprints can be taken out of context and misinterpreted. **True** **False**
4. Digital footprints, the traces we leave behind as we use the Internet, have both benefits and costs. **True** **False**
5. There's no way on the Internet to say no to most forms of tracking and no way to say you can share this but not that. **True** **False**

Reading comprehension

Task 6

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

Word/phrase	Translation	Word/phrase	Translation
<i>to corrupt data</i>		<i>to snoop around</i>	
<i>to gain unauthorized access</i>		<i>viral</i>	
<i>cyber bullying</i>		<i>to be copyrighted in one's name</i>	
<i>leaking confidential information</i>		<i>establishing ownership on smth</i>	
<i>to interfere with</i>		<i>to give false alerts</i>	

Task 7

You are going to read about The Ten Commandments of Computer Ethics established by CEI.



Before you read the text, think of five questions you expect to be answered when reading. Use the following chart to organize your ideas. Skim the text to find the answers. Share your ideas and results with your groupmates.

<u>Question</u>	<u>Answer</u>
<u>Who...?</u>	
<u>What...?</u>	
<u>When...?</u>	
<u>Why?</u>	
<u>How?</u>	

Task 8

Read and mark with different colors pieces you: agree, disagree, and partially agree. Compare and discuss your notes with your groupmates.

The Ten Commandments of Computer Ethics

1 Thou shalt not use a computer to harm other people.

It is unethical to use a computer to harm another user. It is not limited to physical injury. It includes harming or corrupting other users' data or files. It is wrong to use a computer to steal someone's personal information. Manipulating or destroying files of other users is ethically wrong. It is unethical to write programs, which on execution lead to stealing, copying or gaining unauthorized access to other users' data. Being involved in practices like hacking, spamming, phishing or cyber bullying does not conform to computer ethics.

2 Thou shalt not interfere with other people's computer work.

Computer software can be used in ways that disturb other users or disrupt their work. Viruses, for example, are programs meant to harm useful computer

programs or interfere with the normal functioning of a computer. Using malicious software to attack a computer is unethical.

3 Thou shalt not snoop around in other people's computer files.

We know it is wrong to read someone's personal letters. On the same lines, it is wrong to read someone else's email messages or files. Obtaining data from another person's private files is nothing less than breaking into someone's room. Snooping around in another person's files or reading someone else's personal messages is the invasion of his privacy.

4 Thou shalt not use a computer to steal.

Stealing sensitive information or leaking confidential information is as good as robbery. It is wrong to acquire personal information of employees from an employee database or other such information that is meant to be confidential. In addition, computers must not be used to store stolen information.

5 Thou shalt not use a computer to bear false witness.

Spread of information has become viral today. This also means that false news or rumors can spread speedily through social networking sites or emails. Being involved in the circulation of incorrect information is unethical. Mails and pop-ups are commonly used to spread the wrong information or give false alerts with the only intent of selling products. Direct or indirect involvement in the circulation of false information is ethically wrong. Giving wrong information can hurt other parties or organizations that are affected by that particular theme.

6 Thou shalt not copy or use proprietary software for which you have not paid (without permission).

Like any other artistic or literary work, software is copyrighted. A piece of code is the original work of the individual who created it. It is copyrighted in his/her name. In case of a developer writing software for the organization she/he works for, the organization holds the copyright for it. Copyright holds true unless its creators announce it is not. Obtaining illegal copies of copyrighted software is unethical and also encourages others to make copies illegally.

7 Thou shalt not use other people's computer resources without authorization or proper compensation.

Multi-user systems have user specific passwords. Breaking into some other user's password, thus intruding his/her private space is unethical. Accessing data that you are not authorized to access or gaining access to another user's computer without her/his permission is not ethical.

8 Thou shalt not appropriate other people's intellectual output.

Programs developed by a software developer are her/his property. If he is working with an organization, they are the organization's property. Copying them and propagating them in one's own name is unethical. This applies to any

creative work, program or design. Establishing ownership on a work which is not yours is ethically wrong.

9 Thou shalt think about the social consequences of the program you are writing or the system you are designing.

Looking at the social consequences that a program can have, describes a broader perspective of looking at technology. A computer software on release, reaches millions. Software like video games and animations or educational software can have a social impact on their users. When working on animation films or designing video games, for example, it is the programmer's responsibility to understand his/her target audience/users and the effect it may have on them. Software developers should consider the influence their code can have on the society at large.

10 Thou shalt always use a computer in ways that ensure consideration and respect for other humans.

The communication etiquette we follow in the real world applies to communication over computers as well. One should not intrude others' private space, use abusive language, make false statements or pass irresponsible remarks about others. One should be courteous while communicating over the web and should respect others' time and resources.

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Task 9

Mark the following sentences as True or False. Find in the text the lines/ paragraphs proving your choices.

- | | | |
|--|--------------------|---------------------|
| 1. You must not use the computer in ways that may harm other people. | <i>True</i> | <i>False</i> |
| 2. Manipulating or destroying files is ethically wrong. | <i>True</i> | <i>False</i> |
| 3. You may use computer technology to cause interference in other users' work if it's important. | <i>True</i> | <i>False</i> |
| 4. Spying on another person's digital data is unethical. | <i>True</i> | <i>False</i> |
| 5. Contributing to the spread of fake information conforms to computer ethics. | <i>True</i> | <i>False</i> |
| 6. You should refrain from copying software or buying pirated copies. | <i>True</i> | <i>False</i> |

- | | | |
|--|-------------|--------------|
| 7. It is wrong to claim ownership on a work which is the output of someone else's intellect. | True | False |
| 8. Before developing a software, think about the social impact it can have. | True | False |

Language Work

Task 10

Find words or phrases in the text that mean the following:

- 1) falling outside of what is considered morally right or proper for a person, a profession or an industry.
- 2) an aggressive, intentional act or behavior that is carried out by a group or an individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself
- 3) looking around secretly, in order to discover things or find out information about someone or something.
- 4) data that must be protected from unauthorized access to safeguard the privacy or security of an individual or organization.
- 5) a legal means of protecting an author's work.
- 6) a thing which one is required to do as part of a job, role, or legal obligation.
- 7) the customary code of polite behaviour in society or among members of a particular profession or group.

Task 11

Find in the text the equivalents to the following words and phrases

Зміна або знищення файлів, порушувати роботу, заважати нормальному функціонуванню, вторгнення в приватне життя, незаконні копії програмного забезпечення захищеного авторським правом, копіювання їх та розповсюдження, суспільний вплив, образлива/ ненормативна лексика, бути чемним, робити неправдиві заяви.

Task 12

Study the forms on the left. Decide which sentence illustrates each of the meanings on the right. (See Grammar Reference 1-1)

Sentence	Modal Verb Function
1. Programs meant to harm useful computer programs or interfere with the normal functioning of a computer must be viruses. 2. People ought to look at the social consequences that a program can have. 3. Could you stop snooping around in my files or reading my personal messages, it is the invasion of my privacy. 4. You had better not write programs, which on execution lead to stealing, copying or gaining unauthorized access to other users' data. 5. James shouldn't have written the program, which on execution lead to stealing, copying or gaining unauthorized access to other users' data. 6. People should not use a computer to harm another user. 7. Computer users must follow the communication etiquette as they do in the real world.	• Logical assumption • General advice • Advice on a specific situation • Right thing to do (duty) • Obligation • Criticism • Polite request

Task 13

Match to make collocations. Then translate them into Ukrainian.

*target, normal, pass, alerts, intruding, wrong,
lines, consequences, social, to be involved*

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. on the same _____ 2. _____ one's private space 3. ethically _____ 4. _____ irresponsible remarks 5. false _____ | <ol style="list-style-type: none"> 1. _____ in practices 2. _____ functioning 3. social _____ 4. _____ impact 5. _____ audience/users |
|--|--|

Task 14

Build your own sentences using the collocations from Task 13. Use modals to shape your ideas. (See Grammar Reference 1-1)

Task 15

Imagine that you are preparing for the presentation on the topic “digital citizenship”. Explain the following terms to make them clear for your teenage audience. Use appropriate structures (Appendix 3).

Digital footprint, e-reputation, digital literacy, plagiarism, copyright infringement, computer ethics, cyberbullying, digital wellbeing.

Task 16

In the world of messengers and chat rooms, the use of Internet abbreviations and acronyms is as natural as seeing another selfie maker at the street. Somehow these catchy shorthand words have grown into the whole new language used by millennials and Gen Zers. Here are the most popular. Do you know the meaning of the most popular?

LOL, ROFL, OT, lmk, NP, NC, SLAP, WB.

Task 17

Cross out the incorrect option in each row:

data: harming ,corrupting, manipulating, developing

give: alerts, copyright, access, right

social: user, impact, effect, responsibility

privacy: intrude, invade, respect, build

Task 18

Spot the difference and complete the sentences.

Manage vs control

As verbs the difference between ***manage*** and ***control*** is that ***manage*** is to direct or be in charge of while ***control*** is to exercise influence over; to suggest or dictate the behavior of.

As nouns the difference between **managment** and **control** is that **managment** is the act of managing or controlling something while **control** is (countable/uncountable) influence or authority over.

wikidiff.com

1. Parents should _____ what they children visit on the Internet because children don't have the mental defenses adults have.
2. Network administrators _____ an organization's computer networks.
3. The operating system _____ every task your computer carries out and _____ system resources.
4. Online reputation _____ (ORM) means taking _____ of the online conversation so that people find the right materials when they look you up on the Web.
5. The only way to _____ the virus is an exclusion.

Translation

Task 19

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

Digital Plagiarism

In the past, it was much more difficult to **detect acts of plagiarism**. As you would know, **content matching** would have been quite difficult. Now, we have entered a new era in the war against plagiarism – the digital era.

It has been both a blessing and a curse for all of us when it comes to **plagiarism**. For **willing plagiarists**, this has provided them with a wealth of information and ideas to easily copy and use as original work. For academic institutions it has led to us, a means of **detecting plagiarism**.

Perhaps such digital means might also allow a plagiarist to check if a document or piece of work has been **digitised**. This will grant them the insurance to know that it would be easy to plagiarize. Complex situations could arise though. Someone who uses this as a source, and correctly cites it, might **inadvertently** be taking the ideas of someone else's work, without realising it; and could therefore get into trouble for the **omission of a citation** of this original work.

As time goes by, **plagiarism detection software** will increasingly become more sophisticated. This might lead to a scenario whereby fewer and fewer people engage in acts of plagiarism. What this might not solve though, are acts of **accidental plagiarism**.

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Task 20

Translate the following sentences into English.

1. Комп'ютерна етика являє собою область міждисциплінарного дослідження й включає розгляд технічних, моральних, юридичних, соціальних, політичних і філософських питань.
2. Цифровий слід — сукупність інформації про відвідини та внесок користувача під час перебування у мережі. Класифікується два види цифрових відбитків: пасивні та активні.
3. Цифрове громадянство - це усвідомлення впливу цифрових технологій на суспільство, спільноту та кожного із нас.
4. Сьогодні важливо не просто вміти користуватись новітніми технологіями, але й розуміти їх комплексну дію, переваги, недоліки, можливості та загрози.
5. Просто користуватися смартфоном чи ноутбуком і мати доступ до інтернету — ще не означає володіти цифровою грамотністю. Здатність ефективно та безпечно використовувати сучасні цифрові технології в роботі та навчанні, в професійному та особистісному розвитку — ось що таке цифрова грамотність.
6. Особиста інформація це інформація про конкретну особу. Вона може бути загальнодоступною, призначеною лише для деяких людей або цілковито приватною, залежно від того, наскільки конфіденційною вона є.
7. Увімкнувши батьківський контроль, Ви можете вказати, який контент заборонено завантажувати або купувати в Google Play користувачам відповідно до їхнього віку.
8. Цифрова репутація – це портрет, який формується на основі фото, зображень, статусів, висловлювань, публікацій користувача Інтернету. «Підмочена» цифрова репутація може серйозно позначитися як на кар'єрі, партнерських відносинах, так і на простих людських відносинах.
9. Розвиток інформаційних технологій, спрощення доступу допошуку інформації в інтернет призвели до активного розвитку, так званого інтернет-плагіату.
10. Інтернет дозволяє завантажувати, зберігати та поширювати на необмежене коло осіб різні види інформації, в тому числі і такі об'єкти, які охороняються авторським правом. Проте, така «свобода висловлювання» може завдавати шкоди іншим правам людини, що є неприпустимим.

Speaking

Task 21

Work in pairs or small teams. Brainstorm and organize graphically a set of tips on managing e-reputation. Use the following chart to organize your ideas:

<i>How to Google yourself</i>	1. 2.
<i>Define the type of search results:</i>	1. 2.
<i>Steps to improve:</i>	1. 2. 3.
<i>How to maintain your positive reputation</i>	DOs DONTs

Task 22

Answer the questions, be ready to reason and discuss your choices.

1. **What does it mean if something has a copyright symbol?**
 - a) It is the work and property of the person who created it
 - b) The person who created the work wanted to register their name so they could become famous
 - c) As long as you buy it, you can make as many copies as you want
 - d) Since young people don't have much money, it's okay to copy anything
2. **If you want to use one program on thirty different computers, you should:**
 - a) Purchase a site license or buy enough copies for every computer
 - b) Buy two copies, in case one becomes damaged, and load it on all the computers
 - c) Buy one copy and put it on all the computers
 - d) Borrow it from another school, copy it, and send it back promptly
3. **A university purchased a single-user copy of a word processing program. They may do which of the following?**
 - a) Copy it onto all the computers in the lab
 - b) Use it on only one computer in the lab.

- c) Use it on all the computers in one classroom.
 - d) Duplicate the disk and give it to everyone in the class.
4. **Upon walking into Mr. X's workroom, student Y saw a test for tomorrow on the computer screen. Which of the following can Y ethically do:**
- a) Correct obvious errors on the test to help Mr. Johnson avoid embarrassment.
 - b) Read the questions as a study guide.
 - c) Add a few well-chosen questions that Mr. Johnson left out.
 - d) Leave the room without reading the test questions.
5. **A sent a video to her friend B. However, he uses the video to spread false rumours about A by posted it online. Based on the above situation, what is the code of conduct that B has violated?**
- a) User may not interfere with others' computers
 - b) User may not used computers to harm other people.
 - c) User may not use the computers to bear false witness.
 - d) User may not use others' resources without authorization.

Task 23

Analyse your digital footprint:

- *what was your first impression of your digital footprint?*
- *what surprised you?*
- *what kinds of information would you want / not want an employer/ your friends/ your parents/your teachers to see about you online?*

Writing

Task 24

Write the following disclaimer statements:

- Copyright Disclaimer
- Fair Use Disclaimer
- No Responsibility Disclaimer
- Views Expressed Disclaimer

Useful language and tips you can find in [Appendix](#)

Task 25

Look at the slides presenting digital statistics for Ukraine, analyze and write a detailed description (10 – 12 sentences): <https://datareportal.com/reports/digital-2020-ukraine>



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Creative writing

Back in 2010, Trip Gabriel wrote, in “*Plagiarism Lines Blur for Students in Digital Age*,” that “many students simply do not grasp that using words they did not write is a serious misdeed.” Digital technology makes copying and pasting easy, of course. But that is the least of it. The Internet may also be redefining how students — who came of age with music file-sharing, Wikipedia and Web-linking — understand the concept of authorship and the singularity of any text or image. How true is this for you?

Write a short essay presenting your opinion on plagiarism issues.

Final mini-project

Work in teams.

Create a short presentation on the topic “*Digital citizenship*” to give it in a class.

Find your inspiration in 9 elements of digital citizenship.



©Fractus Learning

REVISION BRAIN-TWISTER

Find all of the words hidden in the letter grid. Words are placed horizontally, vertically and diagonally. Clues below are to help you.

- | | |
|---|---|
| <p>1- steps you need to follow</p> <p>2- a legal means of protecting an author's work</p> <p>3- falling outside of what is considered morally right or proper for a person, a profession or an industry</p> <p>4- bullying through the internet</p> <p>5- share too much information</p> <p>6- rules you have to follow</p> <p>7- the customary code of polite behaviour in society or among members of a particular profession or group.</p> | <p>8- a person who develops the skills and knowledge to effectively use the Internet and other digital technology</p> <p>9- data that must be protected from unauthorized access to safeguard the privacy or security of an individual or organization</p> <p>10- when people track information to steal stuff from you</p> <p>11- circulated rapidly and widely from one Internet user to another</p> <p>12- what you leave behind on the internet</p> |
|---|---|

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

CHECK YOUR PROGRESS

Can you do it in English:

define 10 key terms related to the topic	Yes	No
explain the main concepts of being a cybercitizen	Yes	No
explain The Ten Commandments of Computer Ethics	Yes	No
advise positive e-reputation solutions	Yes	No

LEARN MORE:

<https://www.digitaltechnologieshub.edu.au/teachers/topics/digital-citizenship>

<https://www.goguardian.com/glossary/digital-citizenship/>

<https://www.rasmussen.edu/student-experience/college-life/what-is-digital-footprint/>

<https://ictreverse.com/your-digital-footprint/>

UNIT 2: CAREER IN IT

Lead in

Task 1

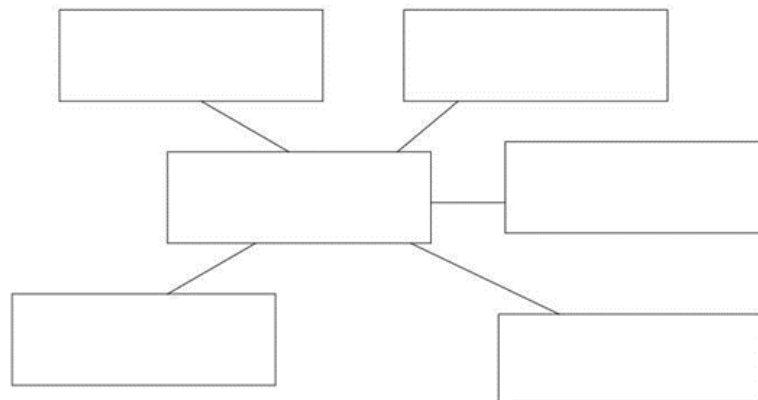
Classify these IT jobs under the heading that best describes their function. If you do not know, take your best guess! You may add extra job titles of your choice.

Software engineer, trainer, hardware engineer, help desk technician, network analyst, network administrator, database administrator, system analyst

Analyze	Design / develop	Manage	Support

Task 2

Think of the words related to the topic. Expand the basic template by drawing your personal variant of a concept map and complete it. Do not forget to add new words and phrases while working on the unit (Appendix 1).



Listening

Task 3

In the video, the authors discuss the question “what's better to start your IT career...An IT Certification or a College/University Degree”. Before you watch, present your opinion and reason it. Use the chart to organize your ideas:

1. An IT Certification is better because: 1) 2)	2. A College/University Degree is more preferable because: 1) 2)
--	---

Task 4

Watch the video and compare the authors' opinion and your ideas.

	 ©SkillsBuild Training
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Task 5

1. An IT certification is ...
2. Some of the IT certifications are...
3. Most people who earn a graduate degree and pair it with certifications ...
4. The strengths of an IT certification are...
5. The weaknesses of an IT certification are...
6. The strengths of an IT degree are...
7. The weaknesses of an IT degree are...

Reading comprehension

Task 6

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

Word/phrase	Translation	Word/phrase	Translation
Enterprise Architect		Data Scientist	
Software Development Manager		Software Engineering Manager	
Solutions Architect		Software Architect	
Data Architect		Systems Architect	
Applications Development Engineer		Cloud Engineer	

Task 7

You will read about the the top 10 highest-paying in-demand jobs in IT. Before you read the text, try to guess three jobs that may be in the list and think of the key skills for them. Use the following chart to organize your ideas. Then skim the text and compare your ideas and information given in the article.

		Your ideas	Text
1	Job Skills		
2	Job Skills		
3	Job Skills		

Task 8

Read the text and mark with different colors the key skills and responsibilities for each job. Compare your notes with your groupmates.

10 Of The Top Paying Tech Careers Right Now

It is no secret that tech jobs are in demand. According to a recent survey at Glassdoor, 11 of the 25 highest-paying in-demand jobs were in technology.

Here are the top 10 highest paying tech jobs that made the list.

Enterprise Architect (Average base salary: \$115,944)

An enterprise architect often reports directly to the chief information officer (CIO) and is responsible for making sure that the business uses proper systems architecture, in keeping with the latest available technology, to achieve its goals. Enterprise architects need to have an in-depth understanding of various systems and how they work together to serve a company's needs. They also must be able to communicate effectively with both technical developers and the highest levels of business management.

Software Development Manager (Average Base Salary: \$108,879)

As the name implies, this role involves managing software developers and projects. Oftentimes candidates must have previous project management experience because a lot of the responsibilities involves project planning, process control, team staffing, and more.

Software Engineering Manager (Average Base Salary: \$107,479)

This manager is responsible for creating a well-coordinated team of software engineers that can quickly and successfully work on software products. This includes maintaining existing software and implementing new software. Software engineering managers must have programming experience, software development experience, and people-management skills.

Software Architect (Average Base Salary: \$105,329)

Software architects are usually experts—this is not entry-level position. They dictate the standards for software tools, platforms, and coding practices, and make the important design choices.

They are a link between a company's on-the-ground tech unit and the non-technical management. Software architects need higher-level technical strategy and vision and the ability to think and plan for the long term. The position requires experience and strong communication skills.

Applications Development Engineer (Average Base Salary: \$104,048)

Applications development engineers must know various programming languages and operating systems. They will use source code to create software that is customized to a client's needs.

Application development engineers may work in teams, on prototypes, and on testing applications.

Solutions Architect (Average Base Salary: \$121,522)

A solutions architect is responsible for deciding which technologies to use. Job responsibilities can vary, but they work closely with others to ensure solutions and technologies are properly implemented.

They also do a lot of hands-on work with designing and engineering complex software and systems. They differ from an enterprise architect in that they focus on delivering solutions while enterprise architects support them and make decisions about the overall systems for the company.

Data Architect (Average Base Salary: \$101,900)

A data architect works within a business and creates a blueprint plan of the company's data management systems. This individual analyzes all of the data flowing from external and internal sources and plans a system to protect, integrate, centralize, and maintain the systems and data.

Systems Architect (Average Base Salary: \$100,984)

A systems architect designs, configures, operates, and maintains a company's networking and computer systems. This includes everything from software, hardware and web portals to security, firewalls, and intranet and internet connections. Systems architects must possess solid programming, conceptualization, and organizational skills.

Cloud Engineer (Average Base Salary: \$96,449)

A cloud engineer handles the planning, design, managing, support, and maintenance duties for various types of cloud computing. The position can include varied roles for the cloud, such as architect, security engineer, software engineer, systems and network engineer. When companies bring a cloud engineer on board, they're typically looking to improve or deploy cloud services or increase their cloud technology.

Data Scientist (Average Base Salary: \$96,116)

Data science is a growing field. Companies are now collecting tons of data from users, and they need to analyze it and draw insights from it. The people responsible for this are data scientists. Data scientists aren't just seen at tech companies or startups. A range of industries is now seeking data science experts.

While many of the top paying tech careers require years of industry experience, breaking into the tech industry itself does not always mean needing a

technical background. With an abundance of educational resources today, it is as easy as ever to move into the booming tech industry.

©thebalancecareers

Task 9

Mark the following sentences as True or False. Find in the text the lines/paragraphs proving your choices.

1. A half of the 25 highest-paying in-demand jobs were in technology. **True False**
2. Enterprise architects must be good at communication. **True False**
3. Software architects are usually newcomers starting a career. **True False**
4. Application development engineers work independently and never in teams. **True False**
5. A solutions architect makes decisions about the overall systems for the company. **True False**
6. A systems architect is a professional who develops and implements a company's networks and computer systems. **True False**
7. Data science is a fresh evolving area. **True False**

Language Work

Task 10

Find words or phrases in the text that mean the following:

- 1) a fixed amount of money paid to an employee by an employer in return for work performed.
- 2) a person who applies for a job.
- 3) knowledge or skill in a particular job or activity, which you have gained.
- 4) the ability to do something well; expertise.
- 5) a job; a place where someone or something is located or has been put.
- 6) involved in active personal participation in an activity; providing direct practical experience.

- 7) tasks or actions that one is required to perform as part of one's job.
- 8) a newly established business.

Task 11

Find in the text the equivalents to the following words and phrases:

Високооплачувані та затребувані, досвід курування проектам, злагоджена команда, навички управління людьми, стратегія та бачення, налаштовані під потреби клієнта, забезпечити належне впровадження рішень та технологій, володіти ґрунтовними навичками програмування, виконувати обов'язки/функції, досвід роботи в галузі.

Task 12

Study the forms on the left. Decide which sentence, illustrates each of the meanings on the right. (See Grammar Reference 1-2)

Sentence	Type of Conditional
1. If James were not a data architect, he wouldn't have had to stay late yesterday and prepare all of the blueprint plans of the company's data management systems.	a) Conditional 0 (general truth)
2. If the person is a software development manager, they are obliged to manage software developers and projects.	b) Conditional 1 (real present)
3. Unless you were a software architect, you would need more experience regarding the standards for software tools, platforms, and coding practices	c) Conditional 2 (unreal present)
4. You wouldn't be in so much trouble if you had contacted the cloud engineer in time.	d) Conditional 3 (unreal past)
5. Provided you had not visited the lecture on prototypes and testing applications, you wouldn't have got the certificate.	e) Mixed conditional 2x3
6. You will be responsible for making sure that the business uses proper systems architecture in case you choose a career of an enterprise architect.	f) Mixed conditional 3x2

Task 13

Match to make collocations. Then translate them into Ukrainian.

*an in-depth, a company's needs, staffing,
position, job, to deliver, plan, skills, to bring, insights*

- | | |
|----------------------|---------------------------|
| 1. to serve _____ | 6. _____ responsibilities |
| 2. a blueprint _____ | 7. to draw _____ |
| 3. _____ solutions | 8. solid _____ |
| 4. entry-level _____ | 9. _____ understanding |
| 5. _____ on board | 10. team _____ |

Task 14

Build your own sentences using the collocations from Task 13. Use conditional sentences to shape your ideas. (See Grammar Reference 1-2)

Task 15

Imagine that you are explaining the career plan to freshmen. Define the following terms. Use appropriate structures (Appendix 3). Think of possible collocations with them.

Freelance, certification, responsibilities, formal qualification, career ladder.

Task 16

What do these acronyms mean? Decode them. Use the Glossary if necessary. Make your own sentences demonstrating them in an appropriate context.

QA, CIO, DBA, SRE, AAS, FL, P/T.

Task 17

Cross out the incorrect option in each row:

experience: previous, high, relevant, hands-on

skills: soft, hard, transferable, chief
position: programming, entry-level, high-level, skilled
to implement: software, diploma, solutions, technologies.

Task 18

Spot the difference and complete the sentences.

Job vs Work

Job is as an activity that an individual performs in exchange for a specific fee or payment. It is also referred to as an occupation, profession, career, or trade. It is a responsibility of an individual towards his employer that he must perform well because he is paid for it. A job is a formal kind of work. Sometimes, **job** is used for *a small task* or *a piece of work*.

Work is a physical or mental activity that is performed in order to accomplish or produce something. It is something that an individual does in the performance of his job or of his responsibilities towards his employers or other people. It has a broader meaning and can refer to all kinds of activities that an individual does. It can be something that one does in the performance of his responsibilities to his family such as cooking their food and cleaning the house or something that one does because he loves doing it like gardening.

An individual does not always have to be paid for his **work** unlike a **job** in which he is paid for accomplishing.

© Difference Between

1. You've done a good _____!
2. I am going to _____ in an hour.
3. He has found a good _____ as a programmer.
4. He was tired after a long day's _____.
5. What do you do at _____?

Translation

Task 19

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

IT is **a wide field of job positions**. Some are engineers with **PhDs**, and others are **high school graduates** helping a secretary install software on their computer. Regardless, those working in IT mustn't forget that nowadays it is not enough to know all the **technical skills** and software **proficiencies**.

Even if you've got **solid hard skills**, employers will evaluate your soft skills as you move through the hiring process.

Communication, collaboration, adaptability, and problem-solving – commonly called “**soft**” **skills** – are now so essential to success in IT that some CIOs have started to call them **core skills**. And despite the demand for IT talent with “hard” tech skills, people who lack core skills will struggle **to land their dream job**.

A study from West Monroe found that more than 78 % of HR leaders say they've become more focused on finding **technology employees** with strong soft skills. 67 % say they have **withheld a job offer** due to a candidate's lack of soft skills.

“[Businesses] should actively look for technologists with the **interpersonal**, writing, and **teamwork abilities** to thrive in an integrated business setting and develop into leaders,” notes Greg Layok, managing director with West Monroe and leader of the firm's technology practice, in the report.

IT leaders say that **a gap in** soft skills on a team can lead to trouble, ranging from **daily team friction** to missed deadlines and **poor results**.

©TheEnterprisesProject

Task 20

Translate the following sentences into English:

1. Чи потрібна вища освіта для роботи в ІТ-компанії та наскільки диплом може стати корисним для кар'єрного росту?
2. Крім фундаментальної технічної освіти ІТ-фахівцеві необхідно мати спеціальну освіту, причому професійні знання повинні постійно оновлюватися.
3. Технічні навички допоможуть вам отримати інтерв'ю, а ось гнучкі навички допоможуть отримати і зберегти роботу, або навіть створити свою власну компанію.
4. Комунікативні навички надзвичайно важливі для ефективного ІТ-фахівця, оскільки команда розробників програмних продуктів може працювати віддалено і вміння спілкуватися між собою, знання іноземних мов, вміння вести ділову переписку, вирішувати конфліктні ситуації та приймати групові рішення збільшує шанси на успішне виконання проекту.

5. IT-фахівець - широке поняття, що об'єднує в собі представників багатьох професій, які працюють в області інформаційних технологій: програмісти, розробники, адміністратори мереж і баз, модератори, фахівці з робототехніки, з інформаційної безпеки, веб-дизайнери і навіть 3D-аніматори.
6. Сертифікаційні курси в сфері IT спрямовані на сучасні технології і дозволяють доповнити університетські знання оновленим матеріалом.
7. Часто окрім професійних знань роботодавці вимагають від кандидатів на посаду спеціаліста з інформаційних технологій вільного володіння іноземною мовою.
8. Впродовж останніх років попит на кваліфікованих IT-фахівців є не просто стабільним, а постійно зростаючим й наразі він значно перевищує пропозицію (адже в умовах сьогодення розвиток будь-якого підприємства пов'язаний з його IT-інфраструктурою, яка, звісно, потребує сервісного обслуговування).
9. У нинішньому складі факультет інформатики та обчислювальної техніки включає чотири випускаючі кафедри: автоматизованих систем обробки інформації і управління (АСОІУ); автоматики та управління в технічних системах (АУТС); технічної кібернетики (ТК); обчислювальної техніки (ОТ).
10. Загальним для всього факультету є підготовка на фундаментальному рівні спеціалістів в галузі програмування.

Speaking

Task 21

Try to reason your choice of the future speciality.

Use the following chart describing the key factors to be considered while choosing a career.

Present a two-minute speech to your groupmates.



Task 22

Create a profile of your speciality. Complete the chart to organize your ideas.

<u>Title:</u>	
<u>Nature:</u>	<u>Basic skills:</u>
<u>I think the main difficulties on the way to my diploma are:</u>	
<u>I believe a successful specialist in this sphere is / has / must etc.:</u>	
<u>I can suggest the main difficulties on the way to success in this area are:</u>	
<u>Advantages:</u>	<u>Disadvantages:</u>
<u>Career opportunities:</u>	<u>Extra certifying options:</u>
<u>My conclusion:</u>	

Task 23

Discuss in small groups. Use a dice or a random number generator to choose the question to answer.

Set 1: career		
1. A career is...	2. My current career goal is...	3. The education level I want to achieve is...
4. Planning for a career is important because...	5. A career I think I would be good at is...	6. A career I think would be fun is...

Set 2: educational requirements (What does it take?)		
1. High school diploma.	2. Vocational certification.	3. Bachelor's degree.
4. Master's degree.	5. Doctoral degree.	6. 2- and 4-yr college degree.

Writing

Task 24

Go online and investigate the recent and current IT job market trends. Write an article (150-200 words) for a university community presenting statistics and your conclusions.

Task 25

Choose any IT position you like and write a detailed job description. You should outline:

- *Duties and responsibilities;*
- *Special skills and qualifications;*
- *Salary expectations;*
- *Education and training requirements;*
- *Experience requirements.*

Here you can find a good IT Specialist Job Description Sample



Creative writing

Write an essay for freshmen-to-be community describing your student's life. Present your typical day, mention the curricula, and highlight tricks and pitfalls. Explain your education choice and share your experience. You may watch this (or similar of your choice) video for inspiration.



Final mini-project

<i>Imagine you are establishing the school for future IT professionals.</i> <i>Create a presentation to advertise your school to your groupmates.</i>	<i>Highlight the following:</i> • name • concept • competitive advantages • speciality • curricular • basic requirements for students
---	--

REVISION BRAIN-TWISTER

Match the words with the clues provided. Place the number of the correct clue ace in the proper square that is marked by the letter of the matching word. If the words and the clues are matched correctly, the magic square columns, rows and diagonals, will add up to the same number.

<i>A =</i>	<i>B =</i>	<i>C =</i>
<i>D =</i>	<i>E =</i>	<i>F =</i>
<i>G =</i>	<i>H =</i>	<i>I =</i>

- A. layout
- B. fast paced
- C. partandparcel
- D. applicant
- E. affect
- F. lifelong learning
- G. responsibility
- H. staff
- I. from scratch

1. a group of people who work for an organization or business
2. the process of setting out material on a page
3. a person who applies for or requests something
4. a process of gaining knowledge and skills that continues throughout a person's life
5. an essential and unavoidable part that has to be accepted
6. from the beginning
7. moving or changing rapidly
8. to change or influence something
9. the state or job of being in charge of someone or something

CHECK YOUR PROGRESS

Can you do it in English:

list the current top IT jobs

Yes No

present your future speciality

Yes No

create a position profile

Yes No

explain duties and responsibilities

Yes No

define the key hard and soft skills for IT jobs

Yes No

LEARN MORE:

<https://enterprisersproject.com/>

<https://www.itcareerfinder.com/it-careers.html>

<https://www.indeed.com/career-advice/finding-a-job/types-of-it-jobs>

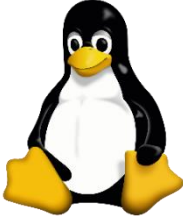
<https://www.it-ology.org/it-resources/why-should-i-consider-an-it-career/>

UNIT 3: OPERATING SYSTEMS

Lead in

Task 1

Look at these logos. They are famous and easy to recognize. Do you know their meaning? Match the logos and explanations.

	
	
	
©DesignerR	

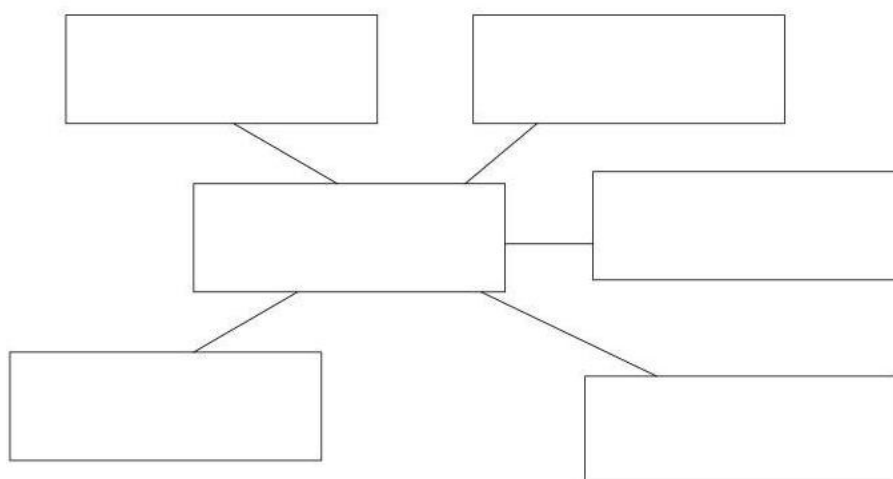
1. The logo indicates that we get infinite freedom of spreading our thoughts to all parts of the world in the second most popular Linux based OS behind Uuntu.
2. ‘We all are one’ and if we look closely in the logo we can see people joining their hands to hands and this is a sign of unity. So this Operating system is a symbol of love and harmony among all the people around the globe.
3. The name of the Operating system speaks for itself. ‘The logo, constituting the name of the OS, implies to ‘Universality’ and ‘Uniqueness’.
4. It is a mascot called “Tux”. Instead of being chosen by a marketing department that wanted to represent a brand, the logo was chosen by OS users themselves.

5. The name says it all as its full name seems to eXPerience and is a long operating system to help its users in home, Office and personal computer. The logo is a simple geometrical shape of a window which leads from originality to digitalism.

6. Looking at the logo we get the view that this Operating system is natural, simple and free of complexities to provide a good environment for the beginners to use. It is free of the useless links and useless difficulties and any beginner will find it much easy to navigate.

Task 2

Think of the words related to the topic. Expand the basic template by drawing your personal variant of a concept map and complete it. Do not forget to add new words and phrases while working on the unit (Appendix 1).



Listening

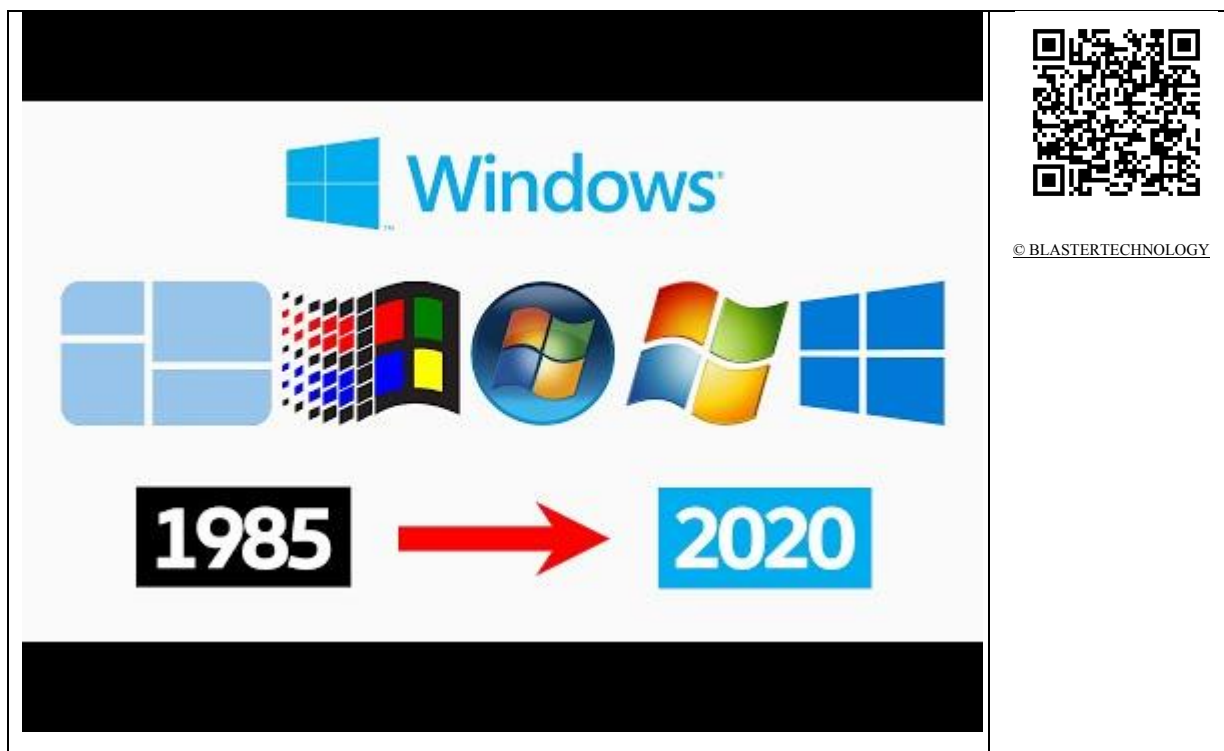
Task 3

The video presents the brief Windows history. Before you watch, decide whether these statements are true or false:

1. The first version of Windows was launched in 1885.
2. Windows 1.0 was an extension to MS-DOS.
3. The first distributed via CD-ROM version was launched in 2000.
4. Windows 2000 is considered to be the the most iconic version.
5. Windows 7 was realeased to cosolodate the advances of Windows Vista.

Task 4

Watch the video and check your answers in Task 3.



Task 5

Listen and note down 3 intreresting/new/surprising facts about 3 versions of Windows. Be ready to share yoiur findings with your groupmates. Use the chart to organize your findings.

Version	1	2	3
Fact 1			
Fact 2			
Fact 3			

Task 6

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

Word/phrase	Translation	Word/phrase	Translation
<i>monoprogrammed</i>		<i>express concurrency</i>	
<i>run a program</i>		<i>multithreaded systems</i>	
<i>primitive operating systems</i>		<i>subprocess</i>	
<i>simultaneous</i>		<i>multiplexing the processor</i>	
<i>designate a running program</i>		<i>functional vision</i>	

Task 7

You will read the part of a lecture notes. Before you read the text, answer the questions. Use the following chart to organize your ideas. Then skim the text and compare your ideas and information given in the article.

1. What is being classified?	
<i>Your ideas</i>	<i>Text</i>
2. How are items being grouped?	
<i>Your ideas</i>	<i>Text</i>
3. What are the common characteristics?	
<i>Your ideas</i>	<i>Text</i>
4. What are the categories?	
<i>Your ideas</i>	<i>Text</i>

Task 8

Read the text and mark with color the key concepts. Compare your notes with your groupmates.

A classification of operating systems

When classifying current operating systems one can take into account different criteria. One possible classification is based on the following criteria, which can be combined: **(1)** if the system can run at the same time one or more than one program, **(2)** if it supports the connection from a single terminal or from more than one, and **(3)** whether it supports a single user or can manage more than one user.

(1) Monoprogrammed/multiprogrammed.

They are also known as single-tasking/multitasking, terms that we will consider synonymous. In the primitive operating systems, both monitors as the first systems for personal computers, for example MS-DOS, the execution of a program had to finish for the start of the next program. These systems are called monoprogrammed (singletasking). From 1965 there appeared the first multiprogrammed systems (OS/360, Multics). Today, virtually all operating systems are multiprogrammed (multitasking). In multiprogrammed systems, several programs run concurrently, i.e., interleaving their executions over time, which are perceived as simultaneous. They use the concept of process (or task) to designate a running program. As stated above, multiprogramming was motivated by the need to optimize processor usage, and therefore running processes in a multiprogrammed system usually represent independent applications. Later multiprogramming has been used to express concurrency in the same application, where a set of tasks cooperate in a coordinated manner. For example, in a word processor we can find a task in charge of reading and processing keyboard input, another task in charge of checking the spelling, a third task responsible for periodically saving changes... A particular class of multiprogrammed operating systems is the multithreaded systems, which allow expressing the concurrency in an application more efficiently. The difference between a process and a thread (also called subprocess) is, for our purposes, very small, and we will not address it at this time. Thus, multiprogramming means multiplexing the processor among processes, as explained above. Obviously, a multiprocessor system (a computer with multiple processors) enhances further the multiprogramming by allowing the concurrent execution of programs to be also parallel. This is known as multiprocessing, and operating systems that control these systems are called multiprocessor operating systems. Although there are significant differences in the implementation of a multiprocessor operating system with respect to a single-processor operating system, with respect to the functional vision of applications and users they hardly transcend.

(2) Single-terminal/multiterminal.

An operating system ready to be connected simultaneously from different terminals is said to be multiterminal, otherwise it is said to be single-terminal. Timesharing operating systems, such as Unix, are multiterminal. An operating system designed for personal computers —MS-DOS, Windows 95/98— is, naturally, single-terminal. It is noteworthy the case of Linux, a Unix system for personal computers, which maintains the multiterminal Unix philosophy by means of a set of virtual terminals. Mac OS X, also derived from Unix, is another multiterminal example. It is clear that a multiterminal system must be somehow multiprogrammed: as we shall see, it is common that each terminal (real or virtual) has an associated process that manages the connection.

(3) Single-user/multiuser.

A multiuser system is able to provide user authentication and includes policies for managing user accounts and access protection, providing privacy and integrity to users. In the primitive monitor-based operating systems, shared by several users, this function was carried out manually by the system operator. The first operating systems for personal computers, such as MS-DOS, were single-user. The general purpose operating systems of today are multiuser. Note that some personal systems, such as mobile phones, include some verification mechanism (usually a password), but lack of policies to protect accesses to system resources and user management; they simply authenticate the user, but are in all aspects single-user.

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Task 9

Mark the following sentences as True or False. Find in the text the lines/paragraphs proving your choices.

- | | |
|---|--------------------------|
| 1. A single-tasking operating system can only run one program at a time. | <i>True False</i> |
| 2. Systems that allow sheduled processes are said to be multiprogramming. | <i>True False</i> |
| 3. A typical operating system designed for PCs is multiterminal. | <i>True False</i> |
| 4. There is no difference between a process and a thread. | <i>True False</i> |
| 5. All modern operating systems are multitasking. | <i>True False</i> |
| 6. A multiprocessor diminishes simultaneous programs running | <i>True False</i> |

7. Mac OS X is a multiterminal operating system, **True False**
8. A multiuser system is able to provide privacy and integrity to users. **True False**

Language work

Task 10

Find words or phrases in the text that mean the following:

- 1) the standards by which something is judged or assessed.
- 2) a software program (designed for users) that runs on a computer.
- 3) the execution of two or more computer programs by a single computer.
- 4) the process of putting something into effect; execution.
- 5) a program that emulates the functionality of a classic terminal.
- 6) by hand rather than automatically or electronically.
- 7) able to be used by more than one person simultaneously.
- 8) the process of establishing the truth, accuracy, or validity of something.

Task 11

Find in the text the equivalents to the following words and phrases:

Підтримувати з'єднання, однозадачні / багатозадачні, виконання програми, працювати\виконуватись одночасно, оптимізувати використання процесора, співпрацювати узгоджено, відповідати за перевірку правопису, періодичне збереження змін, забезпечення конфіденційності та цілісності, механізм перевірки.

Task 12

Study the forms on the left. Decide which sentence, illustrates each of the meanings on the right. (See Grammar Reference 1-3)

Sentence		Infinitives/Gerunds are used:	
1	Modern users prefer using multiprogrammed systems since several programs run concurrently.	a	after preposition

2	Multiprogramming has been used to express concurrency in the same application.	b	as a noun
3	Multiprogramming means multiplexing the processor among processes.	c	after certain adjectives
4	A multiprocessor system enhances further the multiprogramming by allowing the concurrent execution of programs to be also parallel.	d	to express purpose
5	An operating system ready to be connected simultaneously from different terminals is said to be multiterminal.	e	after certain verbs to refer to an opinion
6	Otherwise an operating system is said to be single-terminal.	f	after modal verbs and phrases
7	A multiuser system is able to provide user authentication.	g	after certain verbs to express general preference

Task 13

Match to make collocations. Then translate them into Ukrainian.

*a single, interleaving, applications, simultaneously, process, policies
operating systems, timesharing, protection, the multiprogramming*

- | | |
|----------------------------|--------------------------|
| 1. independent _____ | 6. _____ for managing |
| 2. an associated _____ | 7. _____ terminal/user |
| 3. _____ the executions | 8. _____ access |
| 4. monitor-based _____ | 9. to be connected _____ |
| 5. _____ operating systems | 10. enhance _____ |

Task 14

Build your own sentences using the collocations from Task 13. Use gerunds and infinitives to shape your ideas. (See Grammar Reference 1-3)

Task 15

Imagine that you are creating a lecture notes for freshmen. Explain the following terms. Use appropriate structures (Appendix 3).

Operating system, kernel, source code, open source, network OS, distributed OS, real-time OS, embedded OS.

Task 16

What do these acronyms mean? Decode them. Use the Glossary if necessary. Make your own sentences demonstrating them in an appropriate context.

GUI, TUI, GNU, DOS, MS-DOS, WIMP, BSD.

Task 17

Cross out the incorrect option in each row:

interface: user, management, programming, intuitive

system: operating, multitasking, operation, batch

a program: run, execute, do, launch

error: respond to, detect, do, fix

Task 18

Spot the difference and complete the sentences.

Modify vs Change

Modify means:

- to change some parts of (something) while not changing other parts,
- to change things like a plan, behavior, or a law slightly in order to improve it, make it better and more acceptable.

Change means:

- to make the content, form, nature, or future course different from what it would be or from what it is if left alone,
- to exchange for or replace with another, usually of the same kind or category.

Modify and ***change*** are also used in software programming, and the methods of changing and modifying programs are different.

retrived from Concise Oxford English Dictionary

1. We played a _____ version of this game.
2. If you have the necessary security privilege, you can _____ an existing user interface view.
3. If you choose to _____ the system files directly, there is a risk that you will lose your changes.
4. You can _____ your password for security reasons or reset it if you forget it.
5. Rootkits that _____ system software can be detected with the cooperation of the operating system kernel.

Translation

Task 19

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

User Interface is the term used for specifying how a user interacts with an electronic device, particularly computer. **CLI** and **GUI** are the different kinds of user interfaces. Mainly they differ in the graphics employed in the operating system. To perform an operation on the CLI system one has to write a command. On the other hand, in GUI users provided the **visual aids** (graphics) that include images and icons, which **facilitates** users to perform a task directly.

CLI systems require expertise in the commands for **performing task** whereas GUI doesn't require expertise, it could be operated by **novice users** too.

Comparison Chart

BASIS FOR COMPARISON	CLI	GUI
Basic	Command line interface enables a user to communicate with the system through commands	Graphical User interface permits a user to interact with the system by using graphics which includes images, icons, etc. (WIMP)
Device used	Keyboard	Mouse and keyboard

Ease of performing tasks	Hard to perform an operation and require expertise.	Easy to perform tasks and does not require expertise.
Precision	High	Low
Flexibility	Intransigent	More flexible
Memory consumption	Low	High
Appearance	Can't be changed	Custom changes can be employed
Speed	Fast	Slow
Integration and extensibility	Scope of potential improvements	Bounded
© Tech Differences		

Task 20

Translate the following sentences into English.

1. Операційна система, скорочено ОС — це базовий комплекс програм, що виконує керування апаратною складовою комп'ютера або віртуальної машини; забезпечує керування обчислювальним процесом і організовує взаємодію з користувачем.
2. Компоненти операційної системи поділяються на два класи: системні та прикладні.
3. До прикладних компонентів відносяться текстові редактори, компілятори, інтегровані системи програмування, пакети графічного виведення, комунікаційні програми і т.п.
4. До системних компонентів відносяться ядро системи, що забезпечує взаємодію всіх компонентів, завантажувач програм, підсистеми, що забезпечують діалог з людиною, — віконна система та інтерпретатор команд і, насамкінець, файлова система. Саме системні компоненти ОС визначають основні властивості операційної системи.
5. Однозадачні системи (вони, як правило, для одного користувача) допускають тільки послідовне виконання завдань: у кожний момент часу виконується тільки одне завдання.
6. Практично всі сучасні ОС підтримують багатозадачний режим, при якому можливе паралельне виконання завдань і розподіл ресурсів комп'ютера між завданнями.

7. Операційні системи можна класифікувати за багатьма ознаками, наприклад: за цільовим пристроєм, за кількістю програм, що виконуються одночасно, за типом інтерфейсу, кількістю розрядів даних, що обробляються одночасно.
8. Відкритий вихідний код дає можливість використовувати і модифікувати код за своїм бажанням. Можна в будь-який момент виправити якісь помилки або недоліки системи, а також розширити її функціональність, шляхом написання доповнень або програм, що працюють під її управлінням.
9. У багатозадачних ОС поширений графічний інтерфейс, який дає користувачу змогу керувати комп'ютером переважно за допомогою миші та в якому об'єкти системи подано у вигляді зображень на екрані.
10. Формат виводу інформації в інтерфейсі командного рядка не регламентується; звичайно це простий текстовий вивід, але може бути і графічним, звуковим виводом тощо.

Speaking

Task 21

Think of three questions about operating systems. Then interview other students and write down their answers. Be ready to present statistical results of your findings.

	Results	Results	Results
Question 1			
Question 2			
Question 3			
Conclusion:			

Task 22

What operating system do you use? Give reasons for your choice. Complete the chart to organize your ideas:

Name:	Type:
Advantages:	Disadvantages:
Special features:	Typical user:
How would you improve it:	
Conclusion:	

Task 23

Look at the pictures, appreciate the humour, and try to explain the punch line.





Step 1. Reboot

Did that fix it?

No? Proceed to step 2

Step 2.

Format hard drive.

Reinstall Windows.

Lose all your files. Quietly weep.



Step 1. Take it to an Apple store.

Did that fix it?

No? Proceed to step 2

Step 2. Buy a new Mac.

Overdraw your account. Quietly weep.



Linux

Step 1.

Learn to code in C++. Recompile the kernel. Build your own microprocessor out of spare silicon you had lying around. Recompile the kernel again. Switch distros. Recompile the kernel again but this time using a CPU powered by refracted light from Saturn. Grow a giant beard. Blame Sun Microsystems. Turn your bedroom into a server closet and spend ten years falling asleep to the sound of whirring fans. Switch distros again. Abandon all hygiene. Write a regular expression that would make other programmers cry blood. Learn to code in Java. Recompile the kernel again (but this time while wearing your lucky socks).

Did that fix it?

No? Proceed to step 2

Step 2.

Revert back to using Windows or a Mac.

Quietly weep.

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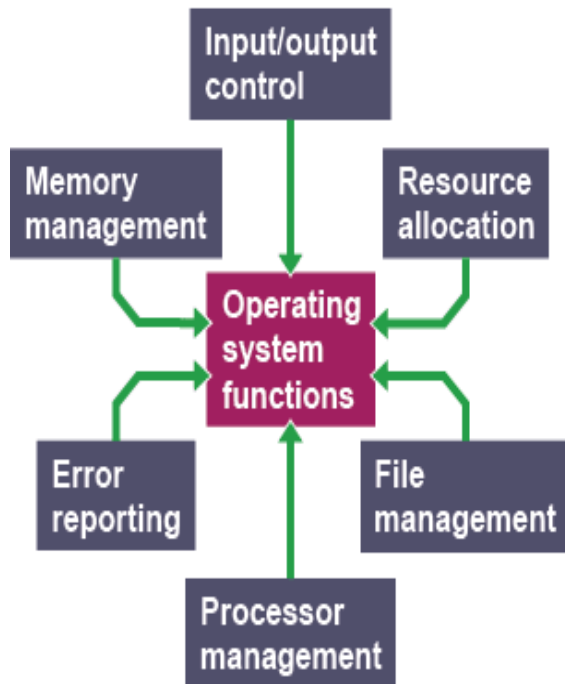
Writing

Task 24

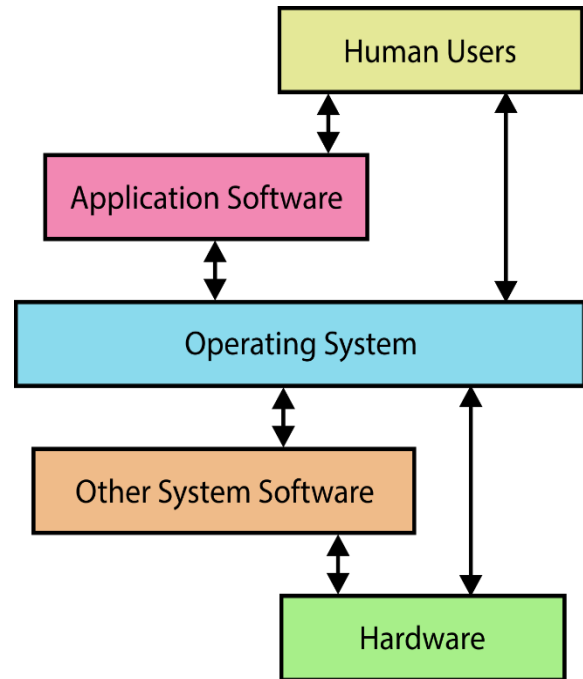
Look at the pictures and write a detailed description (12-15 sentences) about how operating systems work. For your description use the clues given on the picture. The following steps will help you to succeed:

- *Outline and define the key terms.*

- Explain their basic functions.
- Sequence the phases.
- Link sentences (use: first, second, next, finally etc.).



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Task 25

Imagine you are responsible for choosing an operating system for a new office. Conduct a research, compare two/three suitable options and write a short report for your boss reasoning your choice.

Creative writing

Go on <https://gs.statcounter.com> , investigate the information on the operating systems market share. You may analyze any category (on your choice): by platform, by region, by period etc. Write an article describing trends and presenting your comment on them.



Final mini-project

<i>Imagine that you have created a new operating system.</i> <i>Make a presentation advertising it.</i>	<i>Your presentation should include:</i> • naming • logo • slogan • type • special features • functions • competitive advantages
---	--

REVISION BRAIN-TWISTER

The letters of the words below are jumbled. Figure out what the word is and write it on the blank line provided. Clues are to help you.

- | | |
|--------------------|---------------------------|
| 1. RLEMUTIUS _____ | 5. PARCHALGI _____ |
| 2. LNIXU _____ | 6. DDEDEEBM _____ |
| 3. LIERAMTE- _____ | 7. LANMMMGITIOPRGUR _____ |
| 4. NEELRK _____ | 8. AETPIRNGO MYSTES _____ |

1) system software that manages computer hardware, software resources, and provides common services for computer programs. 2) a computer operating system which allows multiple users to access	5) a computer program at the core of a computer's operating system with complete control over everything in the system. 6) a form of user interface that allows users to interact with electronic devices through graphical icons and
---	---

the single system with one operating system on it.	audio indicator such as primary notation, instead of text-based user interfaces, typed command labels or text navigation.
3) an open source operating system that is made up of the kernel, the base component of the OS, and the tools, apps, and services bundled along with it.	7) a specialized operating system designed to perform a specific task for a device that is not a computer.
4) an operating system intended to serve real-time applications that process data as it comes in, typically without buffer delays.	8) keeping several programs in main memory and executing them concurrently using a single CPU only.

CHECK YOUR PROGRESS

Can you do it in English:

explain the main functions of OS	Yes	No
list the criteria for OS classification	Yes	No
compare different types of operating systems	Yes	No
explain user interface types	Yes	No
list the pros and cons of the most popular operating systems	Yes	No

LEARN MORE:

<http://faculty.salina.k-state.edu/tim/ossg/index.html>

<https://www.guru99.com/operating-system-tutorial.html>

<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-033-computer-system-engineering-spring-2018/week-1/>

<https://nptel.ac.in/courses/106/105/106105214/>

UNIT 4: COMPUTER NETWORKS

Lead in

Task 1

How much do you know about networks? Answer the questions and discuss your ideas with your groupmates.

1. What is a network?
2. What are the two ways computers can connect to the network?
3. What devices do they usually connect to?
4. How many protocols are used when one computer accesses another computer?
5. Your company has three divisions. Each group has a network, and all the networks are joined together. Is this still a LAN?
6. The company adds a new division. There is a head office and five branch offices. What type of network is this?

Task 2

How many words can you think of related to the topic? You have three minutes to brainstorm and make notes. Then share your ideas with your groupmates. Do not forget to add new words and phrases while working on the unit.

Nouns

Verbs

Adjectives

Other

Task 3

You will watch the video explaining a network topology and its main types. Before you watch brainstorm and complete the chart.

A topology is...			
Wired topologies:	1	2	3
Wireless topologies:	1	2	3

Task 4

Watch the video and check your answers in Task 3.



© PowerCertAnimated

Task 5

Complete the summary chart:

The most common wired topology is..		
Star topology	The major advantage is...	The main disadvantage is...
Ring topology	The major advantage is...	The main disadvantage is...
Bus topology	The major advantage is...	The main disadvantage is...
Mesh topology	The major advantage is...	The main disadvantage is...

Infrastructure topology uses ...		
Wireless Mesh is very redundant because...		

Reading comprehension

Task 6

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

<u>Word/phrase</u>	<u>Translation</u>	<u>Word/phrase</u>	<u>Translation</u>
<i>interconnected</i>		<i>twisted pair</i>	
<i>communications medium</i>		<i>fiber optics</i>	
<i>general purpose hosts</i>		<i>bandwidth</i>	
<i>initial assignment</i>		<i>privately-owned networks</i>	
<i>coaxial cable</i>		<i>public utilities</i>	

Task 7

Answer the questions and complete the chart. Then skim the text and compare your ideas and information given in the article.

Network may involve not only computers, but other devices such as:	
Your ideas	Text
The nodes of a computer network may be classified by...	
Your ideas	Text

The main purpose of networks is...	
<i>Your ideas</i>	<i>Text</i>
Computer networks may be classified by...	
<i>Your ideas</i>	<i>Text</i>

Task 8

Read the text and mark with color the key concepts. Compare your notes with your groupmates.

Computer network is a group of two or more computers that are interconnected to share resources (data, hardware, software...) Two computers are said to be interconnected if they are able to exchange information.

Experts in the field of networking debate whether two computers that are connected together using some form of communications medium constitute a network but we will take above definition as relevant.

Network may involve other devices such as routers, switches, network printers, IP telephones etc. so, in general, we speak about nodes of a network.

The nodes of a computer network may be classified by many means as personal computers, servers, networking hardware, or general purpose hosts. They are identified by hostnames and network addresses. Hostnames serve as memorable labels for the nodes, rarely changed after initial assignment. Network addresses serve for locating and identifying the nodes by communication protocols such as the Internet Protocol.

The main purpose of networks is to transfer data from source to destination. Data is transferred by different types of signal and represented with sequence of bits (ones and zeros). Various physical media can be used for transmission of signal: coaxial cable, twisted pair, fiber optics and air.

Computer networks may be classified by many criteria, for example, the transmission medium used to carry signals, bandwidth, communications protocols to organize network traffic, the topology, traffic control mechanism, organizational intent. Another important criterion for classifying networks is their scale. As shown in Figure 8 there are:

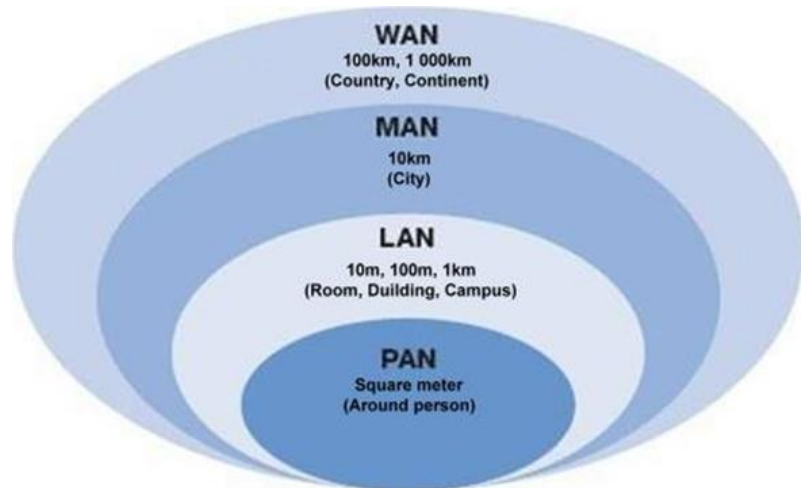
Personal Area Network
(PAN)

Local Area Network
(LAN)

Metropolitan Area
Network (MAN)

Wide Area Networks
(WAN)

Fig. 8



Personal Area Network (PAN) - The interconnection of devices within the range of an individual person, typically within a range of 10 meters. For example, a wireless network connecting a computer with its keyboard, mouse or printer is a PAN. Also, a PDA that controls the user's hearing aid or pacemaker fits in this category. Another example of PAN is a Bluetooth. Typically, this kind of network could also be interconnected without wires to the Internet or other networks.

Local Area Network (LAN) - Privately-owned networks covering a small geographic area, like a home, office, building or group of buildings (e.g. campus). They are widely used to connect computers in company offices and factories to share resources (e.g., printers) and exchange information. LANs are restricted in size, which means that the worst-case transmission time is bounded and known in advance. Knowing this bound makes it possible to use certain kinds of designs that would not otherwise be possible. It also simplifies network management. Traditional LANs run at speeds of 10 Mbps to 100 Mbps, have low delay (microseconds or nanoseconds), and make very few errors. Newer LANs operate at up to 10 Gbps.

Metropolitan Area Network (MAN) - Covers a larger geographical area than is a LAN, ranging from several blocks of buildings to entire cities. MANs can also depend on communications channels of moderate-to-high data rates. A MAN might be owned and operated by a single organization, but it usually will be used by many individuals and organizations. MANs might also be owned and operated as public utilities. They will often provide means for internetworking of LANs. Metropolitan Area Networks can span up to 50km, devices used are modem and wire/cable.

Wide Area Networks (WAN) - Computer network that covers a large geographical area, often a country or continent. (Any network whose communications links cross metropolitan, regional, or national boundaries). Less formally, a network that uses routers and public communications links.

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Task 9

Mark the following sentences as True or False. Find in the text the lines/paragraphs proving your choices.

1. The nodes of a computer network are identified by hostnames and IP. **True False**
2. Data is transferred by different types of signal and represented with sequence of ones and zeros. **True False**
3. Another important criterion for classifying networks is their physical size. **True False**
4. Typically, PANs require extra cable and wire to set up. **True False**
5. LANs have a short propagation delay. **True False**
6. WANs often provide means for internetworking of LANs. **True False**
7. Metropolitan Area Network may be both private and public. **True False**
8. Wide Area Networks don't span large locality. **True False**

Language Work

Task 10

Find words or phrases in the text that mean the following:

- 1) a networking device that forwards data packets between computer networks.
- 2) a label that is assigned to a device connected to a computer network and that is used to identify the device in various forms of electronic communication.
- 3) a protocol, or set of rules, for routing and addressing packets of data so that they can travel across networks and arrive at the correct destination.
- 4) the amount of data moving across a network at a given point of time.
- 5) a standard for the short-range wireless interconnection of mobile phones, computers, and other electronic devices.
- 6) a medium through which a message is transmitted to its intended audience.
- 7) a device that converts signals produced by one type of device to a form compatible with another.

Task 11

Find in the text the equivalents to the following words and phrases:

Вузли комп'ютерної мережі, мережеве обладнання, розміщення та ідентифікація, фізичні носії, обмежений за розміром, час передачі, швидкість передачі даних від середньої до високої, засоби для міжмережевої взаємодії, громадські засоби зв'язку.

Task 12

Study the forms on the left. Decide which sentence, illustrates each of the meanings on the right. (See Grammar Reference 1-3)

Sentence		Passive Voice Construction
1	The nodes of a computer network may be classified by many means as personal computers, servers, networking hardware, or general purpose hosts.	a Passive sentence with present reference (reporting verbs)
2	Computer networks are usually classified by experts according to their scale.	b Passive sentence with generalised agent
3	Metropolitan Area Networks are considered to have outlived the system.	c Passive sentence with an instrument
4	LAN is considered a privately-owned network.	d Passive sentence with an agent
5	Ted has recently got his computer connected to the company's LAN.	e Passive sentence with a complement
6	Two computers are said to be interconnected if they are able to exchange information.	f Passive construction which describes a service performed for us by someone else
7	Data is represented with sequence of bits (ones and zeros).	g Passive sentence with past reference (reporting verbs)

Task 13

Match to make collocations. Then translate them into Ukrainian.

*Management, organizational, traffic control, network (x2),
bits, memorable, organization, public, transmission*

- | | |
|----------------------|--------------------------|
| 1. network _____ | 6. a single _____ |
| 2. _____ labels | 7. _____ intent |
| 3. _____ mechanism | 8. to constitute a _____ |
| 4. sequence of _____ | 9. _____ medium |

Task 14

Build your own sentences using the collocations from Task 13. Use passive voice constructions to shape your ideas. (See Grammar Reference 1-4)

Task 15

Imagine that you are explaining the key concepts of networking to the amateurs. Define the following terms. Use appropriate structures (Appendix 3). Think of possible collocations with them.

Wireless network, router, server, protocol, sharing, shared data, hub, switch, clients, transmission media.

Task 16

What do these acronyms mean? Decode them. Use the Glossary if necessary. Make your own sentences demonstrating them in an appropriate context.

NIC, NAT, FTP, SMTP, VPN, AP, IPS.

Task 17

Cross out the incorrect option in each row:

network: to manage, to set up, to build, to do
network: complex, Word Area, local, private

network: under, on, though, over
transmit: signals, data, media, virus

Task 18

Spot the difference and complete the sentences.

Authentication vs Authorization

Authentication verifies who you are. For example, you can login into your Unix server using the ssh client, or access your email server using the POP3 and SMTP client. Usually, PAM (Pluggable Authentication Modules) are used as low-level authentication schemes into a high-level application programming interface (API), which allows programs that rely on authentication to be written independently of the underlying authentication scheme.

Authorization verifies what you are authorized to do. For example, you are allowed to login into your Unix server via ssh client, but you are not authorized to browser /data2 or any other file system. Authorization occurs after successful authentication. Authorization can be controlled at file system level or using various application level configuration options such as chroot (2).

Usually, the connection attempt must be both **authenticated** and **authorized** by the system. You can easily find out why connection attempts are either accepted or denied with the help of these two factors.

retrived from Concise Oxford English Dictionary

1. The system requires the _____ of the user identity.
2. They need _____ to perform.
3. This application is often used for the patterns _____ .
4. Many excel academically, but without work _____, they cannot be legally employed.
5. He can return to his position only with a doctor's _____.

Translation

Task 19

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

COMMUNICATION MEDIA

A wired network is a network that uses a physical media to transfer data between two or more nodes. The transmission media for wired networks are **Unshielded Twisted Pair (UTP)** and **Fibre optic cables**.

A wireless network is a network that uses non-physical components to transfer data between two or more nodes. Local area networks are often wireless LANs (WLANs). Transmission media include **radio waves** (wireless network) and infrared **signals** (wireless network).

Definition	Cost	Accessibility	Coverage	Security
UTP uses electricity to move the signals from a sender to receiver.	The most popular type of cabling because the material used to set it up is relatively cheap.	Relatively simple to install, with minimal equipment and technical expertise .	It can only connect devices up to 100 meters.	Prone to electrical wave interference and has weak security.
Fiber optic uses light to move the signals from a sender to a receiver.	The materials used and the installation is expensive.	Difficult to install due to equipment and technical expertise.	Fiber optic covers longer distances .	Immune to electromagnetic interferences and it carries a low security risk .
Radio waves uses radio waves.	Relatively cheap to install and minimal expertise is required to set up.	Relatively simple to install, with minimal equipment and technical expertise.	Can cover very short to very long distances depending on the device used.	Prone to interference and security risks are influenced by device used.
Infrared (IR) technology.	No cost involved.	Allows computers and other electronic devices to communicate via short-	Limited to very short distances.	Carries a low security risk .

		<i>range light signals.</i>		
©Siyavula				

Task 20

Translate the following sentences into English.

1. Бездротова мережа — тип комп'ютерної мережі, яка використовує бездротове з'єднання для передачі даних й підключення до мережевих вузлів.
2. Топологія визначає вимоги до обладнання, тип використовуваного кабелю, можливі і найбільш зручні методи керування обміном, надійність роботи, можливості розширення мережі.
3. Локальна комп'ютерна мережа являє собою об'єднання певного числа комп'ютерів (іноді досить великого) на відносно невеликій території.
4. 3. У порівнянні з глобальною мережею, локальна мережа зазвичай має більшу швидкість обміну даними та менше географічне покриття.
5. Зазвичай WAN має меншу швидкість передачі даних аніж LAN, в основному через більшу віддаленість комп'ютерів одного від іншого, але теоретично WAN має можливість надавати таку ж швидкість, як і LAN, MAN або CAN, використовуючи такі технології, як оптоволокно.
6. Середовищами передавання у комп'ютерних мережах можуть бути телефонні кабелі, та спеціальн мережеві кабелі: коаксіальні кабелі, виті пари, волоконно-оптичні кабелі, радіохвилі, світлові сигнали.
7. Усі інфрачервоні бездротові мережі використовують для передачі даних інфрачервоні промені. У подібних системах необхідно генерувати дуже сильний сигнал, оскільки інакше значний вплив робитимуть інші джерела, наприклад світло з вікна.
8. Віртуальна приватна мережа — узагальнена назва мереж, які створюються поверх інших мереж із меншим рівнем довіри. Тунель, який створюється між двома вузлами, дозволяє приєднаному клієнту бути повноцінним учасником віддаленої мережі і користуватись її сервісами.
9. В однорангових мережах усі комп'ютери рівноправні, серед них немає ієрархії. Кожен комп'ютер є одночасно і клієнтом, і сервером. Користувачі самі визначають, які дані на своєму комп'ютері зробити доступними для інших користувачів мережі. Як правило, однорангові

мережі застосовуються при невеликій кількості користувачів, що компактно розташовані.

10. На відміну від однорангових мереж, мережі на основі сервера містять як мінімум один комп'ютер, що використовується винятково як сервер.

Speaking

Task 21

In pairs or groups, list all the advantages or disadvantages of a network. Then together consider how the disadvantages can be minimized.

Team 1 Advantages:	Team 2 Disadvantages:
Possible solutions to minimize disadvantages:	
Conclusion:	

Task 22

How much do you know about VPN? Answer the questions, be ready to explain and discuss your choices.

1. VPN is abbreviated as _____	
a) Visual Private Network	c) Virtual Private Network
b) Virtual Protocol Network	d) Virtual Protocol Networking
2. Which of the statements are not true to classify VPN systems?	
a) <u>Protocols used for tunnelling the traffic</u>	c) <u>Securing the network from bots and malwares</u>
b) <u>Whether VPNs are providing site-to-site or remote access connection</u>	d) <u>Levels of security provided for sending and receiving data privately</u>

3. What types of protocols are used in VPNs?	
a) Application level protocols b) Tunnelling protocols	c) Network protocols d) Mailing protocols
4. VPNs uses encryption techniques to maintain security and privacy which communicating remotely via public network.	
a) True	b) False
5. There are _____ types of VPNs.	
a) 3 b) 2	c) 5 d) 4
6. Using VPN, we can access _____	
a) Access sites that are blocked geographically b) Compromise other's system remotely	c) Hide our personal data in the cloud d) Encrypts our local drive files while transferring

Task 23.

Prepare a two-minute speech for your groupmates summarizing the key issues of the topic "Networks". Complete the chart to organize your ideas.

Network is... (define the term)	Types of networks:
Topology is... (define the term)	Types of topologies:
Advantages:	Disadvantages:
Conclusion:	

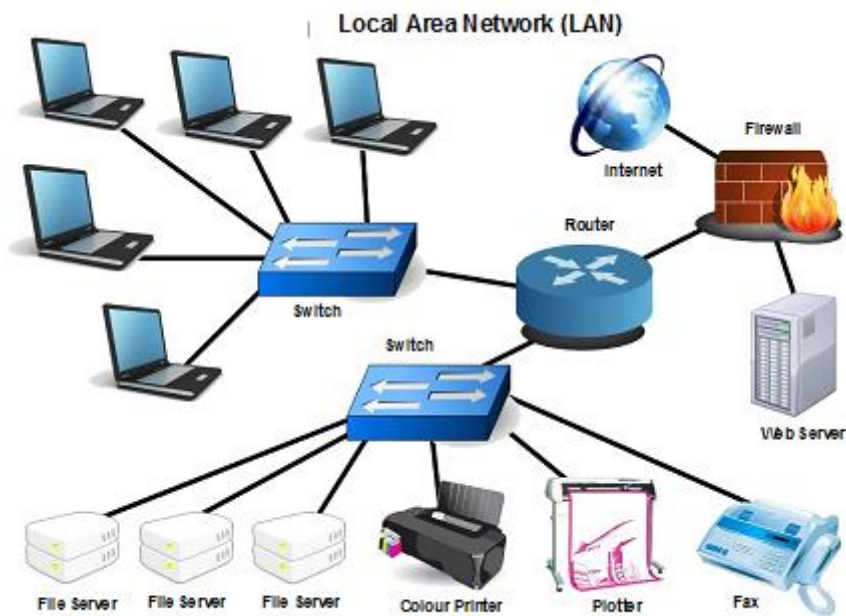
Writing

Task 24.

Look at the picture, analyze it, and write a detailed description (12 - 15 sentences) of the LAN.

Do not forget to include the information about:

- organization
- components
- operation basics.



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Task 25.

5G wireless network technology is expected to change the way people live and work. However, it scares some people. Agree or disagree with them. Give reasons for concern or dispel doubts.

Creative writing

Find and analyze the information about current networking trends. Write an article in 150-200 words for a tech-blog.

Final mini-project

Work in teams. Create a short presentation on the topic “Network technologies” to give it in a class.

In your presentation you should:

- present one of the network technologies;
- analyze the process of its development and rise;
- consider major technical details;
- outline its pros and cons;
- mention some interesting facts;
- cite 3 or more sources;
- obey copyright!

REVISION BRAIN-TWISTER

Each line of the puzzle has one word hidden in a list of random letters. The blank space is a missing letter that belongs to that word. Decide what word is hidden in the letters and write in the space the missing letter. Clues are to help you.

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

1. the shape of a network
2. helps to avoid unwanted network traffic
3. programs that help people to work collectively while located remotely
4. a large WAN
5. the main cable

6. wide area network
7. a type of mixed topology
8. wireless local area network
9. a wireless technology standard for exchanging data over short distances
10. a centralized, powerful computer

CHECK YOUR PROGRESS

Can you do it in English:

list the main network types	Yes	No
reason the benefits of using a network	Yes	No
explain the main concepts of network technologies	Yes	No
describe a network topology	Yes	No

LEARN MORE:

<https://fcit.usf.edu/network/chap1/chap1.htm>

<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-829-computer-networks-fall-2002/lecture-notes/>

<https://freevidelectures.com/course/2276/computer-networks>

https://www.eecis.udel.edu/~bohacek/videoLectures/ComputerNetworking/ComputerNetworking_v2.html

UNIT 5: WORLD WIDE WEB

Lead in

Task 1

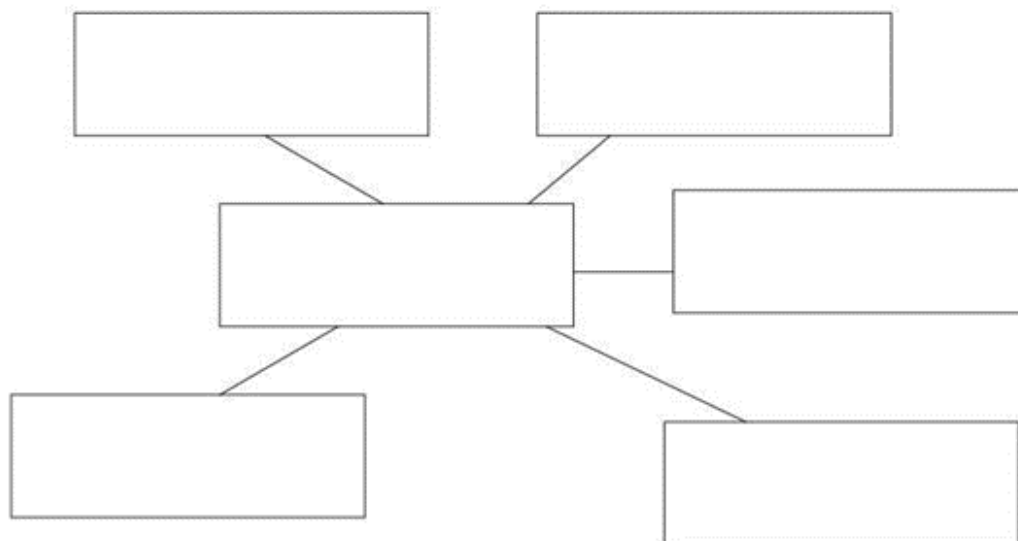
How much do you know about World Wide Web?

Think of three facts about WWW. Share your knowledge with your groupmates.

Fact 1	
Fact 2	
Fact 3	

Task 2

Think of the words related to the topic. Expand the basic template by drawing your personal variant of a concept map and complete it. Do not forget to add new words and phrases while working on the unit (Appendix 1).



Listening

Task 3

You will watch the video explaining the basic concepts of the WWW. Before you watch, decide whether these statements are true or false

1. The WWW and the Internet are often used interchangeably.
2. The WWW is simply the way computers connect to each other in order to share information.
3. The most common use of the Internet is accessing the World Wide Web.
4. Tim Berners-Lee is the father of the World Wide Web.
5. Hyperlinks allow the Web to operate along the same lines as our thought patterns – in a linear fashion.

Task 4

Watch the video and check your answers in Task 3.



Task 5

Complete the following statements:

1. Think of the Web as a bunch of skyscrapers, each representing a _____, a computer always connected to the Internet, specifically designed to _____ and _____ it.
2. The people who own these skyscrapers and rent space in them are called _____, but anyone can _____ a web server with the right _____ a bit of know-how.

3. Just like with a real life address, a _____ lets you get where you want to go. The information stored in the websites is in _____, such as HTML and JavaScript.
4. We don't need to know any special _____ because the _____ creates a _____ for us.
5. So, in a lot of ways, the World Wide Web is a big _____ where we communicate with each other in web languages, with browsers acting as our _____.

Reading comprehension

Task 6

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

Word/phrase	Translation	Word/phrase	Translation
<i>to be coined</i>		<i>hit counters</i>	
<i>Read-Only Web</i>		<i>mashups</i>	
<i>to establish an online presence</i>		<i>folksonomies</i>	
<i>participative Web</i>		<i>to deliver services</i>	
<i>content providers</i>		<i>semantic web</i>	

Task 7

***You are going to read an extract from the research paper
“A Journey of Human Comfort: Web 1.0 to Web 4.0”.***



Before you read the text, think of five questions you expect to be answered when reading. Use the following chart to organize your ideas. Skim the text to find the answers. Share your ideas and results with your groupmates.

Question	Answer
<i>Who...?</i>	
<i>What...?</i>	
<i>When...?</i>	
<i>Why?</i>	
<i>How?</i>	

Task 8

Read the text and mark with color the facts you have not known. Compare your notes with your groupmates.

Web 1.0 was first coined by Tim Berners-Lee in 1989. It is treated as the first generation of WWW. Socially people could only view the information provided by the web pages hence this era is also called as “Read-Only Web”. The web pages developed in Web 1.0 generation were static and were not changing frequently. Producers and service providers started publishing of online catalogues for the advertisement of their products or services. The main goal of the websites was to publish the information for anyone at any time and establish an online presence. The appearance of shopping carts encouraged people to purchase goods or services online. The information dissemination to the customers was done through “Push Model” because customers could not interact or contribute in the content creation by giving their feedback. Web 1.0 pages were developed in HTML and basic communication protocol was HTTP.

The concept of Web 2.0 was coined by Dale Dougherty in 2004. Web 2.0 is also called the people-centric Web, participative Web, and read/write Web. With Web 2.0 we moved away from a traditional model of publishers making content available to consumers, to a much more dynamic participatory model where the majority of web page developers had the opportunity to update their own media-rich web sites as often as they liked. Information began to flow in both directions between content providers and viewers. For example, hit counters roughly indicate Web sites’ relative popularity, while the volume of user comments provides a measure of user participation.

This was an era of user-generated content and huge social media interaction., blogging, video /picture sharing, chatting, hosted services, web applications, voice over IP, emails, instant messages, social bookmarking, podcasting, weblogs,

mashups and folksonomies, etc and all kinds of online interactivity became possible and has proved to be a great success.

The biggest gift of Web 2.0 to the mankind is social media sites. The social media has connected people globally in ways unimaginable just a few decades ago. One of the key drivers of the development of Web 2.0 is the emergence of a new generation of Web-related technologies and standards. Ajax, JavaScript, Cascading Style Sheets, Document Object Model, Extensible HTML, XSL Transformations (XSLT)/XML, and Adobe Flash provided users with a rich interactive experience. These technologies display and deliver Web services just like desktop software, making distributed processing difficulties invisible.

Web 3.0 added machine readability feature to the web documents which did not exist in the web 1.0 and web 2.0. Web 3.0 is also known as semantic web. Semantic web was thought up by Tim Berners-Lee. The word semantic stands for “meaning of” so Semantic Web term is understood as “to add meaning to the web.” According to the W3C, “The Semantic Web provides a common framework that allows data to be shared and reused across application, enterprise, and community boundaries.” Semantic Web is an efficient way to represent data on the Web, or as a database that is globally linked, in a manner understandable by machines, to the content of documents on the Web. Semantic technologies represent meaning using ontologies and provide reasoning through the relationships, rules, logic, and conditions represented in those ontologies. The semantic Web is not a new Web but it is an extension of existing Web.

Example: If someone is searching for the flight timings of a particular country, a semantic search will return flight times to this country as well as the details of the weather conditions at the time of visit, maps, city guides, and the other useful information such as hotel, restaurant and car reservations.

The data in Semantic Web is represented in graphical form by Resource Description Framework which is based on the XML syntax. Taxonomies of classes and properties are represented by RDFS (RDF Schema). Web Ontology Language (OWL) provides standard vocabulary. RIF/SWRL enables us to write rules beyond RDFS and OWL. Simple Protocol and RDF Query Language (SPARQL) is used to query RDF data. The logic and proof layers ensure the trustability of inputs. The origin of sources for the input data is verified by digital signatures. The user applications are developed at the top of all layers. Semantic Web provides an infrastructure to develop so many web applications which will reduce the human efforts required to search for products or services. Semantic Web search engines and applications like Zemanta (Browser Plugin), Facebook („Like“button feature), TripIt (travelling service site) have proved their significance for the humans by providing comforts in their day to day life work on the Internet.

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Task 9

Mark the following sentences as True or False. Find in the text the lines/paragraphs proving your choices.

1. The main goal of the websites developed in Web 1.0 generation was to present the information. **True False**
2. Online shopping began with Web 2.0. **True False**
3. Web 2.0 was an era of user-generated content. **True False**
4. A new generation of Web-related technologies and standards provided users with a rich interactive experience. **True False**
5. Dale Dougherty coined semantic web. **True False**
6. Ontology is considered as the backbone of the semantic Web. **True False**
7. The semantic Web is a completely new Web. **True False**
8. All Semantic Web information is stored and represented in the RDF. **True False**

Language Work

Task 10

Find words or phrases in the text that mean the following:

- 1) a piece of software that keeps the record of the items a buyer has 'picked up' from the online store.
- 2) a formal description of digital message formats and rules.
- 3) applications, IT infrastructure components or functions that organizations access from external service providers, typically through an internet connection.
- 4) an online service which allows users to add, annotate, edit, and share bookmarks of web documents.
- 5) the transmission of voice and multimedia content over Internet Protocol (IP) networks.
- 6) An adjective used to describe things that deal with the meanings of words and sentences.
- 7) a way to ensure that an electronic document (e-mail, spreadsheet, text file, etc.) is authentic.

Task 11

Find in the text the equivalents to the following words and phrases:

Виробники та постачальники послуг, купувати товари чи послуги, сприяти створенню контенту, багатий інтерактивний досвід, представлений у графічній формі, походження джерел, розробляти веб-додатки, зменшити зусилля людини, пошукові системи та програми/додатки, в Інтернеті.

Task 12

Study the forms on the left. Decide which sentence, illustrates each of the meanings on the right.

Sentence	Type of Clause
1 Web 2.0 has become very popular among users, for it helped us move away from a traditional model of publishers making content available to consumers.	a Defining Relative clause
2 Although Web 1.0 was very informative, it was very static.	b Non-defining relative clause
3 The concept of Web 2.0, which was coined by Dale Dougherty in 2004, is also called the people-centric Web.	c Time clause
4 The response on the flight timings was so detailed as if it was a semantic search.	d Clause of Reason
5 World Wide Web has become an indispensable part of our life since it was first introduced by Tim Berners-Lee in 1989.	e Clause of Result
6 The web pages developed in Web 1.0 generation were static and were not changing frequently.	f Clause of Concession
7 Socially people could only view the information provided by the web pages hence this era is also called as “Read-Only Web”.	g Clause of Manner

Task 13

Match to make collocations. Then translate them into Ukrainian.

*information, participatory model, web sites, measure of, reasoning,
trustability of, signature, framework, social, user-generated*

- | | |
|-----------------------------|------------------------|
| 1. provide _____ | 6. _____ content |
| 2. digital _____ | 7. _____ inputs |
| 3. _____ media | 8. _____ dissemination |
| 4. dynamic _____ | 9. a common _____ |
| 5. _____ user participation | 10. media-rich _____ |

Task 14

Build your own sentences using the collocations from Task 13. Use clauses to shape your ideas. (See Grammar Reference 1-5)

Task 15

Imagine that you are preparing for the presentation on the topic “WWW”. Explain the following terms to make them clear for your amateur audience. Use appropriate structures (Appendix 3).

World Wide Web, web server, web browser, domain name, protocol, search engine, web crawlers.

Task 16

What do these acronyms mean? Decode them. Use the Glossary if necessary. Make your own sentences demonstrating them in an appropriate context.

URL, HTML, SMTP, IMAP, EML, DNS, W3C.

Task 17

Cross out the incorrect option in each row:

web: network, crawler, design, client

hyper-: text, link, web, computer

search: advanced, random, web, cloud

engine: software, hardware, search, compute

Task 18

Spot the difference and complete the sentences.

Browsing vs searching

Browsing is used to describe casual looking through material generally with nothing specific in mind.

Searching describes looking for something specific, and generally by entering search terms at a search engine to find information you want.

Browsing is scanning the worldwide web through links from one site to another or one page to another.

Searching on the other hand refers to looking for specific pieces of information using search engines.

retrived from Concise Oxford English Dictionary

1. Learn a way of _____ lists of useful links.
2. He paused, as if _____ for a word.
3. He likes choosing designs online and _____ literally dozens of sites.
4. I decided to spend the night _____ the Web.
5. Was he _____ for answers?

Translation

Task 19

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

WEB 4.0

Web 4.0 is still an underground idea in progress and there is no exact definition of how it would be. Web 4.0 is also known as *symbiotic web*. The dream behind of the symbiotic web is interaction between humans and machines in symbiosis. It will be possible to build more powerful interfaces such as *mind controlled interfaces* using web 4.0. In simple words, machines would be clever on reading the contents of the web, and react in the form of executing and deciding what to execute first to load the

websites fast with *superior quality* and *performance* and build more *commanding interfaces*.

Web 4.0 will be the *read-write-execution-concurrency* web. It achieves a critical mass of participation in online networks that *deliver global transparency, governance, distribution, participation, collaboration* into key communities such as industry, political, social and other communities.

Web 4.0 or webOS will be such as a *middleware* in which will start functioning like an operating system. The webOS will be parallel to the human brain and implies a massive web of highly *intelligent interactions*. Although there is no exact idea about web 4.0 and its technologies, but it is obvious that the web is moving toward using *artificial intelligence* to become as an *intelligent web*.

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Task 20

Translate the following sentences into English:

1. WWW працює за принципом клієнт-сервер: існує велика кількість серверів, які за запитом клієнта надають йому гіпермедійний документ який складається із частин з різним представленням інформації (текст, графіка, звук, відео, тривимірні об'єкти тощо).
2. Мова розмітки гіпертекст - це формат гіпермедійних документів, які використовують в WWW для представлення інформації; формат описує вміст документу, його структуру, а також його зв'язки з іншими документами.
3. Період Веб 1.0 характеризується створенням статичних сайтів з HTML-гіпертекстовими зв'язками, пасивної передачею даних з серверів клієнту, односпрямованим характером потоків даних: потік ручного збору даних від творців ресурсів до сервера та потік пасивної роздачі даних з сервера клієнтам.
4. Головною особливістю Веб 2.0 є покращення і пришвидшення взаємодії веб-сайтів з користувачами, що привело до стрімкого зростання активності користувачів.
5. Веб 2.0 –технології, що передбачають розвиток технологічної платформи Веб 1.0 в напрямках надання ідентифікованим користувачам доступу до редагування наявного в мережах контенту, забезпечення користувачам можливості формування і розповсюдження в мережах власного контенту, підтримки спільної діяльності користувачів при створенні та розповсюдженні колективного контенту, забезпечення функціонування електронних соціальних спільнот.

6. Еволюція Веб – це не лише еволюція веб -технологій, а й еволюція взаємодії користувача з актуальними веб-технологіями.
7. У пошукових систем, є дві основні функції: 1) зібрати інформацію і обробити її, помістивши в сховище даних вже в тому вигляді, який буде зручний для пошуку інформації за критеріями; 2) видати інформацію користувачеві за запитом, з максимально відповідним вмістом його запиту вигляді.
8. Сер Тімоті Джон Бёрнерс-Лі — британський спеціаліст з інформатики, творець HTTP, HTML, URI і автор інших розробок в галузі інформаційних технологій, головний розробник Всесвітньої павутини (спільно з Робертом Кайо) та автор концепції семантичної павутини.
9. У першій половині 1990-х років Бернерс-Лі доклав значних зусиль для того, щоб переконати весь світ використовувати єдині стандарти інтернет-комунікації, щоб Мережа не розпалася на безліч приватних "інтернетів", несумісних один з одним.
10. У 2016 році ООН визнала доступ до мережі базовою потребою людини, нарівні з чистою водою, електрикою, притулком та їжею.

Speaking

Task 21

Think of three questions about the World Wide Web. Then interview other students and write down their answers. Make mini-presentations to your groupmates on your findings.

	Question 1	Question 2	Question 3
Student 1			
Student 2			
Student 3			
Conclusion:			

Task 22

In pairs, make up and act out the dialogue.

Speaker 1.	Speaker 2.
Imagine that you have been asked to make an interview with Tim Berners-Lee. Your task is to prepare a good set of questions that you can ask the interviewer to find out what you are interested in.	You will act as Tim Berners-Lee. You may find the key information here:  In addition, you may use any source of information of your choice.

Task 23

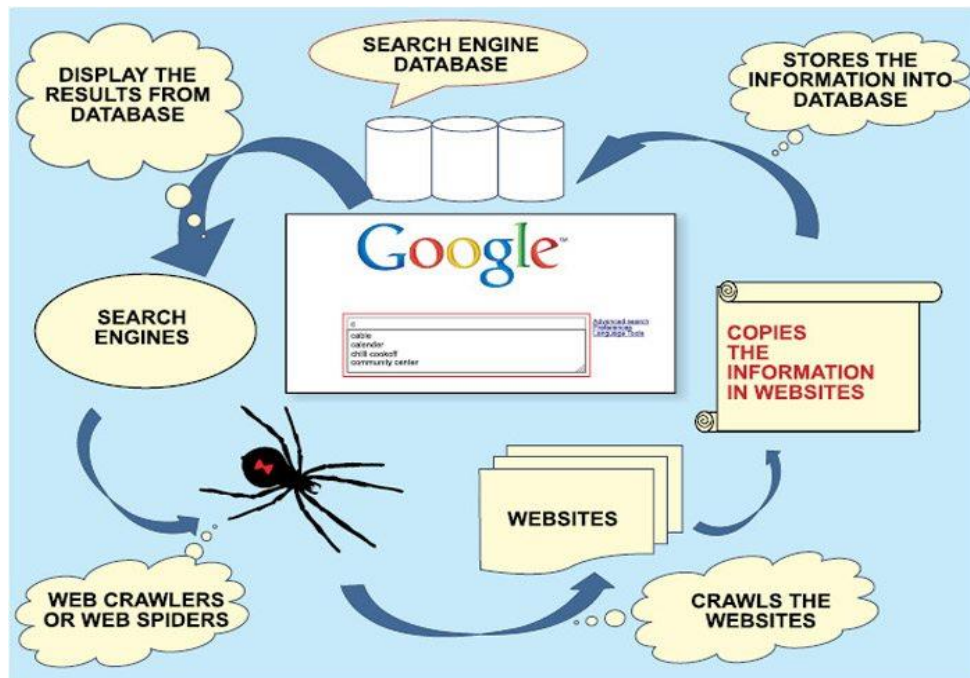
Create concise and comprehensive instructions on a productive web search. Present the most useful techniques, describe methods and give examples. The chart will help you to organize your ideas.

Purpose	Method	Example
Search for specific type of webpage	Once you made a Google search, click on the <i>Images</i> , <i>News</i> , <i>Videos</i> or <i>Maps</i> button to search for those items.	Search: <i>Jackie Chan</i> Click on <i>News</i>
Search for webpages updated at a specific time		
Search for results that exactly match your query		
Exclude certain words from your search result		
Search for results from a specific words		
Search on social media		

Writing

Task 24

Look at the picture and try to explain how Google search works. Write a detailed description (12-15 sentences). For your description, use the clues given on the picture.



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Task 25

Choose the most inspirational quotation and write a thesis plan for your TED talk.

- “In the information age, man and spider both live in a web.” — Amit Kalantri, Wealth of Words.
- “The web is more a social creation than a technical one. I designed it for a social effect - to help people work together - and not as a technical toy.” — Tim Berners-Lee.
- “The technological breakthrough of the World Wide Web has been enormously beneficial to society.” — Mike Fitzpatrick.
- “The Web as I envisaged it, we have not seen it yet. The future is still so much bigger than the past.” — Tim Berners-Lee.

Creative writing

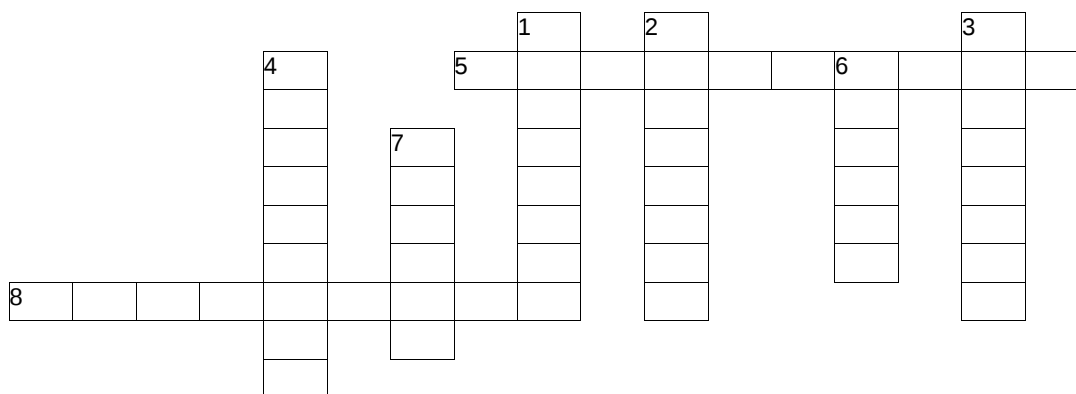
WWW has celebrated its 30th anniversary recently. However, it is still a box of surprises for many users. Conduct a research and write a post for students' community presenting interesting/unknown/surprising facts about World Wide Web.

Final mini-project

Work in teams. Create a short presentation on the topic “WWW” to give it in a class.
In your presentation you should:

- define the term WWW
- highlight the main evolution stages
- list the main components
- explain the fundamental concepts
- mention some interesting facts;
- cite 3 or more sources;
- obey copyright!

REVISION BRAIN-TWISTER



Across

5. invented the World Wide Web in 1989

8. text or a graphic in an HTML document that, when clicked, brings the user to another part of the same document or to another website, web page or resource on the Web.

Down

1. information about reactions to something

2. a way of showing the properties of a subject area and how they are related, by defining a set of concepts and categories that represent the subject

3. stands for “meaning of”

4. first coined the phrase "Web 2.0" in 2004
6. Simple Protocol and RDF Query Language
7. an adjective to describe the web pages developed in Web 1.0 generation

CHECK YOUR PROGRESS

Can you do it in English:

define 5 key terms related to the topic	Yes	No
explain the main concepts of WWW	Yes	No
present the WWW evolution stages	Yes	No
advise effective online search techniques	Yes	No

READ MORE:

<https://www.bbc.co.uk/programmes/m000bj15>

<https://www.edx.org/school/w3cx>

<https://ctcgulf.com/product/understanding-the-world-wide-web>

<https://www.coursera.org/learn/internet-history>

UNIT 6: CYBERSECURITY

Lead in

Task 1

How much do you know about cybersecurity? Choose the correct options, be ready to explain your choices and discuss the results with your classmates.

1. What does the “https://” at the beginning of a URL denote, as opposed to “http://” (without the “s”)?
 - a. That the site has special high definition
 - b. That information entered into the site is encrypted
 - c. That the site is the newest version available
 - d. That the site is not accessible to certain computers
 - e. None of the above
 - f. Not sure
2. Which of the following is an example of a “phishing” attack?
 - a. Sending someone an email that contains a malicious link that is disguised to look like an email from someone the person knows
 - b. Creating a fake website that looks nearly identical to a real website in order to trick users into entering their login information
 - c. Sending someone a text message that contains a malicious link that is disguised to look like a notification that the person has won a contest
 - d. All of the above
 - e. Not sure
3. On the evening news you heard the reporter talking about an Internet threat called a 'Botnet'. What exactly is a Botnet?
 - a. It is a malicious program that attempts to hide itself, other files, or computer data so they cannot be found on a computer.
 - b. A group of computers running malicious programs that are remotely controlled by cybercriminals.
 - c. A new type of cyber virus spread from China causing havoc around the globe.
 - d. All of the above
 - e. Not sure
4. Which of the following four passwords is the most secure?
 - a. Boat123

- b.** WTh!5Z
 - c.** into*48
 - d.** 123456
 - e.** Not sure
- 5.** Criminals access someone's computer and encrypt the user's personal files and data. The user is unable to access this data unless they pay the criminals to decrypt the files. This practice is called ...
 - a.** Botnet
 - b.** Ransomware
 - c.** Driving
 - d.** Spam
 - e.** None of the above
 - f.** Not sure
- 6.** "Private browsing" is a feature in many internet browsers that lets users access web pages without any information (like browsing history) being stored by the browser. Can internet service providers see the online activities of their subscribers when those subscribers are using private browsing?
 - a.** Yes
 - b.** No
 - c.** Not sure
- 7.** What kind of cybersecurity risks can be minimized by using a Virtual Private Network (VPN)?
 - a.** Use of insecure Wi-Fi networks
 - b.** Key-logging
 - c.** De-anonymization by network operators
 - d.** Phishing attacks
 - e.** Not sure
- 8.** This type of attack is designed to hinder the normal operation of a website, or other network resource.
 - a.** DoS attack
 - b.** POS attack
 - c.** Phishing
- 9.** You are on a business trip and sitting in the local cafe trying to send emails to your colleagues to catch up on a few tasks. To protect your communications over these public networks you should always do the following:
 - a.** Find the strongest WiFi signal near you
 - b.** Turn off your file sharing
 - c.** Use a Virtual Private Network.

Task 2

How many words can you think of related to cybersecurity? You have three minutes to brainstorm and make notes. Then share your ideas with your groupmates. Do not forget to add new words and phrases while working on the unit.

Nouns

Verbs

Adjectives

Other

Listening

Task 3

Google Security Princess Parisa Tabriz and Jenny Martin from Symantec are introducing the topic “Internet cybersecurity and crime”. Before you watch, decide whether these statements are true or false:

1. Cybercrimes are often feasible owing to unintentional decisions made by the people using the software.
2. The people committing cyber crimes are professionals looking for financial gain.
3. Once a virus is on your computer it can steal or delete any of your files, control other programs, or even allow someone else to remotely control your computer.
4. Using computer viruses, hackers can take over millions of computers world wide and then use them as a digital army, otherwise known as a botnet.
5. When a computer system gets hacked the problem is always the security design or the software

Task 4

Watch the interview and check your answers in Task 3.



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Task 5

Complete the statements:

1. Today cybercrime causes huge problems for society...
2. This is all done by exploiting and taking advantage of
3. There are a couple ways an attacker can infect someone's computer. Attacker...
4. A phishing scam is...
5. Often your actions impact the security of...

Reading comprehension

Task 6

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

Word/phrase	Translation	Word/phrase	Translation
malicious attack		compromised application	
intruder		deploy	
targeted attacker		data assets	
keep free of threats		permissions	
data breaches		introduce a virus	

Task 7

Answer the questions and complete the chart. Then skim the text and compare your ideas and information given in the article.

<i>Cyber security can be divided into a few common categories:</i>	
<i>Your ideas</i>	<i>Text</i>
<i>What is the purpose of cybercrimes, cyber-attacks, cyberterrorism?</i>	
<i>Your ideas</i> Cibercrime - Cyber-attack - Cyberterrorism -	<i>Text</i>

Task 8

Read the text and mark with color the key concepts. Compare your notes with your groupmates.

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security. The term applies in a variety of contexts, from business to mobile computing, and can be divided into a few common categories. • Network security is the practice of securing a computer network from intruders, whether targeted attackers or opportunistic malware. • Application security focuses on keeping software and devices free of threats. A compromised application could provide access to the data its designed to protect. Successful security begins in the design stage, well before a program or device is deployed. • Information security protects the integrity and privacy of data, both in storage and in transit. • Operational security includes the processes and decisions for handling and protecting data assets. The permissions users have when accessing a network and the procedures that determine how and where data may be stored or shared all fall under this umbrella. • Disaster recovery and business continuity define how an organization responds to a cyber-security incident or any other event that causes the loss of operations or data. Disaster recovery policies dictate how the organization restores

its operations and information to return to the same operating capacity as before the event. Business continuity is the plan the organization falls back on while trying to operate without certain resources.

- End-user education addresses the most unpredictable cyber-security factor: people. Anyone can accidentally introduce a virus to an otherwise secure system by failing to follow good security practices. Teaching users to delete suspicious email attachments, not plug in unidentified USB drives, and various other important lessons is vital for the security of any organization.

The scale of the cyber threat

The global cyber threat continues to evolve at a rapid pace, with a rising number of data breaches each year. A report by RiskBased Security revealed that a shocking 7.9 billion records have been exposed by data breaches in the first nine months of 2019 alone. This figure is more than double (112%) the number of records exposed in the same period in 2018.

Medical services, retailers and public entities experienced the most breaches, with malicious criminals responsible for most incidents. Some of these sectors are more appealing to cybercriminals because they collect financial and medical data, but all businesses that use networks can be targeted for customer data, corporate espionage, or customer attacks.

With the scale of the cyber threat set to continue to rise, the International Data Corporation predicts that worldwide spending on cyber-security solutions will reach a massive \$133.7 billion by 2022. Governments across the globe have responded to the rising cyber threat with guidance to help organizations implement effective cyber-security practices.

In the U.S., the National Institute of Standards and Technology (NIST) has created a cyber-security framework. To combat the proliferation of malicious code and aid in early detection, the framework recommends continuous, real-time monitoring of all electronic resources.

The importance of system monitoring is echoed in the “10 steps to cyber security”, guidance provided by the U.K. government’s National Cyber Security Centre. In Australia, The Australian Cyber Security Centre (ACSC) regularly publishes guidance on how organizations can counter the latest cyber-security threats. The threats commonly countered by cyber-security are three-fold:

1. Cybercrime includes single actors or groups targeting systems for financial gain or to cause disruption.
2. Cyber-attack often involves politically motivated information gathering.
3. Cyberterrorism is intended to undermine electronic systems to cause panic or fear.

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Task 9

Mark the following sentences as True or False. Find in the text the lines/paragraphs proving your choices.

- | | |
|--|---------------------|
| 1. Cybersecurity is the practice of protecting data. | True False |
| 2. Information technology security and cybersecurity are synonyms. | True False |
| 3. Network security is the practice of securing LANs. | True False |
| 4. Successful security begins well before a program or device is released. | True False |
| 5. Information security focuses on keeping stored data private. | True False |
| 6. The permissions users must have when accessing a network are related to the operational type of security. | True False |
| 7. To combat the spread of malicious code, the framework recommends regular annual monitoring of all electronic resources. | True False |
| 8. The global cyber threat is developing rapidly. | True False |

Language Work

Task 10

Find words or phrases in the text that mean the following:

- 1) a technology that allows transmission of data, voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link
- 2) encompasses measures taken to improve the security of an application often by finding, fixing and preventing security vulnerabilities.
- 3) a breach of a system's security policy in order to affect its integrity or availability and/or the unauthorised access or attempted access to a system or systems.
- 4) a person who ultimately uses or is intended to ultimately use a product.
- 5) a computer file sent along with an email message.

- 6) the kind of harmful computer code or web script designed to create system vulnerabilities leading to back doors, security breaches, information and data theft, and other potential damages to files and computing systems.
- 7) a series of documents defining the best practices an organization follows to manage its cybersecurity risk.

Task 11

Find in the text the equivalents to the following words and phrases:

цілісність та приватність даних, при зберіганні та передачі, інформаційні активи, аварійне відновлення, порушення роботи системи або втрата даних, дестабілізувати електронні системи, для отримання економічної вигоди, порушувати роботу, боротися з актуальними кіберзагрозами, впроваджувати ефективні заходи безпеки.

Task 12

Study the forms on the left. Decide which sentence, illustrates each of the meanings on the right.

Sentence	Linking Word Function
1 Network security is the practice of securing a computer network from intruders, particularly targeted attackers or opportunistic malware.	a Positive addition
2 Information security protects the integrity and privacy of data, equally in storage and in transit.	b Exemplification
3 Some of these sectors are more appealing to cybercriminals because they collect financial and medical data.	c Clarification
4 Successful security begins in the design stage, that is to say well before a program or device is deployed.	d Similarity
5 Cyber security is also known as information technology security or electronic information security.	e Purpose

- 6 Regarding the importance of system monitoring, U.K. government's National Cyber Security Centre published guidance "10 steps to cyber security". f Reference
- 7 Disaster recovery policies dictate how the organization restores its operations and information in order to return to the same operating capacity as before the event. g Cause/Reason

Task 13

Match to make collocations. Then translate them into Ukrainian.

*solutions, security corporate, , design real-time,
actors, customer, detection, access, threat*

- | | |
|---------------------|---------------------|
| 1. network _____ | 6. _____ espionage |
| 2. to provide _____ | 7. security _____ |
| 3. _____ stage | 8. early _____ |
| 4. cyber _____ | 9. _____ monitoring |
| 5. _____ data | 10. single _____ |

Task 14

Build your own sentences using the collocations from Task 13. Use linking words to shape your ideas. (See Grammar Reference 1-6)

Task 15

Imagine that you are composing a cybersecurity leaflet for internet users. Explain the following kinds of cybercrime. Use appropriate structures (Appendix 3).

Defacing, spoofing, cyberstalking, salami shaving, phishing, social engineering, PUPS (Potentially Unwanted Programs), online scams.

Task 16

What do these acronyms mean? Decode them. Use the Glossary if necessary. Make your own sentences demonstrating them in an appropriate context.

APT, CAPTCHA, DLP, IDS/IDP, DNS attack, VPN

Task 17

Cross out the incorrect option in each row:

malicious: attack, code, software, computer

vulnerable: attack, software, hardware, system

to cause: disruption, panic, defence, shutdown

access: provide, attack, deny, restrict

Task 18

Spot the difference and complete the sentences.

Cybersecurity vs Cybersafety

Cybersecurity protects the technology infrastructure, such as networks, computers, cloud applications, and data from cyber attacks.

Cybersafety uses technology to protect the physical and emotional well being of users.

Fundamentally, **cybersafety** focuses on people while **cybersecurity** involves information.

retrived from Concise Oxford English Dictionary

1. _____ addresses the ability to act in a safe and responsible manner on the Internet.
2. _____ solutions help organizations protect sensitive information, such as social security numbers, from hackers.
3. Children have to be educated about online threats and _____.
4. Universities need to _____ protect important data like personally identifiable information from malware and phishing schemes, or even accidental sharing of information.
5. _____ is just as important for adults as it is for children and teens - from privacy concerns to identity theft and cyberstalking, there are plenty of hazards on the web.

Translation

Task 19

Translte the following passage into Ukrainian, pay attention to the words and phrases in bold.

The risk and severity of cyber-attacks have clearly grown over the past few years. Recently, mankind has witnessed the most horrific cases of cybercrimes related to **massive data breaches, flaws in microchips, cryptojacking**, and many others.

It goes without saying that the advancement of technology and the wide use of digital media is making attackers smarter by the day. They target everything from **a newly-launched blog** to an **established online store** to gain access to **sensitive information**.

Every other day we read news related to cybersecurity threats like **ransomware, phishing, or IoT-based attacks**. However, new period comes with a whole new level of cybersecurity threats that businesses need to be aware of. A report by Threat Horizon reveals that in the coming years, organizations will face cyber threats under three key themes –

Disruption: Over-dependence on **fragile connectivity** will increase the risk of premeditated internet outages that compromise business operations. Cybercriminals will use ransomware **to hijack the IoT**.

Distortion: Spread of misinformation by bots and automated sources will cause **compromise of trust** in the integrity of information.

Deterioration: Rapid advances in smart technologies and conflicting demands posed by evolving national security will negatively impact an enterprise's ability to control information.

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Task 20

Translate the following sentences into English.

1. Кібербезпека — це процес застосування заходів безпеки з метою забезпечення конфіденційності, цілісності та доступності даних.
2. Залежно від мотивів, кіберзлочини поділяють на: спрямовані на заволодіння коштами; спрямовані на заволодіння інформацією; втручання в роботу інформаційних систем з метою отримання доступу до автоматизованих систем управління.

3. Зазвичай, програма-вимагач блокує екран пристрою жертви або шифрує дані на диску, відображаючи вимогу про викуп із реквізитами платежу.
4. Криптоджекінг це видобування криптовалюти у браузері за допомогою простого JavaScript. Цей метод дозволяє виконувати зловмисну діяльність безпосередньо в браузері жертви без встановлення жодного програмного забезпечення.
5. Одним із розповсюджених методів проникнення шкідливих програм на комп'ютери жертв стало використання експлойтів, які забезпечують швидке поширення загрози.
6. Ще один напрямок, в якому за прогнозами фахівців, як і раніше будуть використовуватися пристрої IoT - створення бот-мереж для розсилки спаму, анонімізації і проведення DDoS-атак.
7. Витік даних, неправильна конфігурація, небезпечні інтерфейси і API-інтерфейси, викрадення облікових записів, зловмисні інсайдерські загрози і DDoS-атаки є одними з головних загроз безпеки в хмарі.
8. Вже зараз понад 80% новобудов в Україні містять елементи інтернету речей, але значна частина розумних пристроїв та систем не мають надійних протоколів аутентифікації або взагалі не захищені жодними рішеннями з безпеки.
9. Безпека інформаційної мережі включає захист обладнання, програмного забезпечення, даних і персоналу та складається з положень і політики, прийнятої адміністратором мережі, щоб запобігти і контролювати несанкційований доступ, неправильне використання, зміни або відмови в комп'ютерній мережі та мережі доступних ресурсів.
10. На відміну від автентифікації, що розпізнає легальних і нелегальних користувачів, система авторизації має справу тільки з легальними користувачами, що вже успішно пройшли процедуру автентифікації.

Speaking

Task 21

Go through the list of cybercrimes and rank them according to their gravity. Then look at the forms of punishment and decide which is adequate for each offence. Be ready to reason your choices.

Cybercrimes

cyberstalking	denial of service attack
phishing	sending unsolicited messages
defacing	spoofing
piracy	salami shaving
creating/ distributing computer viruses	placing spyware on devices

Punishment

doing community service	(give) suspended sentence
(give) a warning	Imprisonment
fine	*offer your own idea

Task 22

Share your experience and compare with your groupmates.

- Have you ever experienced any cybercrime?
- What actions have you undertaken,
- What conclusions have you drawn?

Task 23

Work in pairs or small teams. Choose one of the categories below and make a poster presenting cybersafety tips for it:

1. Adults	5. Educational institutions
2. Juveniles	6. Governmental organizations
3. Travelers	7. Big businesses
4. Small private entrepreneurs	

Writing

Task 24

Choose the most inspirational quotation and write a thesis plan for your TED talk.

- “Threat is a mirror of security gaps. Cyber-threat is mainly a reflection of our weaknesses.” — Stephane Nappo
- “A breach alone is not a disaster, but mishandling it is.” — Serene Davis.
- “I believe we will all be responsible for our own security – no vendor, service provider, or even government entity will save us.” — Sean Martin.
- “Security in IT is like locking your house or car – it doesn’t stop the bad guys, but if it’s good enough they may move on to an easier target.” —Paul Herbka.

Task 25

Write a brief summary describing the infographics “How Much Do You Know About Data Security?”



Creative writing

Write a post for a blog about the most impressive cyber-crime (in your opinion). Analyze and present your opinion on the following aspects:

- *feasibility*
- *attack surface*
- *consequences*
- *possible measures to prevent.*

Final mini-project

Work in teams.	• Define the term “cybercrime”; • Explain the main reasons for cybercrimes;
-----------------------	---

Create a short presentation on the topic “Cybercrime” to give it in a class. In your presentation you should:	● Explain 5 the most common/ tricky/unusual etc. cybercrimes ; ● List and describe 1-3 laws to protect digital information and/or users; ● Explain how we can protect ourselves. Offer at least 3 solutions; ● Tell about 1-3 organizations that help to prevent and fight cybercrimes; ● Include 5 statistics about cybercrime; ● Cite 3 or more sources; ● Obey copyright!
---	--

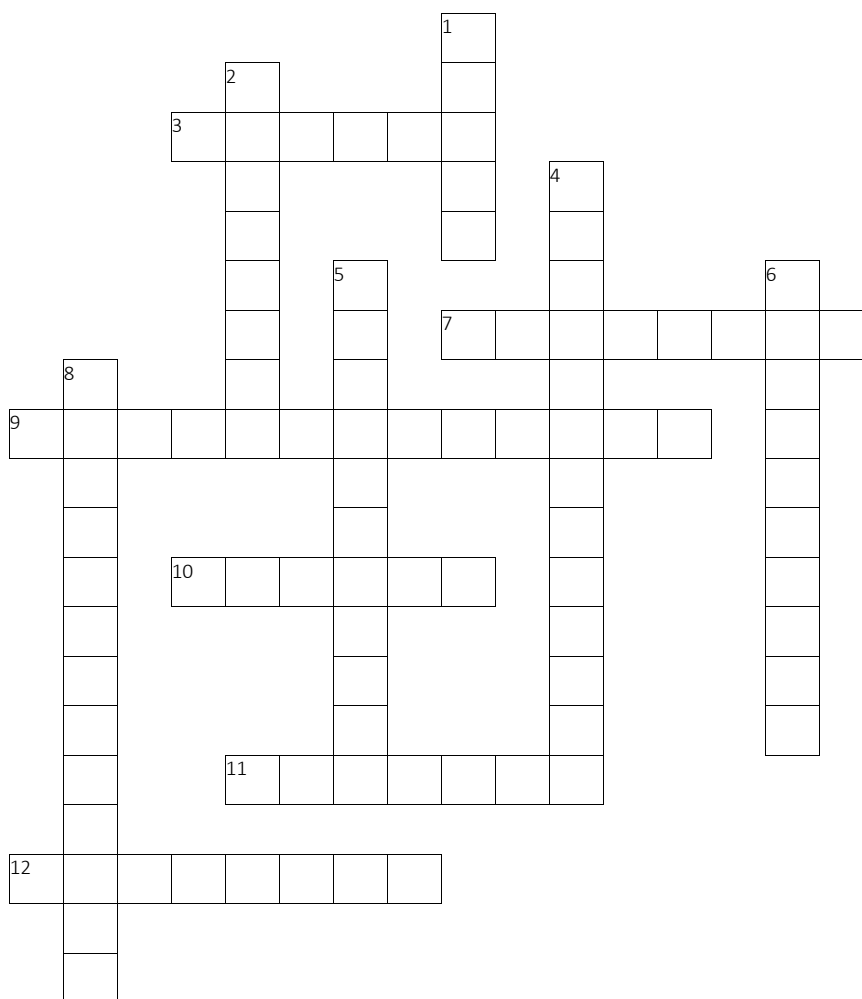
REVISION BRAIN-TWISTER

Across

3. someone who seeks and exploits weaknesses in a computer system or computer network.
7. the activity of defrauding an online account holder of financial information by posing as a legitimate company.
9. body of technologies, processes and practices designed to protect networks, computers, programs and data from attack, damage or unauthorized access
10. an attempt by hackers to damage or destroy a computer network or system.
11. software that enables a user to obtain covert information about another's computer activities by transmitting data covertly from their hard drive.
12. a network security system, either hardware- or software-based, that controls incoming and outgoing network traffic based on a set of rules.

Down

1. a piece of code that is capable of copying itself and typically has a detrimental effect, such as corrupting the system or destroying data
2. a method, often secret, of bypassing normal authentication in a product
4. used to describe any code in any part of a software system or script that is intended to cause undesired effects, security breaches or damage to a system.
5. uses technology to protect the physical and emotional well being of users
6. made possible by using algorithms to create complex codes out of simple data, effectively making it more difficult for cyberthieves to gain access to the information
8. protects the technology infrastructure, such as networks, computers, cloud applications, and data from cyber attacks.



CHECK YOUR PROGRESS

Can you do it in English:

explain the main concepts of cybersecurity	Yes	No
see the difference between cybersecurity and cybersafety	Yes	No
list 10 types of cybercrimes	Yes	No
explain the major cyber threats	Yes	No
advice cybersafety solutions	Yes	No

LEARN MORE:

<https://www.cisco.com/c/en/us/products/security/what-is-cybersecurity.html>

<https://www.itgovernance.co.uk/what-is-cybersecurity>

<https://www.coursera.org/courses?query=cybersecurity>

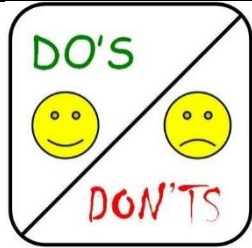
<https://www.udemy.com/topic/cyber-security/>

MIND-MAPPING RULES		
❖ Mind mapping is one of the most common types of information processing. Mind mapping is often used to gather thoughts and ideas. ❖ A mind map should be a web-like structure of words and ideas that are loosely tied to one another.		
Examine ideas in NEW WAYS	Build on the CENTRAL IDEA	
Use FREE association to start the ideas flowing. RECORD what comes to mind		
Work from the CENTER to the corners	NO CLUTTER. No padding words	
Use SINGLE words or SIMPLE phrases		
Use SYMBOLS and PICTURES		
Use COLOR to separate DIFFERENT ideas	CLEAR handwriting leads to clear THOUGHTS	
CROSSLINK your thoughts. Draw lines between thoughts to create LATERAL THINKING		
Connect NEW ideas to OLD	EXTAND your THOUGHTS from one idea to the next	
Help your brain. Dotted lines help your brain to WONDER AROUND		
 BE CREATIVE	HAVE FUN 	 BE ORGANIZED

You can find mind maps and concept maps templates here:

<https://www.lucidchart.com/pages/templates/mind-map>

<https://templatelab.com/mind-map/>

BRAINSTORMING RULES	
❖ Set up the area so that everyone can see each other and what is being recorded.	
	❖ Assign one person as the recorder. His / her task is to write down all the ideas during the brainstorming.
❖ Set up rules, such as: letting one person speak at a time, allowing all participants to contribute, recording all responses, no one should insult or criticize another participant for their responses.	
	❖ Determine a goal that everyone would like to have accomplished by the end of the session such as, a minimum number of ideas, everyone has at least two suggestions, etc.
❖ As people are sharing their ideas, the recorder should put the ideas in categories or sub-categories so the information is somewhat organized.	
	❖ Once the brainstorming is over, analyze the list and evaluate each idea.
❖ When examining the responses, combine repeated or similar ideas and eliminate answers that do not fit.	
	❖ Discuss the remaining responses.
❖ Collaborate with each other to create an effective solution.	

TERMS: DEFINING	
The best way to define an object is to describe its function or properties.	<i>For example: It is a device used to calculate. (A computer)</i>
Useful constructions:	
<i>for + ing</i>	<i>It is a device used for calculating.</i>
<i>relative pronoun + verb</i>	<i>It is a device that / which calculates.</i>
<i>relative pronoun + is used + to + infinitive</i>	<i>It is a device which is used to calculate.</i>
REMEMBER!	
We use which / that to refer to things	<i>A computer is a device which calculates.</i>
We use who / that to refer to people	<i>A programmer is a person who / that creates programs.</i>
We use where to refer to places.	<i>A computer lab is a place where we have practice lessons.</i>
We use when to refer to time periods	<i>Summer is a season when we have final exams.</i>

TERMS: CLASSIFYING	
<i>Classifying means putting objects into groups or classes.</i>	
Classifying from general to specific:	
Useful constructions:	
<i>...are classified into X categories / types / classes etc.</i> <i>...can be divided into X types / groups etc.</i>	
<i>e.g.</i>	Computers can be divided into 3 types : analogue, digital, and hybrid.
<i>...include</i> <i>...consists of</i> <i>...is made up of</i> <i>...is comprised of</i> <i>...comprise</i>	
<i>e.g.</i>	Binary code consists of 1s and 0s.
Classifying from specific to general:	
Useful constructions:	
<i>... is a type / kind/group/class of</i> <i>...are parts / components of</i> <i>...constitute</i> <i>...make up</i>	
<i>e.g.</i>	RAM and ROM make up / constitute the main memory.

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Remittances to Mexico: Recent Trends

Jesus Cañas
Federal Reserve Bank of Dallas

Financial Education & Economic Inclusion The Immigrant Experience

Hosted by
Federal Reserve Bank of Dallas
The Consulate General of Mexico in Dallas
Financial Fitness Greater Dallas

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REFERENCE 1-1

MODAL VERBS

We use modal verbs to add extra meaning to the main verb.

Modal verbs:

- do not take an –s or –ed suffix
- are usually followed by a bare infinitive (exceptions include: have to, ought to, etc.)
- go before the subject in questions
- are followed by “not” in negations

Modal	Function
CAN	to show ability
	to suggest a possibility or give an option
	to ask for or to give permission
	to show impossibility
COULD	to show past ability
	to ask a polite question
	to show possibility
	to show impossibility
	to suggest a possibility / opportunity or give an option
MAY	to ask for or to give permission (formal)
	to show possibility
MIGHT	to show possibility
SHOULD	to show advisability
	to show obligation
	to show expectation
OUGHT TO	to show advisability
	to show obligation

	to show expectation
HAD BETTER	to show advisability
MUST	to show probability or to make a logical assumption
	to show necessity
	to show prohibition
HAVE TO	to show necessity
	to show lack of necessity
WILL	to make a promise or to show willingness
	to ask a polite question
WOULD	to ask a polite question
WOULD RATHER	to show a preference
WOULD LIKE	to express a desire

REFERENCE 1-2

CONDITIONALS

Conditional clauses consist of two parts: the if-clause (hypothesis) and the main clause (result). When the if-clause comes before the main clause, the two clauses are separated with a comma. When the main clause comes before the if-clause, then no comma is necessary.			
Type of a Conditional	If-clause (hypothesis)	Main clause (result clause)	Use
TYPE 0 REAL PRESENT	If (when) +Present Simple,	Present Simple	something that is always true; laws of nature
TYPE 1 REAL PRESENT	If+any present form,	Future/ Imperative/ can/ may/ might/ must/ should+ bare infinitive/ Present Simple	true or likely to happen in the present or future
TYPE 2 UNREAL PRESENT	If +Past Simple or Past Continuous,	would / could / might + bare infinitive	untrue in the present; also used to give advice
TYPE 3 UNREAL PAST	If +Past Perfect or Past Perfect Continuous,	would / could / might + bare perfect infinitive	imaginary situation contrary to facts in past; also used to express regrets or criticism

MIXED CONDITIONALS

Any types pf conditionals can be mixed. Any tense combination is possible if the context permits it.		
Type of a Mixed Conditional	If-clause (hypothesis)	Main clause (result clause)
TYPE 2 X TYPE 3	If +Past Simple or Past Continuous,	would / could / might + bare perfect infinitive
TYPE 3 X TYPE 2	If +Past Perfect or Past Perfect Continuous,	would / could / might + bare infinitive

REFERENCE 1-3

The Infinitive / -ing Form (Gerund)

<i>Forms of the Infinitive</i>			<i>Forms of the –ing Form</i>	
	Active voice	Passive voice	Active voice	Passive voice
Present	(to) play	(to) be played	playing	being played
Present Cont.	(to) be playing		---	---
Perfect	(to) have played	(to) have been played	having played	having been played
Perfect Cont.	(to) have been playing		---	---

The to-infinitive is used	The –ing form is used
to express purpose	as a noun
after certain verbs (agree, decide, promise, etc.)	after certain verbs (admit, consider, deny, fancy, mind, object to, report, suggest, understand, etc.)
after certain adjectives (happy, glad, sorry, etc.)	after: dislike, enjoy, hate, like, love, prefer to express general preference.
after I would like / would love/ would prefer to express specific preference	after: I'm busy, it's no use, it's (no) good, it's (not) worth, what's the use of, can't help, there's no point (in), in addition to, as well as, have trouble, have a hard/difficult time.
after certain nouns	after: spend/waste (time, money, etc.)
after too / enough constructions	after prepositions
with: it+be+adjective(+of+noun/pronoun)	after: look forward to, be/get used to, be/get accustomed to, object to, admit (to), etc.
with: so+adjective+as	after: hear, listen, notice, see, watch to express an incomplete action, an action in progress or a long action. BUT: hear, listen, see, watch + bare infinitive express a complete action, something that one saw or heard from beginning to end.
with “only” to express an unsatisfactory result	The bare infinitive is used
after: be + the first / second etc / next / last / best/ etc.	after most modal verbs
in the expression: for + noun/pronoun	after had better/ would rather/ would sooner

in expressions such as: to tell you the truth, to begin with, to be honest, etc.	after make/ let/ see/ hear/ feel in the active Note: passive: be made/ be heard/ be seen/ was/were allowed to (instead of let) + to-inf
--	--

REFERENCE 1-4

Passive Voice

The Passive voice is used: - when the focus is on the action - when the person who carries out the action is unknown, unimportant or obvious from the context	
FORM	BE + Past Participle
Present Simple	am/ is/ are + pp
Present Continuous	am/ is/ are + being + pp
Present Perfect	have / has + been + pp
Past Simple	was / were + pp
Past Continuous	was / were + being + pp
Past Perfect	had + been + pp
Future Simple	will + be + pp
Be + going to	am / is / are / was / were + going to + to be + pp
Modals	modal + be + pp
Note: - Present Perfect Continuous is not used in Passive; - Only transitive verbs can be changed into the Passive.	

REFERENCE 1-5

Clauses

Relative Clauses	Reference to	Function in a Sentence		
		Subject	Object	Possessive
	People	who, that	that, who, whom	whose
	Things/Concepts	which, that	which, that	whose, of which
	Place		where	
	Time		when	
	Reason		why	
Clauses of time	Are introduced by: after, as, as long as, as soon as, just as, once, since. When, before, by the time, while, until/till, the moment, whenever, every time, immediately, etc. Note: - Time Clauses follow the rule of the sequence of tenses; - When the TC precedes the MC, a comma is used.			
Clauses of Reason	Reason is expressed with : as, since, because, for, the reason for, the reason (why), on the grounds that, because of/due to+ the fact that/noun/-ing form.			
Clauses of Result	Result is expressed with : that (after such/so...), (and) as a result, (and) as a consequence, consequently, so, such a(n)+ (adjective)+singular countable, such + (adjective)+ uncountable/plural noun, such+a lot of+ noun, so+adjective/adverb, so+much/many/little/few+noun, so+adjective+a(n)+noun, as a result/therefore/consequently/so+clause.			
Clauses of Purpose	Purpose is expressed with: to/in order to/so as to+inf, so that+can/will (present/future reference), so that+could/would (past reference), with a view to/with the aim of+ -ing form, for+noun/-ing form, in case+present (present/future reference)/past (past reference). Negative Purpose: in order not /so as not + to-inf, for fear/least+might/should, for fear of sth/doing sth, prevent+noun/pronoun+ (from) + -ing form, avoid+ -ing form. Note: Clauses of Purpose follow the rule of the sequence of tenses.			
Clauses of Concession	Concession is expressed with: although/ even though/ though+clause, despite/in spite of+noun/-ing form, despite/in spite of the fact + that-clause, while/whereas/but/on the other hand/yet+clause, nevertheless/ however+ clause, however/ no matter how+adj/adv+subject (+may)+verb, whatever/no matter what+clause, adj/adv+though+subject+verb/(may+bare inf), adj/adv+as+subject+verb. Note: A comma is used when the clause of concession either precedes or follows the main clause.			

Clauses of Manner	Are introduced by: as if/as though (after the verbs act, appear, be, behave, feel, look, seem, smell, sound, taste), as, how, (in) the way that, the way in which, (in) the same way, (in) the same way as.
--------------------------	---

REFERENCE 1-6

Linking Words

Agreement / Addition / Similarity	in the first place, again, moreover, not only ... but also, to, as well as, as a matter of fact, and, together with, in like manner, also, of course, in addition, then, likewise, coupled with, equally, comparatively, in the same fashion / way, identically, correspondingly, first, second, third, uniquely, similarly, in the light of, like, furthermore, not to mention, as, additionally, to say nothing of, too, equally important, by the same token
Examples / Support / Emphasis	in other words, notably, in fact, to put it differently, including, in general, for one thing, like, in particular, as an illustration, to be sure, in detail, in this case, namely, to demonstrate, for this reason, chiefly, to emphasize, to put it another way, truly, to repeat, that is to say, indeed, to clarify, with attention to, certainly, to explain, by all means, surely, to enumerate, important to realize, markedly, such as, another key point, especially, for example, first thing to remember, specifically, for instance, most compelling evidence, expressively, to point out, must be remembered, surprisingly, with this in mind, point often overlooked, frequently, on the negative side, significantly, on the positives side.
Space / Location / Place	in the middle, here, further, to the left/right, there, beyond, in front of, next, nearby, on this side, where, wherever, in the distance, from, around, here and there, over, before, in the foreground, near, alongside, in the background, above, amid, in the center of, below, among, down, beneath, adjacent to, up, beside, opposite to, under, behind, between, across.
Time / Chronology / Sequence	at the present time, after, henceforth, from time to time, later, whenever, sooner or later, last, eventually, at the same time, until, meanwhile, up to the present time, till, further, to begin with, since, during, in due time, then, first, second, until now, before, in time, as soon as, hence, prior to, as long as, forthwith, in the meantime, when, straightaway, in a moment, once, without delay, about, by the time, in the first place, next, whenever, all of a sudden, now, at this instant, now that, immediately, formerly, instantly, quickly, suddenly, presently, finally, shortly, occasionally.

Effect / Result / Consequence	as a result, for, consequently, under those circumstances, thus, therefore, in that case, because the, thereupon, for this reason, then, forthwith, henceforth, hence, accordingly.
Opposition / Limitation / Contradiction	although this may be true, but, although, in contrast, (and) still, instead, different from unlike whereas of course ..., but or despite on the other hand (and) yet conversely on the contrary while otherwise at the same time albeit however in spite of besides rather even so / though as much as nevertheless be that as it may even though nonetheless then again regardless above all notwithstanding in reality after all
Cause / Condition / Purpose	in the event that if in case granted (that) ... then provided that as / so long as unless given that on (the) condition (that) only / even if for the purpose of when so that with this intention whenever so as to with this in mind since owing to in the hope that while due to to the end that for fear that because of inasmuch as in order to as seeing / being that since in view of while lest
Conclusion / Summary / Restatement	as can be seen after all overall generally speaking in fact ordinarily in the final analysis in summary usually all things considered in conclusion by and large as shown above in short to sum up in the long run in brief on the whole given these points in essence in any event as has been noted to summarize in either case in a word on balance all in all for the most part altogether

WORD LISTS

Unit 1 abusive language, to be copyrighted in one's name to corrupt data courteous cyber bullying to destroy files digital citizen digital footprint to establishing ownership on something ethics to give false alerts illegal copies of copyrighted software to interfere to interfere with invasion of someones privacy. make false statements to manipulate files oversharing policy procedures sensitive snoop around to gain unauthorized access to track unethical viral	Unit 2 blueprint plan Applications Development Engineer base salary to be customized to needs to bring on board Cloud Engineer conceptualization skills to deliver solutions to draw insights Enterprise Architect entry-level position in-demand jobs in-depth understanding industry experience to possess skills previous experience project management to serve needs Software Architect Software Development Manager Software Engineering Manager solid skills Solutions Architect Systems Architect team staffing well-coordinated team
Unit 3 access protection associated process coordinated manner to designate a running program execution of a program to express concurrency functional vision implementation to interleave executions over time manually monitor-based operating system monoprogrammed multiplexing the processor multithreaded systems	Unit 4 authentication authorization bandwidth chroot coaxial cable communications medium fiber optics general purpose hosts hostname initial assignment interconnected memorable label Metropolitan Area Network moderate-to-high data rates

multiuser policies for managing primitive operating system to provide privacy and integrity to run a program to run concurrently simultaneous single terminal subprocess timesharing operating system verification mechanism virtual terminals	network address networking hardware network traffic Personal Area Network physical media privately-owned networks public communications links public utilities transmission time twisted pair user identity Wide Area Networks
Unit 5 to be coined browsing common framework content providers to contribute in to deliver services dynamic participatory model to establish an online presence folksonomies hit counters information dissemination mashups media-rich ontology participative Web to purchase online Read-Only Web search engine searching semantic semantic web social bookmarking SPARQL static voice over IP	Unit 6 to be targeted for compromised application cryptojacking cyber-attack cybercrime cybersafety cybersecurity cyberterrorism data assets data breaches to deploy deterioration disruption distortion flaw to hijack the IoT to introduce a virus intruder to keep free of threats malicious attack newly-launched operating capacity permissions single actors targeted attacker

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