Дрогобицький державний педагогічний університет
імені Івана Франка

Кафедра практики англійської мови і методики її навчання

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АНГЛІЙСЬКА МОВА ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ:

КОМП’ЮТЕРНІ НАУКИ

Навчальний посібник для студентів
галузі знань «Інформаційні технології»
спеціальності «Комп’ютерні науки»

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Б 87 **Брода М. Англійська мова за професійним спрямуванням: комп'ютерні науки** : навч. посіб. для студентів спеціальності «Комп'ютерні науки». Дрогобич: Дрогобицький державний педагогічний університет імені Івана Франка, 2025. – 96 с.

Навчальний посібник написаний відповідно до чинної програми з навчальної дисципліни «Іноземна мова за професійним спрямуванням (англійська)» для підготовки фахівців ОКР «Бакалавр» зі спеціальності «Комп'ютерні науки», затвердженої вченою радою Дрогобицького державного педагогічного університету імені Івана Франка.
Мета посібника − формування необхідної англомовної комунікативної компетенції студентів у професійній сфері спілкування.

Призначений для студентів та викладачів закладів вищої освіти, учнів закладів загальної середньої освіти відповідного профілю навчання та тих, хто вивчає англійську мову самостійно.
Бібліографія 35 назв.

ЗМІСТ

ВСТУП

У сучасному світі інформаційних технологій англійська мова є незамінним інструментом професійної комунікації, саморозвитку та кар'єрного зростання. Більшість технічної документації, програмного забезпечення, наукових статей, онлайн-курсів, конференцій та спілкування в IT-середовищі відбувається саме англійською мовою. Саме тому володіння професійною англійською є обов'язковим компонентом підготовки фахівців зі спеціальності «Комп'ютерні науки», адже воно відкриває доступ до найновіших знань, технологій і практик, що визначають розвиток IT-галузі.

Мета посібника полягає у формуванні необхідної англомовної комунікативної компетенції студентів у професійній сфері спілкування, що передбачає розширення активного словника студентів у сфері ділового спілкування, розвиток навичок практичного володіння діловою англійською мовою в різних видах мовленнєвої діяльності, в усній і письмовій формах, що обумовлена професійними потребами на рівні незалежного користувача, поглиблення професійних та лексичних знань.

Посібник містить адаптовані тексти та завдання, спрямовані на розвиток читання, говоріння та письма в IT-контексті. Значна увага приділяється вивченню та закріпленню термінології, необхідної для впевненого орієнтування в IT-дискурсі. Подано вправи на засвоєння і закріплення професійної лексики, розуміння її в контексті, а також створення власних висловлювань, що сприятиме формуванню навичок реального спілкування у професійному середовищі.

Посібник має виразне комунікативне спрямування, оскільки всі тексти й завдання побудовані навколо реальних ситуацій професійної діяльності в IT-сфері. Кожна тема містить інтерактивні види роботи — обговорення у парах, рольові завдання, проєктні і ситуативні вправи, які формують уміння пояснювати технічні рішення, аргументувати вибір і співпрацювати в команді. Завдяки такому підходу посібник не лише допомагає засвоїти професійну англійську, а й розвиває компетенції ефективної комунікації, що є необхідними для майбутніх фахівців у галузі комп'ютерних наук.

Посібник може бути використаний як у межах аудиторної роботи, так і для самостійного навчання.

Сподіваємося, що даний курс допоможе студентам впевнено орієнтуватися в англомовному IT-просторі та успішно реалізовувати себе у своїй майбутній професії.

HOW COMPUTERS ARE TRANSFORMING OUR WORLD TODAY

Before you read the text answer the following questions:

- Do you use any smart devices at home? What are their advantages?
- How can technology help us in our daily life?

The power of modern **computing** has revolutionized how we live, work, and communicate. Tiny, powerful devices — such as **smartphones**, **wearables**, and embedded systems — now control complex operations in everything from **medical devices** and vehicles to **smart homes** and consumer electronics. People use mobile apps and **cloud platforms** to collect data, track health, manage finances, and work remotely.

Computing devices are not only getting smaller but also smarter. Today's machines can learn, predict, and adapt using **artificial intelligence (AI)** and **machine learning (ML)**. Cars use onboard computers to improve fuel efficiency and assist drivers with safety systems. **Smartphones** offer features like **biometric security**, voice assistance, and real-time translation.

Smart devices have become part of everyday life. **Smartwatches** monitor heart rate and activity. **Smart refrigerators** track food expiration. A **smart home** may include voice-controlled lights, thermostats, and security cameras, all connected through the **Internet of Things (IoT)**. These tools help **automate** routine tasks, making life more convenient.

Computers also enhance creativity. With **cloud-based tools** and **AI assistance**, people can edit videos, create art, produce music, and collaborate globally in real time. **Distance learning** platforms, online courses, and **AI tutors** make education more interactive and **accessible**.

In healthcare, **telemedicine** and **AI diagnostic systems** help doctors provide care across long distances. In business, **videoconferencing** and collaborative apps have transformed how teams work together, making **remote work** a standard part of many jobs. **Computers** have become not only personal tools but also **interpersonal** tools that improve communication and productivity.

Today's networks — from **Wi-Fi 6** to **5G** — allow **instant access** to vast resources. The Internet connects billions of devices, making information available anywhere, anytime. With good **cybersecurity** practices, users can **share data** safely and responsibly.

Ultimately, people remain central to this **digital ecosystem**. While hardware and software continue to evolve, it's human decisions that determine how these tools are used — creatively, ethically, and for the benefit of society.

Glossary

• **computing** – обчислювальна техніка
• **wearables** – носимі пристрої
• **medical devices** – медичні пристрої
• **smart home** – розумний дім
• **cloud platform** – хмарна платформа
• **computing device** – обчислювальний пристрій
• **artificial intelligence (AI)** – штучний інтелект
• **machine learning (ML)** – машинне навчання

• **biometric security** – біометрична безпека
• **smart device** – розумний пристрій
• **Internet of Things (IoT)** – інтернет речей
• **cloud-based tools** – інструменти на базі хмари
• **distance learning** – дистанційне навчання
• **AI tutors** – AI-репетитори
• **telemedicine** – телемедицина
• **AI diagnostic systems** – діагностичні системи на базі AI
• **videoconferencing** – відео конференція
• **remote work** – віддалена робота
• **cybersecurity** – кібербезпека
• **digital ecosystem** – цифрова екосистема
• **share data** – ділитися даними
• **automate routine tasks** – автоматизувати рутинні завдання

1. **Answer these True / False questions:**

1. Smart devices can help people automate daily tasks.
2. Wearables are used only for entertainment purposes.
3. Artificial intelligence allows machines to learn and adapt.
4. Smartphones cannot provide biometric security.
5. Telemedicine helps doctors treat patients remotely.
6. The Internet of Things connects devices in a smart home.
7. Computing devices are getting bigger and slower.
8. Cloud-based tools make global collaboration possible.
9. Remote work is no longer used in modern businesses.
10. Cybersecurity ensures safe data sharing online.

2. **Comprehension questions**

1. How have smart devices changed everyday life?
2. What are some examples of how AI is used in modern technology?
3. How do smart homes use the Internet of Things (IoT)?
4. In what ways do cloud platforms support creativity and collaboration?
5. What role does telemedicine play in healthcare today?
6. How has remote work changed business practices?
7. What technologies provide fast and reliable internet connectivity?
8. Why is cybersecurity important in a connected world?
9. What is meant by a "digital ecosystem"?
10. What is the role of people in the development and use of modern technology?

Vocabulary Practice

1. Complete the sentences with the correct word from the list below.

(computing, smartphone, wearables, artificial intelligence, biometric security, cloud platform, smart home, telemedicine, 5G, cybersecurity)

1. Modern cars use _____ to assist drivers and improve safety.
2. A _____ can recognize your fingerprint to unlock the device.
3. Many people use a _____ to manage daily tasks and communicate.

4. Doctors can now diagnose patients remotely using _____ technology.
5. _____ devices like smartwatches track your health and activity.
6. The company stores its data safely on a _____ rather than on local servers.
7. _____ networks like 5G provide fast wireless internet for mobile devices.
8. Protecting personal data from hackers is the goal of _____.
9. A _____ is a house equipped with automated systems controlled via the Internet.
10. Advances in _____ allow computers to learn and make decisions.

2. Match the word to its correct definition.

Word	**Definition**
1. Artificial intelligence (AI)	a) A secure method using physical traits for authentication
2. Cloud platform	b) A connected home with automated devices
3. Wearables	c) Technology that enables machines to mimic human intelligence
4. Biometric security	d) Internet-based services for data storage and software
5. Smart home	e) Devices worn on the body that collect data

3. Complete the mini-dialogues with your own expressions, use the promts in brackets.

Characters:

- **Alex** – Network administrator
- **Jamie** – Employee/user

Jamie is having some questions about the new technology in the office. Alex explains and discusses the issues.

Jamie: Hi Alex, I've been hearing a lot about our office using **cloud platforms** now. Can you explain how it helps us?
(Explain the benefits of cloud platforms.)
Alex: Sure! Using cloud platforms means ...

Jamie: That sounds useful. But I'm worried about security. How does the company protect our data?
(Talk about cybersecurity measures.)
Alex: We use ...

Jamie: I also heard about **biometric security** being added. What does that mean for us?
(Explain biometric security features.)
Alex: Biometric security uses things like fingerprints or facial recognition to ensure only authorized people can access sensitive areas or information.

Jamie: Interesting! What about the **5G** network the company mentioned? Will that improve our internet speed?

(Discuss benefits of 5G.)
Alex: Yes, ...

Jamie: Last question – how do you see **artificial intelligence** helping our work in the future?
(Discuss AI applications.)
Alex: AI can ...

- **Use this template to create your own dialogue.**
- **Choose different vocabulary words or prompts (e.g. *computing devices, smartwatch, medical devices, AI diagnostic systems, AI tutors, cloud platforms, digital ecosystem, etc.*)**
- **Add your own questions and answers to make the conversation longer.**

4. Discuss the following topics:

1. **Daily Life and Technology**
    - How do you use **smartphones** or **wearables** every day?
    - Describe how a **smart home** might improve your life.
2. **Health and Medicine**
    - Explain how **telemedicine** can help patients and doctors.
    - Talk about the importance of **biometric security** in hospitals.
3. **Work and Education**
    - How has **remote work** changed your or your family's job?
    - Describe ways **cloud platforms** support learning or working from home.
4. **Future of Technology**
    - Predict how **artificial intelligence** will change the world in 10 years.
    - Discuss the benefits and challenges of faster internet like **5G**.
5. **Safety and Privacy**
    - Why is **cybersecurity** important for individuals and companies?
    - What can people do to protect their data online?
6. **Technology in Society**
    - How do interconnected devices form a **digital ecosystem**?
    - Share your opinion about the impact of technology on social relationships.

COMPUTER ARCHITECTURE

Answer the questions:

- Have you ever built or upgraded a computer? What parts did you use?
- What features do you look for when buying a computer?

Read the advertisement and match the headings to the paragraphs:

a. ***Modern OS***
b. ***Lightning-Fast Storage***
c. ***Incredible Performance***
d. ***Next-Gen Memory***
e. ***Next-Level Graphics***
f. ***Stylish design***
g. ***Immersive Multimedia***
h. ***Stunning 4K Visuals***

Looking for a reliable, high-performance, and modern PC?

1. Intel Core i7 14th Gen Processor (3.9GHz base, up to 5.2GHz Turbo Boost)
2. 16GB DDR5 RAM (dual-channel, 5600MHz)
3. 1TB NVMe SSD (Gen 4)
4. NVIDIA GeForce RTX 4060 GPU, 8GB GDDR6 VRAM
5. High-definition 7.1 surround integrated audio
6. Blu-ray RW drive + USB-C 3.2 ports
7. 27" IPS LED monitor, 4K UHD resolution (3840 × 2160)
8. Windows 11 Pro

1._____

The main processing chip is an **Intel Core i7 14th Generation** processor, designed by Intel Corporation. It operates at a **base clock speed of 3.9 GHz** and can reach up to **5.2 GHz** using **Turbo Boost technology**, ensuring excellent performance for multitasking, gaming, and professional workloads.

2._____

16GB of DDR5 synchronous dynamic RAM, using a dual-channel configuration for high-speed, high-bandwidth data processing. DDR5 runs at much faster clock speeds (e.g., 5600 MHz), ideal for demanding modern applications.

3._____

A **1TB NVMe SSD (Gen 4)** — a solid-state drive that connects via a high-speed M.2 PCIe interface. It offers extremely fast read/write speeds, significantly outperforming older SATA hard drives and enabling rapid boot-up and application loading.

4._____

A modern **NVIDIA GeForce RTX 4060 graphics card** with **8GB of GDDR6 memory**, connected via **PCI-Express Gen 4**. It supports ray tracing, AI-assisted rendering, and high-resolution gaming or professional graphics work.

5._____

Experience stunning **7.1 surround audio** providing crystal-clear sound for music, movies, and gaming and enjoy full media capability with a **Blu-ray RW drive** and **USB-C 3.2 ports** for connecting modern peripherals and external storage devices.

6._____

A **27-inch 4K UHD IPS LED monitor** (3840 × 2160 resolution), offering wide viewing angles, vibrant colors, and high pixel density — ideal for content creation, streaming, and productivity tasks.

7._____

Windows 11 Pro is the operating system installed on the computer. It provides modern features like virtual desktops, secure boot, touch and pen support, AI enhancements, and seamless integration with Microsoft services.

8._____

All in a sleek mid-tower case with RGB lighting, optimized airflow, and support for advanced cooling systems.

1. Scan the text to find this information:

1. What is the memory size (RAM) of this PC?
2. What storage devices are included?
3. What is the size and resolution of the display screen?
4. How fast is the processor?
5. What is the capacity and type of the hard drive?
6. What type of graphics card does the computer use?
7. What operating system does the computer run?
8. What multimedia features does this computer offer?
9. What types of ports and optical drives are available?

1. Match each component with its function. Then describe its purpose in your own words.

A –Component	**B – Function**
1. DDR5 RAM	a. synchronizes operations across all system components
2. Intel Core i7 CPU	b. stores and transfers data using fast solid-state memory
3. Motherboard	c. connects all hardware components and allows communication between them
4. System clock	d. stores startup instructions for initializing the system
5. USB-C SSD (portable)	e. reads/writes Blu-ray discs and legacy media
6. 4K UHD monitor	f. performs all processing and controls operations of the system
7. Mechanical keyboard	g. inputs typed data through physical key switches
8. Blu-ray drive (external)	g. provides ultra-fast temporary storage for frequently accessed data
9. L3 cache	h. displays high-resolution visual output from the computer

10. UEFI/BIOS chip (ROM)	i. holds temporary data and program instructions for fast access by the processor

2. **Work in pairs. Find out as much as you can about your partner's computer and fill in the table.**

Feature	**Student A**	**Student B**
Processor type		
Processor speed		
Memory capacity		
Memory speed		
Memory type		
Hard disk capacity		
Screen size		
Screen resolution		
Optical drive speed		
Additional features		

Student A

- Intel Core i5-1235U (10-core)
- Up to 4.4 GHz Turbo Boost
- 8 GB
- 4800 MHz
- 512 GB NVMe SSD
- LPDDR5
- 17″
- 1920 × 1200 (Full HD+)
- Windows 11 Home
- No optical drive (external USB optional)
- Wi-Fi 6E, Bluetooth 5.3, USB-C, HDMI, up to 10 hours battery life

Student B

- AMD Ryzen 7 7840HS (8 cores / 16 threads)
- Boost frequency: up to 5.1 GHz
- Infinity Fabric interconnect
- 32 GB RAM
- 6400 MHz
- LPDDR5X
- 1 TB SSD + 1 TB HDD
- 14-inch OLED display
- 2880 × 1800 resolution
- No optical drive
- Windows 11 Pro
- Fingerprint reader, Wi-Fi 7, USB4, Bluetooth 5.4, fast charging

4. Choose the most **suitable computer configuration for each type of user, based on their needs. Use your knowledge of computer architecture and hardware components**.

User Profiles:

1. **Anna** – A high school student who needs a simple computer for browsing, writing essays, and using Google Classroom.
2. **Mark** – A university student in computer science who programs, runs virtual machines, and compiles code.
3. **Olena** – A graphic designer working with Photoshop, Illustrator, and video editing software.
4. **Ivan** – A casual home user who mostly watches videos, checks email, and shops online.
5. **Dmytro** – A gamer who plays modern high-resolution games and streams them online.
6. **Oksana** – A system administrator managing servers and working with databases and remote systems.

a) **Select or describe the ideal specification**, including:
   - CPU
   - RAM
   - Storage (SSD/HDD)
   - GPU (if needed)
   - Monitor type/size
   - Other devices or peripherals

b) **Explain your choice** using vocabulary from the topic.
   Use this model sentence:

"I recommend a system with [component] because this user needs to [activity]."

5. Answer the questions:

- What's the difference between a desktop, laptop, and server in terms of architecture?
- Which component of a computer do you think affects its speed the most? Why?
- Have you ever run out of storage on a computer? How did you solve the problem?
- What do you think is more important: RAM or processor? Why?
- Would you sacrifice storage space to get a faster processor? Why or why not?
- Would you choose a lighter laptop with less performance, or a heavier one with better specs?

PERIPHERAL DEVICES AND THEIR INTERACTION WITH A COMPUTER

Before reading the text discuss the following questions:

- Which peripheral device do you use most often and why?
- What would a computer be like without any peripheral devices?

Peripheral devices are external devices that are connected to a computer to expand its functionality. They help users input data, receive output, and store or transfer information. These devices are essential for communication between the user and the system.

Input devices such as a keyboard, mouse, scanner, and webcam allow users to send data into the computer. For example, a keyboard is used to type text, while a scanner can copy documents and convert them into digital files.

Output devices, like monitors, printers, and speakers, help the computer present information to the user. A monitor displays images and videos, and a printer produces a paper copy of a digital document.

Some devices, like a USB flash drive or an external hard disk, serve both input and output purposes. These are often called **input/output (I/O) devices**, as they can store data from the computer or provide data to it.

Peripheral devices connect to the computer using different **interfaces**, such as USB ports, HDMI cables, Bluetooth, or Wi-Fi. Most modern computers support **plug-and-play** technology, which means devices are automatically detected and ready to use without installing extra drivers.

To work properly, peripherals may require **configuration** through the operating system's settings. For example, users may need to set up a printer by installing the correct drivers or selecting it as the default printing device.

In conclusion, peripheral devices play an important role in making a computer system interactive, useful, and more powerful. Choosing the right devices depends on the user's needs and the type of work being done.

Reading Comprehension Tasks

1. Read the statements and write T (True) or **F (False)**.

1. Peripheral devices are built inside the computer.
2. A scanner and a webcam are examples of input devices.
3. A printer is used to display images and videos.
4. USB flash drives can both send and receive data.
5. Plug-and-play technology requires users to install all drivers manually.
6. Bluetooth and Wi-Fi are wireless ways to connect peripherals.
7. All peripherals work automatically without any configuration.

2. Answer the questions:

1. What are peripheral devices?
2. What are some examples of input devices?
3. How do output devices help users?
4. What is meant by I/O devices?
5. Name at least two types of connection interfaces for peripherals.

6. What may be required to make a printer work properly?

Vocabulary Practice

1. Match the terms with their definitions:

Term	**Definition**
1. Input device	a. A device that displays results from the computer
2. Output device	b. A device used to send data into a computer
3. USB port	c. A physical connection point for peripherals
4. Storage device	d. A device used to save data for future use
5. Bluetooth	e. A wireless technology to connect devices

2. Complete the sentences using the correct word:

(*peripheral, monitor, store, input, port*)

1. A keyboard is an example of an _____ device.
2. We use external hard drives to _____ large files.
3. A _____ is used to display information visually.
4. A USB _____ allows fast data transfer.
5. A printer is a common _____ device.

3. Complete the dialogue using appropriate vocabulary:

A: Hey! I need to connect a new printer to my laptop.
B: Is it wireless or does it use a _____ connection?
A: It uses a USB _____.
B: Great. After you connect it, make sure the _____ is installed so your system can recognize the device.
A: Got it. Thanks! Also, do you know how to connect a wireless mouse via _____?
B: Yes, go to Bluetooth settings and pair the _____.

4. Choose the correct answer:

1. Which of the following is an output device?
a) Scanner
b) Monitor
c) Mouse
d) Keyboard
2. A USB flash drive is used to:
a) Display images
b) Input text
c) Store data
d) Connect the internet
3. What allows communication between a peripheral and the CPU?
a) RAM
b) Driver
c) Power supply
d) Screen
4. Which technology is used for wireless connection?

a) USB
b) HDMI
c) Bluetooth
d) SSD

5. Imagine you are a tech designer. Your task is to create and describe the *ideal computer workstation* for a specific user (e.g., a graphic designer, a gamer, a teacher, or a remote worker).
Step 1: Choose a type of user.
Step 2: Select at least **5 peripheral devices** that best support this user's work.
Step 3: Describe:

- What each device does (input, output, or I/O)
- How it connects to the computer (USB, Bluetooth, etc.)
- Why it is necessary for this setup

Step 4: Present your workstation to the class / group / in writing. You may draw a sketch or make a poster if desired.

Language support / Useful phrases:

- My workstation is designed for a ____.
- The keyboard is used for typing and is connected via _____.
- I chose a ____ monitor because it provides high resolution.
- This setup includes both wired and wireless devices.
- A printer is essential because...
- The webcam allows the user to...
- This device serves as both input and output because...

Example:
My ideal setup is for a freelance graphic designer.
It includes:

- *A **graphics tablet** (input) connected via USB-C – essential for drawing.*
- *A **4K monitor** (output) – displays high-quality images.*
- *A **wireless keyboard and mouse** (input) – connected via Bluetooth.*
- *An **external hard drive** (I/O) – used to store large design files.*
- *A **photo printer** (output) – for printing designs in high quality. This setup helps the designer work comfortably and efficiently.*

Compare the two setups.

1. **Answer the questions:**
    - Which setup uses more input/output devices?
    - Which one is more suitable for mobility, performance, or daily use?
    - Which one is more expensive or efficient?

Useful phrases:

- Setup A includes…, while Setup B features…
- Both setups use…, but only Setup A…
- The printer in Setup B is essential because…
- Setup A is more portable due to…

- Unlike Setup A, Setup B uses wireless devices…
- This configuration is better suited for…

Example: *The gamer's setup is more powerful and designed for high performance, with wired devices for speed. The teacher's setup is more practical and mobile, with easy plug-and-play functionality and quieter components.*
Unlike Setup A, Setup B uses wireless peripherals to save space and increase flexibility.

Glossary

Names of Peripheral Devices – Назви периферійних пристроїв

Input Devices – Пристрої введення:

- **keyboard** – клавіатура
- **mouse** – миша
- **scanner** – сканер
- **microphone** – мікрофон
- **webcam** – вебкамера
- **touchscreen** – сенсорний екран

Output Devices – Пристрої виведення:

- **monitor / display** – монітор
- **printer** – принтер
- **speakers** – динаміки
- **headphones** – навушники
- **projector** – проєктор

Input/Output (I/O) Devices – Пристрої введення/виведення:

- **external hard drive** – зовнішній жорсткий диск
- **USB flash drive** – флеш-накопичувач
- **modem** – модем
- **network card** – мережева карта
- **docking station** – док-станція

2. Connection Types – Типи підключення

- **USB port** – USB-порт
- **HDMI** – HDMI
- **Bluetooth** – Bluetooth
- **wireless / Wi-Fi** – бездротовий зв'язок
- **Ethernet cable** – мережевий кабель
- **audio jack / jack** – аудіороз'єм
- **power supply** – блок живлення

3. Verbs Describing Interaction – Дієслова, що описують взаємодію

- **connect / plug in** – під'єднувати
- **disconnect / unplug** – від'єднувати
- **install** – встановлювати
- **configure / set up** – налаштовувати
- **detect** – виявляти
- **recognize** – розпізнавати
- **transfer (data)** – передавати (дані)

- **print / scan / record / playback** – друкувати / сканувати / записувати / відтворювати

4. Adjectives to Describe Devices – Прикметники для опису пристроїв

- **wireless / wired** – бездротовий / дротовий
- **external / internal** – зовнішній / внутрішній
- **portable** – портативний
- **compatible / incompatible** – сумісний / несумісний
- **responsive** – чутливий
- **multifunctional** – багатофункціональний
- **durable** – міцний, довговічний

5. Useful Description Structures – Корисні мовні конструкції для опису

- *This device is used for...* – Цей пристрій використовується для...
- *It connects to the computer via...* – Він під'єднується до комп'ютера через...
- *It allows users to...* – Він дозволяє користувачам...
- *It transfers data between...* – Він передає дані між...
- *It supports wireless communication.* – Він підтримує бездротовий зв'язок.
- *It can be configured through the system settings.* – Його можна налаштувати через системні параметри.

6. Thematic Phrases – Тематичні словосполучення та вирази

- **peripheral compatibility** – сумісність периферійних пристроїв
- **plug-and-play device** – пристрій з автоматичним встановленням
- **hardware interface** – апаратний інтерфейс
- **user interface device** – пристрій користувацького інтерфейсу
- **signal transmission** – передача сигналу
- **data input/output** – введення/виведення даних
- **external storage** – зовнішнє сховище

OPERATING SYSTEMS: TYPES, FUNCTIONS, AND PRINCIPLES OF OPERATION

"A computer without an operating system is like a body without a brain."

Discuss:

- Do you agree with this comparison? Why or why not?
- Which operating system do you use and what do you like about it?

An **operating system (OS)** is the main software that manages a computer's hardware and software resources. It acts as an intermediary between users and the computer hardware, allowing people to interact with the system easily.

Types of Operating Systems

Batch Operating Systems

In batch systems, jobs with similar needs are grouped and run without user interaction. This type is mostly used in older mainframe computers.

Time-Sharing Operating Systems

Time-sharing OS allows multiple users to use the computer at the same time by sharing system resources. Each user gets a small time slot for processing.

Distributed Operating Systems

These OS manage a group of independent computers and make them appear as a single system. They share tasks and resources across the network.

Real-Time Operating Systems (RTOS)

RTOS are designed for real-time applications that require immediate processing, such as in medical devices or industrial robots.

Mobile Operating Systems

Mobile OS like Android and iOS control smartphones and tablets, managing their hardware and apps.

Desktop Operating Systems

Common desktop OS include Windows, macOS, and Linux. They support a wide range of applications for personal and professional use.

Functions of Operating Systems

- **Process Management:** The OS handles the creation, scheduling, and termination of processes (running programs).
- **Memory Management:** It manages the computer's memory, allocating space for programs and data while preventing conflicts.
- **File System Management:** The OS organizes files on storage devices and controls access permissions.
- **Device Management:** It controls input/output devices like keyboards, printers, and disk drives.
- **User Interface:** Most OS provide graphical user interfaces (GUI) to make interaction easier.
- **Security and Access Control:** The OS protects data and restricts unauthorized access.

Principles of Operation

Operating systems work by managing hardware resources and providing a stable environment for applications to run. When a user runs a program, the OS loads it into memory, allocates resources, and controls its execution.
The OS uses **system calls**—special functions that programs use to request services from the OS. For example, opening a file or sending data to a printer requires a system call.
Modern OS support **multitasking**, which allows multiple programs to run simultaneously. They also use **virtual memory**, a technique that uses disk space to extend the available RAM.

Glossary

- **operating system** – операційна система
- **software** – програмне забезпечення
- **hardware** – апаратне забезпечення
- **user interface** – користувацький інтерфейс
- **process management** – управління процесами
- **memory management** – управління пам'яттю
- **file system** – файлова система
- **multitasking** – багатозадачність
- **real-time operating system** – операційна система реального часу
- **batch processing system** – пакетна обробка
- **network operating system** – мережева операційна система
- **command line interface** – командний рядок
- **graphical user interface** – графічний інтерфейс користувача
- **kernel** – ядро
- **task scheduling** – планування завдань
- **resource allocation** – розподіл ресурсів
- **security** – безпека
- **virtual memory** – віртуальна пам'ять
- **input/output management** – управління введенням/виведенням

Reading Comprehension

1. Answer the questions:

1. What is an operating system?
2. Name three main functions of an operating system.
3. What are the two main types of user interfaces mentioned?
4. What does process management involve?
5. What is multitasking in an operating system?
6. Give an example of a real-time operating system.
7. What is the role of device drivers?
8. How does memory management help in an operating system?
9. What is virtual memory?
10. What does file system management do?
11. What is the difference between batch processing and network operating systems?
12. What is kernel in an operating system?
13. Why is security important in operating systems?
14. How does task scheduling improve system performance?

15. What is the purpose of input/output management?

Vocabulary Practice

1. Fill in the wright word:

1. The _____ is the core part of an operating system that manages hardware and resources.
2. A _____ user interface shows icons and windows, making the system easier to use.
3. _____ management allocates memory to running programs.
4. _____ drivers help the operating system communicate with external devices.
5. When the computer runs multiple programs simultaneously, it is called _____.
6. _____ memory extends RAM by using disk space.
7. A _____ system processes tasks in groups without user interaction.
8. The _____ manages how files and data are stored on a disk.
9. The operating system controls the _____ between the user and the hardware.
10. Security in an operating system protects against _____ access.

2. Guess the term:

1. The part of the OS that schedules CPU time for programs.
2. A software interface that uses text commands.
3. A technique to make a computer feel like it has more RAM than physically installed.
4. Software that allows the OS to use hardware like printers or keyboards.
5. An OS type that supports communication between multiple computers.

3. Translate into English:

1. Керування пам’яттю
2. Графічний інтерфейс користувача
3. Багатозадачність
4. Драйвер пристрою
5. Віртуальна пам’ять
6. Ядро операційної системи
7. Захист від несанкціонованого доступу
8. Обробка пакетів
9. Система файлів
10. Керування введенням/виведенням

4. Design Your Own Operating System

Imagine you are a software engineer tasked with designing a new operating system (OS). Using the terms you’ve learned, describe the following features of your OS:

1. What kind of **kernel** will your OS use? Explain its role in your system.
2. Describe the **user interface** of your OS. Will it have a **graphical user interface** (GUI), a **command-line interface** (CLI), or both? Why?
3. How will your OS handle **memory management**? Will it support **virtual memory**?
4. Explain how your OS will manage **multitasking**.
5. Describe how your OS will use **device drivers** to communicate with peripheral devices.

6. What kind of **file system** will your OS support for storing and organizing data?
7. How will your OS ensure **security** and protect against **unauthorized access**?
8. Will your OS support **batch processing**? How would this be useful?
9. How will your OS manage **input/output** operations between hardware and software?
10. Will your OS be a **network operating system**? Explain how it will support communication between computers.

Write a short paragraph (3-5 sentences) for each question using the key terms. Be creative and explain your ideas clearly.

TECHNICAL SUPPORT AND MAINTENANCE OF COMPUTER SYSTEMS

Before you read the text discuss the questions:

1. Have you ever had to fix a computer problem on your own? What did you do?
2. Why is preventive maintenance important in IT?
3. What are common technical issues users face in offices?

Technical support and maintenance are very important for the good work of computer systems in any company. Technical support teams help users by finding, fixing, and solving problems with hardware, software, and networks. They often use tools like remote **desktop programs** to connect to users' computers and fix problems without being there in person. It is important to respond quickly and communicate well to reduce **system downtime** and avoid user frustration.

Maintenance means doing tasks that keep computer systems working well and stop problems before they happen. These tasks include **installing software updates** and **patches** to **fix errors** and **security problems**, **running antivirus scans** to protect from viruses, and **cleaning up disk space** to make storage better. **Hardware maintenance** means cleaning inside parts, checking if the computer is too hot, and changing old parts like hard drives or fans.

You should have **regular backups** so that important data can be **saved and restored** if the computer breaks, files are accidentally deleted, or there is a cyberattack like **ransomware**. IT specialists plan backup schedules and use cloud storage or external drives to keep data safe.

Monitoring system performance with special tools helps find problems early. IT professionals **check logs**, watch resource use, and control the network to keep the system healthy.

Good technical support and maintenance make systems more reliable, safer, and users happier. In busy IT environments, well-maintained systems **reduce risks** and help keep the business working. Whether managing one computer or a big company network, good technical support and maintenance are very important for IT infrastructure.

Reading Comprehension

1. Read the text and write *True* or *False* according to the text.

1. Technical support teams only fix problems with hardware.
2. Remote desktop tools allow specialists to work on a computer from far away.
3. Cleaning inside parts of a computer is not necessary.
4. Backups help protect important data from cyberattacks.
5. Monitoring system performance helps detect problems early.

2. Answer the Questions:

1. What does technical support help users with?
2. What do technicians use to fix problems remotely?
3. Why is antivirus software important?
4. What are backups used for?
5. What do IT professionals monitor to keep systems healthy?

Glossary

technical support — технічна підтримка
maintenance — обслуговування / технічне обслуговування
hardware — апаратне забезпечення
software — програмне забезпечення
remote desktop — віддалений робочий стіл
antivirus scan — антивірусна перевірка
update — оновлення
patch — патч, виправлення
storage — зберігання даних
disk cleanup — очищення диска
backup — резервне копіювання
cloud storage — хмарне зберігання
external drive — зовнішній накопичувач
ransomware — програма-вимагач
performance monitoring — моніторинг продуктивності
log — журнал подій
resource usage — використання ресурсів
network control — контроль мережі
system reliability — надійність системи
infrastructure — інфраструктура

Vocabulary Practice

1. Match the term with its definition:

technical support	A. A physical part of a computer
maintenance	B. Regular check and care for computer systems
backup	C. Help users solve problems with computers
virus	D. To check the system's performance
system update	E. The risk of losing files or documents
hardware	F. A saved copy of files
software	G. Programs that run on a computer
remote access	H. A harmful program that can damage data
monitoring	I. Fixes or improvements to programs or systems
data loss	J. Controlling a computer from another location

2. Complete the sentences with the correct word:

Words to use:

monitoring, antivirus, backup, remote, update, maintenance

You should run an _____ scan regularly to keep your system safe.

We use _____ tools to help users who are working from home.
Regular _____ helps your computer work better and longer.
It's important to make a _____ of your data before updating the system.
System _____ can fix bugs and improve performance.
The IT team is _____ the network to find any problems.

3. Choose the correct option (A, B, or C):
What is technical support mainly responsible for?
A. Building websites
B. Helping users with computer problems
C. Installing air conditioners

A system update usually:
A. Deletes all files
B. Adds new games
C. Fixes software bugs and improves security

Which of the following is hardware?
A. A printer
B. Microsoft Word
C. A mobile app

4. Describe a technical support case
Imagine you are an IT support technician. A user contacts you with one of the following problems (choose one or create your own).
Describe:

- The problem the user is facing.
- What steps you would take to diagnose the issue.
- What tools or methods you would use.
- How you would solve the problem.
- How you would prevent the problem from happening again.

Choose a situation or make up your own:

1. A user's computer won't start.
2. The printer is not responding.
3. A virus has infected a system.
4. The internet connection is unstable.
5. The computer is very slow and freezes.

Write 8–10 sentences using the key vocabulary from the glossary, such as:
technical support, diagnose, hardware, software, malfunction, update, antivirus, backup, remote access, etc.

Sample Answer:
A user called and said their computer was very slow and kept freezing. As an IT support technician, I asked a few questions to understand the issue. First, I checked if … .Then, I used remote access to diagnose the problem. I found that ... I closed unnecessary programs and ran a full antivirus scan. The scan found …. I also … and recommended …. Finally, I advised the user to ….

SOFTWARE DEVELOPMENT LIFE CYCLE

"Building software without a plan is like building a house without a blueprint."

Discuss:

- What do you think might go wrong without a proper software development process?

The Software Development Life Cycle (SDLC) is a process used by developers to create high-quality software. It includes several important stages that help manage the project from the beginning to the end. Each stage has specific tasks and goals to make sure the software meets users' needs.

1. **Planning**

   In this first stage, the team defines the project goals and requirements. They decide what the software should do and who will use it. Planning also includes estimating time, costs, and resources.

2. **Analysis**

   During analysis, developers gather detailed information about the system requirements. They study how the current system works and what improvements are needed. This helps create a clear list of features for the new software.

3. **Design**

   In the design stage, the team creates the software architecture. They design how the system will work and how different parts will interact. This can include user interface design, database structure, and security plans.

4. **Development**

   This is the coding phase, where programmers write the actual code for the software. Developers follow the design documents and use programming languages to build the system.

5. **Testing**

   Testing is a crucial step to find and fix errors or bugs in the software. Testers check if the software works as expected and meets all requirements. They test functionality, usability, and performance.

6. **Deployment**

   Once testing is complete and the software is approved, it is released to users. Deployment means installing and configuring the software in the user environment.

7. **Maintenance**

   After deployment, the software needs ongoing support. Maintenance includes fixing bugs, updating features, and improving performance based on user feedback.

Reading Comprehension

1. Read the text and identify how many stages the software development life cycle has. Name them.

2. Determine at which stage:

a) Project goals and requirements are defined.
b) Detailed information about the system is collected.
c) The actual program code is written.
d) The software is tested and bugs are fixed.
e) The software is installed in the users' working environment.
f) Maintenance and updates are performed.

3. Answer the questions:

a) Why is planning important at the start of the SDLC?
b) What happens during software testing?
c) What is the goal of the maintenance stage?
d) How does design help developers?

Glossary

- **software development life cycle (sdlc)** – життєвий цикл розробки програмного забезпечення
- **planning** – планування
- **analysis** – аналіз
- **design** – проєктування
- **implementation** – впровадження, реалізація
- **testing** – тестування
- **maintenance** – обслуговування, підтримка
- **requirement gathering** – збір вимог
- **system design** – системне проєктування
- **coding** – кодування
- **debugging** – виправлення помилок
- **deployment** – розгортання
- **bug** – помилка в програмі
- **user feedback** – відгуки користувачів
- **software update** – оновлення програмного забезпечення
- **quality assurance (qa)** – забезпечення якості
- **project management** – управління проєктом
- **documentation** – документація
- **version control** – контроль версій
- **testing environment** – середовище тестування

Vocabulary Practice

1. Match the words with their definitions

Match the term on the left with the correct definition on the right.

Terms	**Definitions**
1. debugging	a) collecting information about needs
2. planning	b) fixing errors in the code
3. deployment	c) creating software design

Terms	Definitions
4. requirement gathering	d) releasing the software to users
5. design	e) managing a software project
6. maintenance	f) testing and fixing problems after release
7. coding	g) writing the source code
8. quality assurance	h) process to make sure software works well

2. Fill in the blanks with the correct word

Use words from the glossary: *testing, implementation, analysis, documentation, version control, user feedback*

1. After the _____ phase, developers start writing the code.
2. The _____ team checks for bugs before release.
3. During _____, software updates and fixes are made.
4. Clear _____ helps other developers understand the project.
5. _____ helps track changes in the software files.
6. _____ from users helps improve the software.

3. Choose the correct option

1. The **first step** in SDLC is:

a) testing
b) planning
c) deployment

2. When a software is **released** to users, it is called:

a) coding
b) deployment
c) debugging

3. **Fixing errors** in the code is called:

a) requirement gathering
b) debugging
c) documentation

4. What is the main goal of the **analysis** stage?

a) To test software for bugs
b) To gather detailed system requirements
c) To build the system architecture

5. What happens during the **design** phase?

a) Programmers write the code
b) Testers check the usability
c) The system structure and UI are planned

6. What is done during the **development** stage?

a) The team gathers feedback
b) The team writes the source code
c) The team creates test cases

7. Which stage includes **user interface** and **database** planning?

a) Planning

b) Design
c) Testing
8. What is the main purpose of the **testing** phase?
a) To define system requirements
b) To fix user feedback
c) To find and fix bugs
9. What does **maintenance** include?
a) Writing new code from scratch
b) Releasing a new product
c) Updating features and fixing bugs
10. During **planning**, the team:
    a) Creates interface designs
    b) Defines goals, requirements, and estimates costs
    c) Installs software in user environments

4. Use the following words to make your own sentences about software development:

- maintenance
- version control
- user feedback
- project management
- quality assurance

5. Write a short description (3-4 sentences) of the stage you find most interesting or important, using vocabulary from the text.

6. Imagine you are a project manager working on a new software product. Describe the steps you will take during the software development life cycle (SDLC). Explain why each step is important and how it contributes to the success of the project. Use the vocabulary from the lesson (e.g., planning, implementation, testing, deployment, maintenance).

Guiding questions:

- What happens during the planning phase?
- How do you ensure the software meets quality standards?
- Why is user feedback important?
- What challenges might occur during maintenance?

Example start:

"As a project manager, the first step I take is planning. During this phase, I gather requirements from the client and create a roadmap for the project. This is important because it sets clear goals and deadlines. Next, we move to implementation, where developers write the code…"

USER INTERFACE AND USER EXPERIENCE DESIGN

Discuss:

- Have you ever thought that some apps or web-sites are enjoyable and easy to use and some are not?
- What frustrates you most when using badly designed websites?

In software and web development, UI (User Interface) and UX (User Experience) design are essential for creating products that are functional, accessible, and user-friendly. These two areas often work together, but they focus on different aspects of the user's interaction with a digital product.

UI Design: Visual and Interactive Elements

UI design refers to the visual layout and interactive parts of an application or website. It includes:

- **Typography** – the style and appearance of the text.
- **Color scheme** – a consistent set of colors that matches the brand and supports readability.
- **Layout and grid systems** – structures that organize content and elements on the screen.
- **Interactive components** – buttons, sliders, input fields, icons, and dropdown menus.

UI designers use **design systems** to maintain consistency across the product. They also apply **visual hierarchy** to guide users' attention and **responsive design** to make interfaces work on different screen sizes (desktops, tablets, smartphones).

UX Design: The Overall User Journey

UX design focuses on how users feel when they use a product. It is about usability, accessibility, and satisfaction. Key concepts in UX design include:

- **User personas** – fictional profiles representing different types of users.
- **User flows** – the path a user follows to complete a task.
- **Wireframes** – low-fidelity sketches that show layout and functionality.
- **Prototypes** – interactive mockups used for testing design ideas.
- **Usability testing** – observing how real users interact with the product to find problems.

UX designers also consider **information architecture** – how content and navigation are structured – and apply principles such as **consistency**, **feedback**, and **affordance** (making it clear how elements should be used).

What to Consider in UI/UX Design

When designing interfaces, professionals need to think about:

- **Accessibility** – ensuring the product can be used by people with disabilities (e.g. screen readers, contrast ratios).
- **Mobile-first design** – designing for small screens first, then scaling up.
- **Performance** – fast loading times improve user satisfaction.

- **Microinteractions** – small animations or feedback that help users understand what's happening.
- **Error prevention and handling** – designing forms and workflows to reduce mistakes and give clear messages when problems occur.

Conclusion

UI and UX design are not only about how something looks or feels. They are about solving real user problems in effective and elegant ways. Understanding concepts like wireframes, responsive design, and usability testing helps developers and designers build better software. A well-designed product saves time, reduces frustration, and increases user loyalty.

Glossary

- **user interface (ui)** – інтерфейс користувача
- **user experience (ux)** – користувацький досвід
- **layout** – макет, розташування елементів
- **typography** – типографіка, оформлення тексту
- **color scheme** – кольорова схема
- **grid** – сітка
- **wireframe** – каркас (структура) інтерфейсу
- **prototype** – прототип
- **user flow** – шлях користувача
- **microinteraction** – мікровзаємодія
- **usability testing** – тестування зручності використання
- **navigation** – навігація
- **consistency** – послідовність
- **accessibility** – доступність
- **screen reader** – екранний зчитувач
- **responsive design** – адаптивний дизайн
- **feedback** – відгук, зворотний зв'язок
- **visual hierarchy** – візуальна ієрархія
- **onboarding** – адаптація користувача
- **call to action (cta)** – заклик до дії
- **mockup** – макет (візуалізований дизайн)

Reading Comprehension

1. **Read the statements and decide whether they are True or False according to the text.**

1. UI design is mainly focused on how the product works and how users feel.
2. Typography and color schemes are part of UI design.
3. Wireframes are interactive prototypes used in usability testing.
4. UX design is only about visual elements.
5. Responsive design helps adapt the layout for different devices.
6. Microinteractions help users understand interface behavior.
7. Accessibility is not important in UI/UX design.

2. Answer the questions:

1. What does UI design focus on?
2. Name at least three elements included in UI design.
3. What is a user persona?
4. Why is usability testing important?
5. What is the purpose of microinteractions?

Vocabulary Practice

1. Match the terms with their definitions:

1. A system of rows and columns used to organize design elements.
2. A clickable element that encourages a specific action (e.g., "Sign Up").
3. The emotional and practical response a user has when interacting with a product.
4. A structured guide showing the basic structure of an app or website without visual styling.
5. A detailed visual design of an interface, but not interactive.
6. The art of arranging text in a readable and visually pleasing way.
7. Colors used in a design to create contrast, branding, and mood.
8. A basic interactive model used to test user flows and functionality.
9. How a user moves through different steps to complete a task in a digital product.
10. The practice of helping new users learn how to use an app or service.
11. An assistive tool that reads screen content aloud for users with vision impairments.
12. The ability for users with disabilities to effectively use a product.
13. A minor animation or event triggered by user actions (like a button hover).
14. Testing how easy and effective a system is for real users.
15. The organization of content to show what's most important visually.
16. The design that adapts to various screen sizes and devices.
17. Arrangement of elements on a page or screen.
18. Making sure that design elements behave and appear similarly across the interface.
19. Information provided to users about their actions or errors.
20. Menus and paths used to explore the system.
21. The part of the system the user directly interacts with (buttons, screens, etc.).

A. layout
B. typography
C. grid
D. wireframe
E. prototype
F. mockup
G. color scheme
H. user flow
I. call to action (CTA)
J. onboarding
K. accessibility
L. screen reader
M. microinteraction
N. usability testing
O. visual hierarchy
P. responsive design
Q. navigation
R. consistency
S. feedback
T. user interface (UI)
U. user experience (UX)

2. Fill in the blanks with suitable terms:

1. Designers use a _____ to align text, images, and buttons on the screen.
2. A _____ helps test the app's main flow before development starts.
3. _____ is important so people with vision or motor issues can use your app.
4. The _____ controls how titles and body text are displayed.
5. We use a clear _____ so users know where to go next.
6. A good _____ design means the site works well on phones, tablets, and desktops.
7. The designer created a colorful _____ that fits the brand.
8. A _____ makes it easier to imagine the final visual version of the app.
9. _____ helps guide users through the interface when they first install it.
10. A _____ like "Buy now" helps lead users to take action.

3. Guess the design element

You are a junior UI/UX designer attending a project review meeting. Your senior designer is giving feedback on different parts of the user interface design you created. Sometimes the comments are about things that need improvement, and sometimes they praise good work. Your task is to listen carefully and guess which design element the senior is referring to based on their remarks.
Read each sentence carefully. It describes or gives feedback about a part of a user interface design. Choose the correct design element from the list below.

Design elements:

- typography
- grid
- color scheme
- button
- white space
- navigation bar
- wireframe
- contrast
- user flow
- icon

Feedback:

1. "This is too cluttered. Try leaving more empty area around the content so it's easier to focus."
2. "These headings and paragraphs use inconsistent fonts and sizes. Try to unify them."
3. "Nice work! The visual hierarchy is clear thanks to the way you've aligned content in columns and rows."
4. "Users are getting confused and can't easily move from page to page. You should improve this."

5. "This shape and symbol are immediately recognizable, and users know what it represents."
6. "This preview doesn’t include colors or images yet, just a simple outline of the layout."
7. "Well done! These colors work great together and support accessibility."
8. "I can barely read the text over that background. Try increasing the difference between them."
9. "People aren’t noticing the main call-to-action. Make this more visible and clickable."
10. "This menu at the top helps users quickly find what they need on the site."

4. Describe a good or bad experience you’ve had with a mobile app or website. Use at least 5 UI/UX terms from the glossary (for example: layout, color scheme, navigation, CTA, consistency, feedback, etc.).

Write 5–7 sentences.

5. Imagine you are designing a mobile app for your university.

- What UI elements would you include on the home screen?
- What would you do to improve UX for students?
- Mention at least two accessibility features you would add.

6. Explain how you understand the following quotes. Do you agree with them?

“A user interface is like a joke. If you have to explain it, it’s not that good.”

— Unknown

“Good design is obvious. Great design is transparent.”

— Joe Sparano

“Design is not just what it looks like and feels like. Design is how it works.”

— Steve Jobs

IMAGES IN GRAPHIC DESIGN

"Design is the silent ambassador of your brand." – Paul Rand

Discuss:

- What does this quote mean in the context of visual communication?
- Do you agree that images influence the way people perceive a product or message?

Images play a crucial role in graphic design. They help communicate messages, create emotions, and attract attention. There are different types of images used in design, such as **photographs**, **illustrations**, **icons**, and **logos**.

Photographs are realistic pictures taken with cameras. They are often used to show products, people, or places. **Illustrations** are drawings or digital artwork created by designers. They can be simple or complex and are useful for explaining ideas or creating unique visuals.

Icons are small, simple images that represent objects, actions, or concepts. They help users **navigate websites** and apps easily. **Logos** are special images that represent a brand or company. A **well-designed logo** is memorable and helps build a company's identity.

When using images in design, it is important to consider **image resolution** and **quality**. **High-resolution images** look clear and **sharp**, while **low-resolution images** can appear **blurry** or **pixelated**. Designers also pay attention to **image formats**, such as **JPEG**, **PNG**, and **SVG**, because each format has different uses and benefits.

Another important factor is **color scheme**. Images should match the color scheme of the overall design to create harmony and balance. Designers often use **color correction** and **photo retouching** tools in software like Adobe Photoshop or Illustrator to improve colors, **remove backgrounds**, or combine several images into one.

The use of **transparency** and **layering** techniques allows designers to overlay images and create depth in a composition. The **grid system** helps organize images and other elements evenly, maintaining alignment and consistency.

Finally, designers must think about the **image placement** and **white space** around images. Images should support the content **without overwhelming** the design. Proper use of white space helps make the design look clean and professional.

In summary, images are essential elements in graphic design. They enhance communication, support the message, and create an attractive visual experience for users.

Glossary

- **images** – зображення
- **graphic design** – графічний дизайн
- **photographs** – фотографії
- **illustrations** – ілюстрації
- **icons** – іконки

- **logos** – логотипи
- **image resolution** – роздільна здатність зображення
- **quality** – якість
- **high-resolution** – висока роздільна здатність
- **low-resolution** – низька роздільна здатність
- **pixelated** – піксельний, з видимими пікселями
- **image formats** – формати зображень
- **JPEG** – формат зображень JPEG
- **PNG** – формат зображень PNG
- **SVG** – формат векторних зображень SVG
- **color scheme** – колірна схема
- **color correction** – корекція кольору
- **photo retouching** – ретушування фотографій
- **transparency** – прозорість
- **layering** – накладання шарів
- **grid system** – система сітки
- **alignment** – вирівнювання
- **consistency** – послідовність, узгодженість
- **image placement** – розміщення зображень
- **white space** – порожній простір (білий простір)
- **composition** – композиція
- **visuals** – візуальні елементи
- **brand** – бренд
- **identity** – ідентичність

Reading Comprehension

1. Choose the correct answer:

a) What type of image is usually a realistic picture taken with a camera?
- illustration
- photograph
- icon
- logo

b) Which image type is designed to represent a brand or company?
- photograph
- logo
- icon
- illustration

c) What kind of image is used to help users easily navigate websites and apps?
- photograph
- logo
- icon
- illustration

d) Which image format is commonly used for images with transparent backgrounds?
- JPEG
- PNG

- BMP
- TIFF

2. True or False:

a) Low-resolution images look clear and sharp.
b) Color correction and photo retouching can improve the quality of images.
c) Transparency in images allows layering and depth in design.
d) White space helps make the design look cluttered and confusing.
e) Illustrations can be both simple and complex digital artwork.

Vocabulary Practice

1. Fill in the blanks with words from the text:

a) Designers often use _____ tools like Adobe Photoshop to improve colors.
b) The _____ system helps organize images evenly in a design.
c) _____ are small images that represent objects or actions.
d) A well-designed _____ helps build a company's identity.
e) High _____ images look sharp, while low _____ images appear blurry.
f) Using _____ and layering techniques allows designers to create depth.

2. Match the terms with their definitions:

1. Empty areas around images that help the design look clean
2. Drawings or digital artwork created by designers
3. Small simple images representing actions or concepts
4. Technique that allows images to overlay creating depth
5. The organization system used to align elements evenly
6. A set of colors chosen to create harmony in design

a) Illustration
b) Icon
c) Transparency
d) White space
e) Grid
f) Color scheme

2. Discuss the following questions

1. **Explain why it is important to use high-resolution images in graphic design.**

- What happens if low-resolution images are used?
- How can image quality affect user experience?

2. **Describe how colour schemes affect the visual appeal of a design.**

- Why should images match the colour scheme of the overall design?
- How can colour harmony influence the mood or message of a design?

3. **Discuss the role of logos in branding and marketing.**

- Why is a logo important for a company?
- How can a well-designed logo influence customer perception?
- What makes a logo memorable?

4. Design your own brand logo and image concept

1. Imagine you are creating a new brand for a company or product. Think about what the brand represents (for example, technology, fashion, education, or food).
2. Write a short description (5–7 sentences) of your brand's identity and message. Include what emotions or ideas you want your brand to communicate.
3. Choose and describe:
    - What type of **logo** would best represent your brand? (e.g., icon-based, text-based, or a combination)
    - What kinds of **images** (photographs, illustrations, icons) would you use in your brand's design?
    - What **color scheme** would you select and why? How does it support the brand's message?
4. Explain how you would use **white space**, **grid layout**, and **transparency** in your design to make it clear and professional.
5. Optionally, sketch your logo or image concept on paper or describe it in detail.

Example starter:

"My brand is an eco-friendly clothing company. I want the logo to show nature and sustainability, so I will use a simple leaf icon combined with clean, modern text. The images will mostly be photographs of natural landscapes and people wearing the clothes outdoors. I will choose green and earth tones for the color scheme because these colors symbolize growth and health. I plan to use plenty of white space around the images to make the design feel fresh and clean. A grid layout will help keep everything organized and balanced. I also want to use transparency effects to layer the leaf icon over photos subtly."

WEB DEVELOPMENT: FRONTEND (HTML, CSS, JAVASCRIPT)

"HTML is what you say, CSS is how you say it, and JavaScript is what you do with it."
"Without HTML, there is nothing. Without CSS, it is ugly. Without JavaScript, it is dead."

Discuss:

- Is it an accurate description of different roles of these technologies?

Web development is the process of creating **websites** and **web applications**. **Frontend development** refers to the part of web development that focuses on the **user interface (UI)** and **user experience (UX)** — what users see and interact with in their web browsers.

The three main technologies used in frontend development are **HTML**, **CSS**, and **JavaScript**.

HTML (HyperText Markup Language) is the foundation of every web page. It structures the content by defining **elements** such as **headings**, **paragraphs**, **links**, **images**, and **lists**. HTML uses **tags** like <h1>, <p>, <a>, and <img> to organize the content.

CSS (Cascading Style Sheets) is used to **style** and **format** the HTML elements. With CSS, developers can change **colors**, **fonts**, **layouts**, and **spacing** to make the website look attractive and user-friendly. CSS allows control over the **design**, including **responsive layouts** that adapt to different screen sizes such as **desktops**, **tablets**, and **smartphones**.

JavaScript is a **programming language** that adds **interactivity** and **dynamic behavior** to web pages. It allows developers to create features such as **image sliders**, **form validation**, **dropdown menus**, **animations**, and **real-time updates**. JavaScript runs directly in the browser, making websites more engaging and interactive.

Frontend developers use various **tools** and **frameworks** to improve their workflow and create modern web applications.

Other important frontend concepts include:

- **DOM (Document Object Model)** — the programming interface for HTML and XML documents, representing the page structure.
- **API (Application Programming Interface)** — allows frontend code to communicate with backend servers.
- **Cross-browser compatibility** — ensuring the website works well in different web browsers.
- **Debugging** — the process of finding and fixing errors in the code.
- **Version control** — tools like **Git** help track changes in code during development.

Together, **HTML**, **CSS**, and **JavaScript** work to create the complete frontend experience of a website. Good frontend development ensures that websites are not only visually appealing but also **accessible** and **user-friendly** for all users.

Glossary

- **frontend development** — фронтенд розробка
- **user interface (UI)** — користувацький інтерфейс
- **user experience (UX)** — користувацький досвід
- **html (hypertext markup language)** — гіпертекстова мова розмітки
- **css (cascading style sheets)** — каскадні таблиці стилів
- **element** — елемент
- **tag** — тег
- **style** — стиль
- **format** — форматування
- **font** — шрифт
- **layout** — макет, розташування
- **spacing** — відступи, інтервали
- **responsive layout** — адаптивний макет
- **programming language** — мова програмування
- **interactivity** — інтерактивність
- **dynamic behavior** — динамічна поведінка
- **image slider** — слайдер зображень
- **form validation** — перевірка форми (валидація)
- **dropdown menu** — випадаюче меню
- **animation** — анімація
- **real-time update** — оновлення в реальному часі
- **tool** — інструмент
- **framework** — фреймворк, каркас (програмний)
- **DOM (document object model)** — модель об’єктів документа
- **API (application programming interface)** — програмний інтерфейс застосунку
- **cross-browser compatibility** — сумісність між браузерами
- **debugging** — відлагодження, налагодження, виправлення помилок
- **version control** — контроль версій
- **accessible** — доступний (для користувачів з обмеженими можливостями)
- **user-friendly** — зручний для користувача

Reading Comprehension

1. Read the statements and say if they are True or False based on the text.

1. CSS helps to create the logic of the website.
2. JavaScript is used to add interaction to a webpage.
3. An API connects two frontend websites.
4. Debugging means creating new code.
5. Cross-browser compatibility means the site works only in Chrome.
6. HTML is used for layout and styling.
7. Frontend development focuses on how the website looks and works for users.
8. HTML, CSS, and JavaScript are used together to build the frontend of a website.

9. Developers can use JavaScript to make changes to a webpage without reloading it.
10. APIs help frontend applications get data from the backend server.
11. Version control helps teams write code faster but doesn't track changes.
12. Debugging is only used by backend developers.
13. Frontend developers don’t need to test websites on different devices.

2. Answer the questions:

1. What is the main goal of frontend development?
2. What does HTML do in a web page?
3. How does CSS improve the appearance of a website?
4. What are some interactive features JavaScript can create?
5. Why is responsive design important?
6. What does the DOM represent?
7. What is the role of APIs in frontend development?
8. Why is cross-browser compatibility important?
9. What is debugging and when is it used?
10. What tool is commonly used for version control?

3. Put the steps in the correct order when creating a simple webpage:

(a) Add styles with CSS
(b) Write the HTML structure
(c) Test the page in different browsers
(d) Add interactivity using JavaScript

4. Complete the sentences using your own words:

1. HTML is important because...
2. Without CSS, websites would look...
3. JavaScript allows users to...
4. The DOM helps developers...
5. Debugging is necessary when...

Vocabulary Practice

1. Match the term (A – H) with its definition (1 – 8)

1. A system of organizing content on a web page
2. A graphical feature that makes objects move or change appearance
3. A selectable list that appears when you click a menu item
4. A basic part of a webpage, like a button or text box
5. A style or design of text used in documents and websites
6. A system of writing instructions for computers
7. A method of checking if user input is correct
8. A flexible web design that adapts to different screen sizes

A. element
B. layout
C. font
D. form validation
E. dropdown menu
F. animation
G. programming language
H. responsive layout

2: Fill in the blanks. Use the correct word to complete the sentences.

element | tag | color | image slider | spacing | interactivity | style | dynamic behavior

1. The <h1> _____ defines the title of a section on a webpage.
2. Good use of _____ makes a website more readable and organized.
3. An _____ is a basic part of the HTML structure.
4. The site has an _____ that displays product photos automatically.
5. Designers usually pick a _____ scheme that matches the brand.
6. JavaScript is used to add _____ to a webpage.
7. CSS is used to control the _____ and appearance of elements.
8. _____ allows a website to react to user actions in real time.

3. Choose the correct option to complete each sentence.

1. A _____ is used to structure content on a webpage.
   a) font
   b) layout
   c) animation
2. The _____ changes the look of text on the website.
   a) tag
   b) programming language
   c) font
3. JavaScript is mainly used to add _____.
   a) style
   b) interactivity
   c) spacing
4. A _____ checks if the email address in a form is written correctly.
   a) layout
   b) form validation
   c) dropdown menu

5. What will you fix?

Two frontend developers are reviewing a web page together. The senior developer points out some mistakes. You are the junior developer. Reply to each comment by writing a sentence using the given word or phrase in brackets.

You can use the following expressions:

- ✓ change / choose / adjust / apply / use / update **the font**
- ✓ create / design / improve / apply / change / restructure **the layout**
- ✓ adjust / reduce / increase / improve / add / fix **the spacing**
- ✓ add / use / apply / set up / enable / implement **the form validation**

- ✓ create / use / replace / improve **the dropdown menu**
- ✓ add / use / apply / improve / create **the animation**
- ✓ update / apply / improve / use / follow **the style**
- ✓ choose / adjust / change / apply / improve **the color scheme**
- ✓ compress / change / optimize / improve **the image format**
- ✓ create / improve / position / resize / align **the image elements**
- ✓ to improve readability
- ✓ to check the user's input
- ✓ to save space
- ✓ to make the page more dynamic

- **Senior developer**: The text is too small and hard to read.
  You: (font) →
  *I will change the **font** to make the text easier to read.*
- **Senior developer**: The page looks broken on mobile screens.
  You: (responsive layout) →

- **Senior developer**: All the elements are too close to each other.
  You: (spacing) →

- **Senior developer**: Users can type anything into the email field.
  You: (form validation) →

- **Senior developer**: The menu takes too much space on the screen.
  You: (dropdown menu) →

- **Senior developer**: The homepage looks boring—there's no movement or effects.
  You: (animation) →

- **Senior developer**: The colors don't match and look messy.
  You: (style / color) →

- **Senior developer**: The images are too large and take a long time to load.
  You: (format / element) →

Optional Follow-up:
Now swap roles and come up with two new problems and two responses using the remaining words:

- layout
- interactivity
- dynamic behavior
- image slider
- tag

5. Choose one question and discuss with a partner:

- Which frontend technology do you think is the most important — HTML, CSS, or JavaScript? Why?

- Have you ever tried to create a web page? What tools did you use?
- Why is it important for a website to work on different screen sizes?

6. Write 7 − 10 sentences describing any website you have recently visited. Speak about your experience as a user and analyse its positive and negative features as a developer. Use as many words from the glossary as you can.

WEB DEVELOPMENT: BACKEND (SERVERS AND DATABASES)

Before reading the text discuss the following question:

- What happens behind the scenes when you submit a form on a website?

The **backend** is the part of a website that users don't see. It works behind the scenes to make sure everything on the site functions properly. The backend includes the **server**, the **database**, and the **application logic** that connects them.

A **server** is a powerful computer that **stores website files** and **handles requests** from users. When someone opens a website, their browser **sends a request to the server**. The server then sends back the correct data and content.

Databases are used to **store and manage data**. Websites use databases to keep user information, product details, messages, and more. The most common types of databases are *MySQL*, *PostgreSQL,* and *MongoDB.* Developers use **SQL** (Structured Query Language) to communicate with relational databases.

Backend developers write code that connects the website to the database and handles user requests. Popular **backend programming languages** include *Python*, *PHP*, *Java, Node.js,* and *Ruby*.

A website's backend must be **secure**, **efficient**, and **scalable**. **Security** helps protect **sensitive data**, like passwords. **Efficiency** makes the site work fast, even with many users. **Scalability** means the website can grow without problems when more users join.

Modern websites often use **APIs** (Application Programming Interfaces) to share data between systems. For example, a weather site might use an API to show real-time weather **updates** from another service.

Backend developers also use tools like **version control systems** (e.g., Git), **frameworks** (like Django or Express), and **cloud platforms** (such as AWS or Azure) to build reliable and modern web applications.

In short, backend development is essential for building websites that work well, store data safely, and support dynamic features.

Glossary

- **backend** – бекенд, серверна частина
- **server** – сервер
- **database** – база даних
- **store files/data** – зберігати файли/дані
- **manage data** – керувати даними
- **handle requests** − обробляти запити
- **application logic** – логіка застосунку
- **content** – вміст
- **relational database** − реляційна база даних
- **SQL (Structured Query Language)** – мова структурованих запитів
- **backend developer** – бекенд-розробник
- **programming language** – мова програмування

- **secure** – безпечний
- **efficient** – ефективний
- **scalable** – масштабований
- **updates –** оновлення, оновлена інформація
- **sensitive data** – конфіденційні дані
- **API (Application Programming Interface)** – інтерфейс прикладного програмування
- **real-time** – у реальному часі
- **version control system** – система контролю версій
- **framework** – фреймворк
- **cloud platform** – хмарна платформа
- **dynamic features** – динамічні функції

Reading Comprehension

1. Read the statements and decide if they are True or False*:*

1. The backend is the part of the website users interact with directly.
2. A server stores website files and answers user requests.
3. Databases are only used to store images.
4. SQL is used to work with relational databases.
5. Node.js is a backend programming language.
6. Scalability helps a website stay fast with more users.
7. APIs are used to connect backend servers only.
8. Git is a version control system.
9. Backend developers use cloud platforms like AWS.
10. The backend is not important for modern websites.

2. Answer the questions

1. What does the backend of a website include?
2. What is the function of a server?
3. Why are databases important?
4. What does a backend developer do?
5. Name three backend programming languages.
6. What is the purpose of security in backend development?
7. How do websites use APIs?
8. What tools do backend developers often use?
9. Why is efficiency important for a website?
10. What makes a backend scalable?

Vocabulary Practice

1. Guess the term from its definition:

1. Handles browser requests and stores website files
2. Protects user information
3. The part of the website users don’t see
4. Allows communication between systems
5. Keeps and organizes information
6. Supports many users without performance loss

7. A tool to manage code versions
8. Manner of showing updates immediately
9. A language for working with databases
10. Online service used to host websites

Terms:

a) backend
b) database
c) API
d) scalable
e) version control
f) server
g) secure
h) real-time
i) SQL
j) cloud platform

2 Fill in the missing counterpart. Then provide context you might hear these words in.

adjective	**noun**
secure	security
scalable	
	efficiency
reliable	
	dynamics

verb	**noun**
develop	development
	communication
protect	
connect	
	interaction
perform	
	control
update	

Example:

The system must be secure to ensure user data protection. – We must ensure the system's security.

The app must perform well. – The app must maintain high performance no matter what.

3. Word Formation

Complete each sentence with the correct form of the word in brackets.

1. The system must be _____ enough to handle a growing number of users. *(scale)*
2. We need better _____ between frontend and backend developers. *(communicate)*
3. This tool improves the _____ of web page loading. *(efficient)*
4. Our team is working on the _____ of a new cloud service. *(develop)*

5. You should always check for software _____ to keep your data safe. *(update)*
6. Good UI _____ helps users understand how to interact with the website. *(dynamic)*
7. The engineer managed to _____ the new feature with minimal code. *(implement)*
8. _____ is a top priority when storing user passwords. *(secure)*
9. A good server should be both fast and _____. *(rely)*
10. This database has a strong _____ with the payment system. *(connect)*

4. Imagine you are a backend developer. Write 5–6 sentences describing what tools you use and why. Use at least 7 words from the glossary.

Example:

As a backend developer, I use Node.js to write server logic. I work with MongoDB to store user data. My team uses Git for version control. I connect the frontend with the backend using APIs. Security is very important, so we protect sensitive data carefully.

4. Answer the following questions:

A. Vocabulary check questions

1. What is the main function of a **server** in web development?
2. Why do websites use **databases**?
3. What does it mean if a system is **scalable**?
4. How does a **cloud platform** differ from a physical server?
5. Which programming languages are commonly used for backend development?
6. What kind of data is stored in a **relational database**?
7. What is the role of **SQL** in backend development?
8. What does a **secure** backend protect against?
9. What is **real-time communication** in web development? Can you give an example?
10. How do **APIs** help frontend and backend work together?

B. Problem-solving questions

1. A company's website keeps crashing when too many users visit at once. Which **backend principle** is being ignored? What solution would you suggest?
2. You need to **connect** your website to a third-party payment system. Which backend component or tool should you use and why?
3. Your team is working on a project using different programming languages. How can **version control** help you manage this project?
4. A user says the website is "too slow." What **backend factors** might be causing this, and how could you improve them?
5. Imagine your database contains sensitive customer data. Which **security measures** would you recommend, and why?
6. The product team asks for **real-time updates** on the dashboard. What backend technologies would help implement this?

7. How does **API integration** improve user experience on modern websites? Give a specific example (e.g., maps, weather, login with Google).
8. If your website grows quickly and serves a global audience, what **backend decisions** must you review and possibly change?
9. Your database has grown very large. What can you do to maintain **performance** and **efficiency**?
10. What is the difference between a **reliable** and an **efficient** backend system? Can you think of a case when one is more important than the other?

SOFTWARE TESTING AND QUALITY ASSURANCE METHODS

Discuss the following questions:

- Have you ever used an app or website that didn't work as expected? What happened?
- Why is testing an essential part of development?

Software testing is a vital part of the Software Development Life Cycle (SDLC). Its main goal is to verify that software meets requirements and is free of defects. Testing helps find bugs early, reducing risks and improving quality.

A **test case** defines conditions, inputs, and expected results for checking software features. These are grouped into **test suites** and executed in a controlled **test environment** using specific **test data**. The process is planned with a **test plan** outlining scope and schedule.

Testing occurs at several levels. **Unit testing** checks individual components, often automated with tools like JUnit. **Integration testing** verifies that modules interact correctly. **System testing** evaluates the entire system against functional and non-functional requirements. **Acceptance testing** ensures the software meets business needs, often involving end users.

There are different testing types. **Functional testing** confirms features work as expected. **Non-functional testing** checks performance, security, usability, and compatibility. **Regression testing** ensures new changes don't break existing features and is often automated. **Exploratory testing** is an informal technique where testers explore the application to find unexpected bugs.

Quality Assurance (QA) is broader than testing and focuses on improving development processes. QA includes **test automation** with tools like Selenium, **CI/CD pipelines** for continuous testing and deployment, and **static code analysis** to catch issues before runtime. Practices such as **code reviews**, **pair programming**, and methodologies like **Test-Driven Development (TDD)** improve code quality and align development with requirements.

Key metrics in testing include **test coverage** (how much code is tested), **defect density** (bugs per code size), and **mean time to detect/repair** issues. These metrics help measure the effectiveness of QA efforts.

In conclusion, effective software testing and QA are essential for delivering reliable and user-friendly software. Understanding core concepts and terminology prepares IT students for real-world development challenges.

Glossary

- **software testing** — тестування програмного забезпечення
- **bug / defect** — помилка / дефект
- **test case** — тестовий випадок
- **test suite** — набір тестів
- **test plan** — план тестування

- **test environment** — тестове середовище
- **test data** — тестові дані
- **unit testing** — модульне тестування
- **integration testing** — інтеграційне тестування
- **system testing** — системне тестування
- **acceptance testing** — приймальне тестування
- **functional testing** — функціональне тестування
- **non-functional testing** — нефункціональне тестування
- **regression testing** — регресійне тестування
- **exploratory testing** — дослідне тестування
- **test automation** — автоматизація тестування
- **continuous integration (ci)** — безперервна інтеграція
- **continuous deployment (cd)** — безперервне розгортання
- **static code analysis** — статичний аналіз коду
- **code review** — перевірка коду
- **pair programming** — парне програмування
- **test-driven development (tdd)** — розробка через тестування
- **behavior-driven development (bdd)** — розробка через поведінку
- **test coverage** — покриття тестами
- **defect density** — щільність дефектів
- **mean time to detect (mttd)** — середній час виявлення помилки
- **mean time to repair (mttr)** — середній час усунення помилки
- **pass/fail rate** — відсоток пройдених/непройдених тестів

Reading Comprehension

1. Read the text and answer the questions.

1. What is the main goal of software testing?
2. Name and briefly describe the four levels of software testing.
3. What is the difference between functional and non-functional testing?
4. Why is regression testing important?
5. What does Quality Assurance include besides testing?
6. Name two common practices used in QA to improve code quality.
7. What is the role of test automation in modern software development?

Vocabulary Practice

1. Match the terms with their definitions.

Term	**Definition**
a) Unit testing	1. Testing whole software system end-to-end
b)Integration testing	2. Automated scripts that run tests automatically
c) System testing	3. Checking interaction between modules
d) Test automation	4. Testing individual components in isolation
e)Regression testing	5. Ensuring new changes do not break existing functionality

2. Fill in the blanks. Use the following words:

test case	*continuous*	*static code*
bug	*integration*	*analysis*
test plan	*exploratory*	*mean time to*
defect density	*testing*	*repair*

1. A _____ is a documented scenario used to check a specific functionality.
2. _____ helps detect issues in source code before running the program.
3. _____ measures the average time it takes to fix a problem after detection.
4. _____ is an unscripted approach where testers actively look for unexpected errors.
5. The _____ outlines the scope and schedule of all testing activities.
6. _____ is a metric showing how many defects are found relative to the size of the software.
7. _____ is a practice that automatically runs tests whenever code changes are made.
8. A _____ is an error or flaw that causes software to behave incorrectly.

3. Write a short answer (3-4 sentences) to one of the questions below, using terms from the glossary.

- Why is regression testing important in software development?
- How does test automation improve the efficiency of QA teams?
- What are the advantages of using continuous integration?
- Describe the difference between unit testing and integration testing.

THE QA JOURNEY: FINDING AND FIXING SOFTWARE ISSUES

"The bitterness of poor quality remains long after the sweetness of meeting the deadline is forgotten." – Anonymous

Discuss:

- What does this quote suggest about the importance of testing in development?

Software testing plays a foundational role in building dependable applications. It ensures that each part of the software performs according to user expectations and system requirements. Rather than waiting for issues to appear after release, testing identifies flaws during development, making it easier to deliver high-performing, stable products.

Software testers begin by preparing a test plan, which outlines the scope and goals of testing. They then create **test cases** that describe specific user actions and expected results. They define the actions to take, the input to provide, and the results that should occur.For example, a test case for a login form might verify that entering a valid email and password redirects the user to their dashboard. This same form may also be tested for **negative scenarios**, such as entering the wrong password, to ensure the system shows an appropriate error message.

What Do Testers Check?

Testers verify a wide range of functionalities, such as:

- **Form validation** (e.g., checking that empty fields show errors)
- **Navigation and redirects** (e.g., clicking a button takes the user to the correct page)
- **Data saving** (e.g., user input is correctly stored in the database)
- **Search functionality** (e.g., entering a keyword returns relevant results)
- **Error handling** (e.g., app doesn't crash when invalid input is submitted)
- **Performance under load** (e.g., can the system handle 1,000 users at once?)
- **Security** (e.g., testing if unauthorized users can access restricted pages)

Common Bugs Found in Testing

Some typical bugs testers often find include:

- **UI bugs**: buttons misaligned, text overlapping, incorrect color usage
- **Functional bugs**: "submit" button does nothing, form doesn't validate properly
- **Logic bugs**: discounts calculated incorrectly, dates displayed in the wrong format
- **Integration bugs**: app fails to retrieve data from the payment API
- **Security bugs**: password reset link works without verification
- **Performance bugs**: page takes too long to load, app freezes under heavy load
- **Cross-browser bugs**: works in Chrome but breaks in Safari or Firefox

Each bug is reported in a **bug tracking system** (e.g., Jira), where it gets assigned a **severity** (e.g., critical, major, minor) and **priority**. Developers then fix the issue, and testers perform **retesting** and **regression testing** to confirm the bug is resolved and no new issues were introduced.

What Needs to Be Fixed?

Depending on the bug, fixes may involve:

- Correcting the **frontend layout** or fixing broken **CSS styles**
- Updating **backend logic** (e.g., correcting how calculations are made)
- Fixing **API responses** or endpoint logic
- Adding proper **validation rules** for input fields
- Improving **error messages** and user feedback
- Optimizing **database queries** for better performance
- Adding **authorization checks** to protect sensitive data

By combining **manual testing** with **automated tests**, QA specialists help ensure that users receive a stable and trustworthy product. Regular **regression testing**, **test automation**, and good communication between testers and developers are key to maintaining software quality over time.

Glossary

- **software testing** — тестування програмного забезпечення
- **quality assurance (qa)** — забезпечення якості
- **bug** — помилка, дефект
- **test plan** — план тестування
- **test case** — тестовий випадок
- **test suite** — набір тестів
- **test environment** — тестове середовище
- **test data** — тестові дані
- **negative scenario** — негативний сценарій (помилкове або нестандартне введення)
- **form validation** — перевірка форми / валідація введених даних
- **navigation** — навігація
- **data saving** — збереження даних
- **error handling** — обробка помилок
- **performance testing** — тестування продуктивності
- **security testing** — тестування безпеки
- **ui bug** — помилка інтерфейсу користувача
- **functional bug** — функціональна помилка
- **logic bug** — логічна помилка
- **integration bug** — помилка інтеграції
- **security bug** — помилка безпеки
- **performance bug** — помилка продуктивності
- **cross-browser bug** — помилка сумісності між браузерами
- **bug tracking system** — система відстеження помилок
- **severity** — серйозність (помилки)

- **priority** — пріоритет (виправлення)
- **retesting** — повторне тестування
- **regression testing** — регресійне тестування
- **frontend layout** — зовнішній вигляд (інтерфейс користувача)
- **css styles** — css-стилі
- **overlap** – перекриватися, заходити одне за інше
- **misaligned** − неправильно вирівняний
- **backend logic** — логіка на стороні сервера
- **api response** — відповідь api
- **endpoint** — кінцева точка api
- **validation rules** — правила валідації
- **error message** — повідомлення про помилку
- **database queries** — запити до бази даних
- **authorization checks** — перевірка авторизації
- **manual testing** — ручне тестування
- **automated test** — автоматизований тест
- **test automation** — автоматизація тестування
- **stable product** — стабільний продукт
- **user feedback** — зворотний зв'язок від користувача

Reading Comprehension

1. Read each statement and decide if it is True or False based on the text. Correct the false statements.

1. A test case includes random user behavior without expected results.
2. Testers often check both correct input and incorrect or unexpected input.
3. UI bugs refer to issues like slow loading and poor performance.
4. Security testing helps ensure unauthorized users cannot access restricted areas.
5. All bugs found must be fixed immediately, regardless of severity.
6. Automated tests are used to repeat tasks that would take too long manually.
7. Exploratory testing means running only automated scripts.
8. Developers never participate in fixing bugs reported by QA teams.

2. Answer the following questions in 1–2 full sentences using information from the text.

1. What is the purpose of a test plan?
2. Give an example of a negative scenario that a tester might check.
3. What kind of functionality do testers usually verify?
4. List two types of common bugs mentioned in the text.
5. What tool is typically used to report and track bugs?
6. Why is regression testing necessary after a bug fix?
7. What might need to be corrected if a bug is related to calculation errors?

Vocabulary Practise

1. Match the terms with their definitions

a) bug

b) test case
c) regression testing
d) test automation
e) ui bug

1. A documented user scenario with inputs and expected results
2. A visible error in the user interface, like misaligned text
3. A mistake in code causing unexpected behavior
4. Running tests automatically using scripts or tools
5. Testing that a fix didn't break other features

2. Complete the sentences using words from the glossary

Instructions: Use the correct word or phrase from the box to complete each sentence. One word is extra.

test environment – severity – bug tracking system – performance bug – test plan – endpoint

1. We reported the issue to the developer using a _____.
2. A detailed _____ helps organize the goals and scope of testing.
3. A _____ occurs when the app slows down under heavy user load.
4. Testers simulate real conditions by using a properly configured _____.
5. Each bug is assigned a _____ to show how critical it is for the system.
6. (Extra) A broken API _____ caused the application to crash when submitting a form.

3. What Kind of Bug Is It?

Instructions: Read each situation and choose the correct type of bug from the list below.

Bug types:
– ui bug
– logic bug
– functional bug
– integration bug
– performance bug
– security bug

1. When a user clicks the "Submit" button on the form, nothing happens, and no data is saved.

_____

2. The website loads very slowly when more than 50 users try to access it at the same time.

_____

3. On the checkout page, a discount is applied incorrectly — 10% instead of the expected 20%.

_____

4. A user who is not logged in can access the admin dashboard by typing the URL directly.

_____

5. On the mobile version of the site, the navigation menu is overlapping with the header.

_____

6. The app crashes when trying to load data from a third-party payment service.

_____

3. Match the problem with the fix

Read the dialogue between two testers. For each problem they discuss, write down the correct fix

Tester 1: Hey, I noticed that on the registration form, the buttons overlap and look really distorted on mobile devices.
Tester 2: Sounds like we need to *fix the frontend layout or broken CSS styles* there.

Tester 1: Also, the total price in the shopping cart is calculated incorrectly when applying discounts.
Tester 2: That's definitely a backend logic issue. We should _____.

Tester 1: When users try to submit a payment, the app doesn't get any response from the payment gateway, and an error occurs.
Tester 2: We need to _____ for the payment system.

Tester 1: There's a critical bug where users can submit the form without filling mandatory fields, causing the system to crash.
Tester 2: We should _____ to prevent that.

Tester 1: Also, when users enter wrong data, the error messages are confusing and unclear.
Tester 2: Yeah, _____ is a must.

Tester 1: The app gets really slow when searching a large database.
Tester 2: We should _____ to improve performance.

Tester 1: And one more thing — unauthorized users can access pages meant only for admins.
Tester 2: That's a security risk. We need to _____ to protect sensitive data.

If you find difficulty, you can use the following expressions:

Fixes:

1. adding authorization checks to protect sensitive data
2. updating backend logic (e.g., correcting how calculations are made)

3. improving error messages and user feedback
4. adding proper validation rules for input fields
5. optimizing database queries for better performance
6. fixing API responses or endpoint logic

4. Bug Report

Imagine you tested a website page (for example, a registration form, online store, or dashboard). Write a short bug report describing **3 different bugs** you found. For each bug:

1. **Describe the problem** clearly (what happens, what doesn't work, or looks wrong).
2. **Name the type of bug** (e.g., ui bug, logic bug, security bug).
3. **Suggest what needs to be fixed** (e.g., correcting frontend layout, updating backend logic, adding validation rules).

   Try to use vocabulary from the glossary and the exercises.

WIRED AND WIRELESS NETWORK COMPONENTS

Discuss the question:

- What kind of network connection do you prefer touse at home or school—wired or wireless? Why?

In a modern computer network, devices are connected to exchange data, share resources, and access the Internet. Networks can be either **wired**, where devices are physically connected via cables, or **wireless**, where devices use radio signals to communicate.

In wired networks, devices like **switches**, **routers**, and **file servers** are connected using twisted-pair Ethernet cables or optical fiber. Today, most routers support **gigabit** or even **10-gigabit Ethernet** speeds. For backbone connections between buildings or data centers, high-speed **fiber-optic cables** are used, supporting long-distance and high-throughput communication.

Wireless networks (Wi-Fi) use **wireless access points (APs)** to connect laptops, smartphones, and tablets. These APs often function as both routers and bridges, allowing wireless clients to access wired LANs or the Internet. Modern wireless technologies such as **Wi-Fi 6** and **Wi-Fi 6E** offer high speeds, lower latency, and support for more devices in dense environments like schools or offices.

To connect to the Internet, networks use **modems** or **gateways**. Traditional ADSL or cable modems are being replaced by **fiber-optic modems** or **5G routers**, especially in remote areas. A **gateway** allows communication between different network types, such as IPv4 and IPv6 networks, or between internal and external systems.

Security is now a major concern in both wired and wireless networking. Outdated encryption like WEP is no longer safe. Most Wi-Fi networks now use **WPA3** for secure authentication and data protection. Network administrators monitor access, update firmware, and use firewall systems to protect the entire infrastructure.

Glossary

- **wired network** – дротова мережа
- **wireless network** – бездротова мережа
- **router** – маршрутизатор
- **switch** – комутатор
- **file server** – файловий сервер
- **modem** – модем
- **gateway** – шлюз
- **fiber-optic cable** – оптоволоконний кабель
- **backbone** – магістраль (основна лінія передавання даних)
- **lan (local area network)** – локальна мережа
- **wlan (wireless local area network)** – бездротова локальна мережа
- **wireless access point (ap)** – точка бездротового доступу

- **network interface card (nic)** – мережева карта (інтерфейс)
- **wi-fi 6 / wi-fi 6e** – стандарт бездротового зв'язку Wi-Fi 6 / Wi-Fi 6E
- **gigabit ethernet** – гігабітний ethernet
- **throughput** – пропускна здатність
- **latency** – затримка
- **encryption** – шифрування
- **wep (wired equivalent privacy)** – застарілий протокол шифрування WEP
- **wpa3 (wi-fi protected access 3)** – сучасний протокол безпеки WPA3
- **firmware** – мікропрограма (прошивка)
- **firewall** – міжмережевий екран
- **ipv4 / ipv6** – протоколи інтернет-адресації
- **5g router** – 5G маршрутизатор
- **adsl modem** – adsl-модем
- **shared printer** – спільний принтер
- **wireless printer** – бездротовий принтер

Reading Comprehension

1. Read the statements and write True or False based on the text.

1. Wi-Fi 6E supports more devices and lower latency. (___)
2. ADSL modems are more commonly used today than 5G routers. (___)
3. A firewall helps protect the network from external attacks. (___)
4. A switch and a router are two names for the same device. (___)
5. WEP is a modern and secure Wi-Fi encryption protocol. (___)
6. Wireless access points can connect mobile devices to wired LANs. (___)
7. Fiber-optic cables are used mainly for short-distance connections. (___)
8. Most modern routers only support speeds up to 100 Mbps. (___)
9. Network administrators help protect infrastructure by updating firmware. (___)
10. Wired networks use radio signals to transmit data between devices. (___)
11. Gigabit Ethernet is slower than Wi-Fi 6. (___)
12. A gateway allows different types of networks to communicate. (___)

1. Answer the questions:

1. What types of cables are commonly used in wired networks to connect devices?
2. How do wireless access points (APs) help devices connect to a network?
3. Why are fiber-optic cables used for backbone connections?
4. What are the advantages of Wi-Fi 6 and Wi-Fi 6E in modern wireless networks?
5. What security measures are taken to protect both wired and wireless networks today?

2. Fill in the table with advantages and disadvantages of wired and wireless networks based on the text.

Network Type	**Advantages** (at least 2)	**Disadvantages** (at least 1)
Wired Network	1.	
	2.	
Wireless Network	1.	
	2.	

Vocabulary Practice

1. Fill in the blanks:

Fill in the blanks with the correct word from the glossary.

1. In a wired network, devices are physically connected using _____ or fiber-optic cables.
2. A wireless _____ allows devices like laptops and smartphones to connect to a WLAN.
3. The modern Wi-Fi security protocol used today is called _____.
4. A network device that directs traffic between different networks is called a _____.
5. The outdated Wi-Fi encryption protocol that is no longer secure is _____.
6. Fiber-optic cables are often used for _____ connections between buildings or data centers.
7. A _____ allows communication between different network types or protocols.
8. In remote areas, Internet connection is often provided by a _____ with 5G support.
9. To improve wireless network performance, standards like _____ and Wi-Fi 6E are used.
10. A _____ protects the network from unauthorized access by filtering traffic.

2. Discuss the following questions:

1. Describe what a router does in a computer network. Why is it important?
2. Explain the difference between a wired network and a wireless network. What are the advantages of each?
3. Imagine you are setting up a network for a small office. Which devices would you need and why?
4. Why is network security important? What measures would you take to protect a wireless network?
5. Describe how fiber-optic cables improve network performance compared to traditional cables.

Write a short paragraph (4–5 sentences) explaining why modern wireless standards like Wi-Fi 6 and WPA3 are better than older ones.

PROTOCOLS AND NETWORK ARCHITECTURE

"Rules are the foundation of all automation. Break them, and everything breaks with you."— Anonymous

Discuss:

- Why do we need rules (protocols) when computers communicate?

In modern computer networks, **protocols** are essential rules and standards that govern how devices communicate with each other. These protocols define the format, timing, sequencing, and error checking of data transmissions to ensure reliable and **consistent communication** between different devices, regardless of their manufacturer or operating system. One of the most widely used **protocol suites** is **TCP/IP (Transmission Control Protocol/Internet Protocol)**, which forms the foundation of the Internet. Other important protocols include **HTTP (HyperText Transfer Protocol)** for web communication, **FTP (File Transfer Protocol)** for file transfers, and **DNS (Domain Name System)** for translating domain names to IP addresses.

Network architecture refers to the overall design and structure of a network, describing how devices are connected and how **data flows** between them. Different network architectures are designed to meet specific organizational needs, **scalability**, and **security requirements**. The two main models are **client-server** and **peer-to-peer (P2P)** architectures. In the *client-server* model, centralized servers provide services or resources, and clients **request access** to these services. In *peer-to-peer networks*, all devices have **equal status** and can share resources directly without a central server.

Networks operate based on layered models such as the **OSI (Open Systems Interconnection) model** and the **TCP/IP model**, which divide network functions into several layers. Each layer performs specific tasks, such as physical **transmission of data**, **routing**, or **application-level services**. Understanding these layers helps network professionals diagnose problems and **design** efficient systems.

Proper configuration and management of protocols and network architectures are critical for ensuring **network performance**, scalability, and security. Network administrators must select appropriate protocols and architectures depending on the size of the network, type of **data traffic**, and **organizational goals**. For example, **high-security environments** may **implement** additional **protocols** and **encryption methods** to protect sensitive data.

Glossary

- **protocol** – протокол
- **protocol suites** − пакети протоколів
- **consistent communication (consistent between different devices)** − стабільний зв'язок (між різними пристроями)
- **network architecture** – архітектура мережі
- **client-server** – клієнт-сервер

- **peer-to-peer (p2p)** – однорангова мережа
- **request access** − запитувати доступ, подавати/ініціювати запит
- **equal status** − рівний статус
- **osi model** – модель osi
- **flow (of)data –** передаватися (про дані)
- **transmission of data** − передача даних
- **routing** – маршрутизація
- **application-level services** − сервіси рівня додатків
- **design** – проектувати
- **network performance** − продуктивність мережі
- **scalability** – масштабованість
- **security** – безпека
- **data traffic** − мережевий трафік
- **organizational goals** − організаційні цілі
- **high-security environments** − середовища з високим рівнем безпеки
- **implement protocols** − впроваджувати протоколи

Reading Comprehension

1. Define if the following statements are true or false:

1. DNS helps translate IP addresses into readable domain names.
2. Peer-to-peer networks require a central server.
3. All devices in a P2P network have equal status.
4. TCP/IP is an outdated protocol no longer in use.
5. Understanding protocols helps prevent network errors.
6. HTTP is used to transfer files between computers on a network.
7. Network architecture describes how data is stored in a database.
8. The OSI model helps professionals identify and fix network issues.

2. Answer the questions:

1. What is the purpose of protocols in computer networks?
2. Name at least three examples of protocols mentioned in the text.
3. What does the DNS protocol do?
4. What is network architecture?
5. What are the two main types of network architecture described?
6. In a client-server model, what roles do clients and servers play?
7. What is the OSI model used for?
8. Why is understanding layers in a network model important?
9. What factors influence the selection of protocols and network architecture?
10. How can high-security environments protect sensitive data?
11. What might happen if computers didn’t follow communication protocols?
12. Why is TCP/IP so widely used today?
13. Compare client-server and peer-to-peer architectures. What are the advantages of each?
14. How do layered models (like OSI) help in diagnosing network issues?

Vocabulary Practice

1. Match the terms with their definitions.

Term	Definition
1 protocol	a The ability of a system to grow and handle increased demand.
2 consistent communication	b The process of sending data from one device to another.
3 network architecture	c A set of rules that determine how data is transmitted between devices.
4 client-server	d A stable exchange of information between systems or devices.
5 scalability	e The design and layout of a computer network.
6 transmission of data	f A system where servers provide resources and clients request them.
7 high-security environments	g Systems that require strict protection of sensitive information.
8 implement protocols	h To put specific network rules and standards into action.

2. Fill in the blanks with words from the glossary.

1. In a _____ network, devices act both as clients and servers.
2. The company had to redesign its _____ to improve performance and security.
3. Without proper _____, devices wouldn't understand each other when exchanging data.
4. The IT team worked hard to _____ the necessary encryption protocols for secure data sharing.
5. Good _____ ensures that messages between devices are delivered accurately and without interruption.
6. The OSI model helps engineers understand how the _____ works across different layers.
7. Cloud solutions are popular because of their excellent _____ — they grow as the business grows.
8. Access to sensitive files requires a _____, which is usually verified by the server.
9. Developers must consider _____ when they design networks that handle confidential data.
10. Network _____ refers to how efficiently and reliably a network functions.

3. Discuss the following questions

1. What are the benefits of using a layered model in network design?

2. Why might a company choose a client-server model over a P2P one?
3. Can you name one way that network administrators ensure security in communication?
4. Do you think security or speed is more important in network design? Why?
5. Have you ever experienced a network issue (e.g. a website not loading)? What might have caused it based on this text?
6. Why is it important for IT professionals to understand both protocols and network structure?

COMPUTER SYSTEMS AND SERVER ADMINISTRATION

"A server is to a network what a brain is to a body — it controls, processes, and responds."

— Anonymous

Discuss:

- What happens when a server fails in a company or organization?
- Why is server administration important for business continuity and data safety?
- Can one server manage an entire company? Why or why not?

Computer systems administration involves the management and maintenance of computer hardware, operating systems, and software applications to ensure continuous and efficient operation of IT infrastructure. System administrators are responsible for **installing**, **configuring**, and **updating** operating systems (such as Windows Server, Linux, or Unix) and software applications, as well as managing user accounts, permissions, and access rights.

In modern networks, administrators also handle **network configuration**, including setting up **IP addresses**, **subnets**, and **DNS servers** to enable proper communication between devices. They often work with **network protocols** like **TCP/IP** to **troubleshoot connectivity problems** and **optimize data flow**.

Server administration is a specialized branch focusing on managing servers—powerful computers that provide various services like web hosting, file storage, email, databases, and **application hosting**. Server administrators configure and maintain server hardware and software, manage network resources, and ensure servers **run smoothly** with minimal **downtime**. They are responsible for **backup management**, **disaster recovery planning**, and **security monitoring**.

Network security is a critical part of system administration. Administrators implement **firewalls**, **intrusion detection systems (IDS)**, and **virtual private networks (VPNs)** to protect the network from **unauthorized access** and **cyberattacks**. They also apply **software patches** and updates regularly to **fix vulnerabilities**.

Automation tools such as *PowerShell* or *Bash scripting* help administrators automate routine tasks like user management, **software deployment**, and **system monitoring**, improving efficiency and reducing errors.

Effective system and server administration are essential for **business continuity**, data protection, and efficient **resource utilization**. Administrators troubleshoot hardware and software problems promptly, ensuring minimal disruption and maintaining the overall health of the network infrastructure.

Glossary

- **system / server administration** – адміністрування систем / серверів
- **install** – встановлювати

- **configure –** налаштовувати
- **update** – оновлювати
- **handle network configuration** − керувати конфігурацією мережі / налаштуванням мережі
- **application hosting** − хостинг додатків
- **run smoothly** − працювати безперебійно
- **downtime** − час простою
- **backup management** – управління резервними копіями
- **disaster recovery** – відновлення після аварії
- **firewall** – міжмережевий екран
- **intrusion detection system** – система виявлення вторгнень
- **unauthorized access** − несанкціонований доступ
- **cyberattack −** кібератака
- **fix vulnerabilities** − виправляти вразливості
- **software patch** − патч програмного забезпечення
- **subnet** – під мережа
- **dns server** – dns-сервер
- **bash scripting** – bash-скрипти
- **business continuity** − безперервність бізнесу
- **resource utilization −** використання ресурсів

1. Fill in the blanks using words from the box. Use each word once.

install – configure – update – firewall – intrusion detection system – unauthorized access – cyberattack – software patch – fix vulnerabilities – system / server administration

1. It’s important to _____ security updates regularly to prevent threats.
2. A _____ monitors network traffic for suspicious activity.
3. One of the key goals of _____ is to ensure systems remain secure and efficient.
4. Companies often _____ firewalls to protect networks from outside threats.
5. After the latest _____, performance improved significantly.
6. If a system has weak points, admins must _____ them quickly.
7. The _____ acts as a barrier between trusted and untrusted networks.
8. When admins _____ software, they must follow company policy.
9. The team worked overnight to stop a major _____.
10. The IT specialist had to _____ the server before launching the new app.

2. Match the word (1–10) with its correct definition (A–J).

1. downtime	A Hosting and running web apps on a server
2. backup management	B The ability of a company to keep working despite disruptions
3. disaster recovery	C A smaller division of a larger network

4. application hosting	D A process of scripting tasks in Linux/Unix
5. handle network configuration	E Managing the setup of IPs, gateways, DNS, etc.
6. Bash scripting	F A server that resolves domain names into IP addresses
7. DNS server	G Time when a system is not available to users
8. subnet	H Steps to restore systems after a major failure
9. business continuity	I Creating and managing copies of important data
10. resource utilization	J Efficient use of CPU, memory, and storage

3. Answer the following questions using complete sentences and the vocabulary learned.

1. What is the role of a firewall in network security?
2. How does a VPN protect data transmission?
3. Why is network configuration important for system administrators?
4. What does backup management involve?
5. Explain what a protocol is and why it is necessary in computer networks.

4. Respond to the questions or statements:

1. *"Our network was attacked last week. How can we improve our security?"*
2. *"I'm worried about losing important files. What should I do?"*
3. *"I need to connect to the office network while traveling. Any suggestions?"*
4. *"We have too many manual tasks in system management. How can we make this easier?"*
5. *"Our network is slow and hard to manage. What might help?"*
6. *"Some employees are having trouble accessing certain websites. What could be the problem?"*
7. *"We want to protect sensitive data when it travels over public networks. What technology should we use?"*
8. *"Our system crashes often after updates. How can we prepare for such failures?"*
9. *"How can we detect if someone is trying to hack our network?"*
10. *"We need to improve communication between different parts of our large network. Any advice?"*

5. Fill in the blanks and create your own version of the dialogue.

Network Problem and IT Support

User: Hi, I'm having a problem with _____.
(e.g., the Internet connection / logging in / sending files)
Administrator: I see. When did the problem start, and what exactly happens?
User: It started _____. The problem is _____.
Administrator: It could be related to the _____ or the _____.
(e.g., router, network configuration) I'll check the system.

User: Could it be a security issue? I'm worried about _____.
Administrator: Possibly. We can install a _____ to protect the network.
(e.g., firewall, intrusion detection system)
User: Should I use a VPN when working remotely?
Administrator: Yes, a **VPN** is useful. It _____.
(explain what a VPN does — protects data / encrypts connection)
User: And what about data safety?
Administrator: You should create regular **backups**. I can set up **automation** for that.
User: Great. Will you let me know when it's done?
Administrator: Yes. I'll start with _____, and then _____.
User: Thanks a lot!

Swap roles and create a second version with a different issue.
Network / System issues for discussion:

1. Slow Internet connection in the office
2. Frequent disconnection from Wi-Fi
3. Unable to access shared folders or files
4. Problems logging into the system or email
5. VPN not working when working remotely
6. Printer not responding over the network
7. Suspicious emails or possible phishing attack
8. Forgotten password or account lockout
9. System crashes after updates
10. No access to specific websites (possibly blocked)
11. Software not updating automatically
12. Concern about data loss or lack of backup
13. Unusual network activity or possible hacking attempt
14. File transfer between departments takes too long
15. Noisy or overheating server
16. Remote desktop connection is too slow
17. Devices not receiving IP addresses correctly
18. Unclear access rights or permission problems
19. Outdated router or network hardware
20. Too many manual tasks in system administration

6. **Write and act out a dialogue between a system administrator and a manager (about 8–12 exchanges, each person speaks 4–6 time).**

Scenario:
The system administrator and the manager are discussing how to improve the company's network security and performance. They need to talk about problems, possible solutions, and create a plan of action.

Hints to include:

- Discuss recent network problems or security issues.
- Suggest security measures like firewalls, VPNs, or intrusion detection systems.
- Talk about data backup and disaster recovery plans.
- Mention improving network speed by using subnets or upgrading routers.
- Consider automating routine tasks to save time.
- Decide on the first steps and who will be responsible.

Example starter:

Manager: We had some **security breaches** last month, and our **network speed** is slow. What do you suggest?

Administrator: We can start by **installing a new firewall** and **setting up a VPN** for remote workers. Also, **dividing the network into subnets** will help improve speed...

JOB HUNTING

IT PROFESSIONALS

Discuss:

1. What do you think are the most important qualities of a good IT specialist?
2. What types of IT jobs are in high demand today?

1. Read each description and write the correct job title from the list below.
Job titles to choose from:

- software engineer
- hardware engineer
- frontend developer
- backend developer
- network administrator
- computer security specialist
- data analyst
- help desk technician

Questions:

1. I work with physical devices — chips, boards, and computer components. Who am I?

   _____
2. I write code that makes applications and systems function properly.

   _____
3. Everything you see on a website — buttons, layout, animations — is created by me.

   _____
4. I build server-side logic, work with databases, and connect systems through APIs.

   _____
5. I protect networks and systems from hackers, viruses, and other threats.

   _____
6. I'm responsible for keeping the company's network, routers, and servers running smoothly.

   _____
7. I assist users by solving technical problems — in person, by email, or over the phone.

   _____
8. I collect, analyze, and interpret data to help businesses make better decisions.

Which job would you like to do and why?

2. IT Professions – Multiple Choice Quiz

1. I work with physical components like chips, circuit boards, and devices.
   A) hardware engineer
   B) backend developer

C) data analyst
D) help desk technician

2. I write the code that powers computer programs and applications.
   A) help desk technician
   B) software engineer
   C) frontend developer
   D) network administrator

3. I design and build the parts of a website that users interact with.
   A) data analyst
   B) frontend developer
   C) backend developer
   D) software engineer

4. I work behind the scenes on server logic, databases, and APIs.
   A) backend developer
   B) frontend developer
   C) help desk technician
   D) hardware engineer

5. I protect computer systems from cyber threats and attacks.
   A) data analyst
   B) network administrator
   C) computer security specialist
   D) software engineer

6. I make sure the organization’s internal networks work properly.
   A) backend developer
   B) network administrator
   C) frontend developer
   D) help desk technician

7. I help users solve computer-related problems directly.
   A) help desk technician
   B) data analyst
   C) network administrator
   D) frontend developer

8. I work with large datasets to find trends and support decisions.
   A) computer security specialist
   B) software engineer
   C) data analyst
   D) hardware engineer

JOB ADVERTISEMENTS

1. In pairs, read the two job advertisements and tick (✓) the most important qualities and abilities (1–10) for each job. Add more to the list if you can. Which three things do you think are most important for each job?

Job A: Full-Stack Developer

CYBERLINK Solutions is seeking an experienced **FULL-STACK DEVELOPER** to join our dynamic software development team. We are a leading provider of innovative web solutions for FinTech startups.

You will be responsible for the full software development lifecycle: from concept and design to deployment and maintenance. A minimum of 3 years of experience with modern JavaScript frameworks (e.g., React, Angular, Vue.js) for frontend and Node.js (Express) or Python (Django, Flask) for backend is required. Experience with databases (SQL/NoSQL) and cloud deployment (AWS/Azure/GCP) is a must.

We value the ability to work both independently and collaboratively, communicate effectively, and continuously learn.

Don't miss this opportunity to advance your skills and make a significant impact on exciting projects!

Please send your CV and portfolio to careers@cyberlink-solutions.com

Job B: Web Designer

PIXEL PERFECT STUDIO is looking for a creative **WEB DESIGNER** to join our innovative design team, We make nice and easy-to-use websites for different clients.

We are looking for someone who likes design and cares about users. Please show us your best work in a portfolio. You will create ideas for websites. You will be responsible for conceptualizing, designing, and optimizing website layouts, user interfaces (UI), and user experiences (UX) across various devices. You need at least 2 years of work experience. You must know how to use design tools like Figma, Sketch, Adobe XD, Photoshop, or Illustrator. A solid understanding of responsive design principles, typography, color theory, and wireframing/prototyping is required.

Knowledge of front-end basics (HTML, CSS) is a plus for effective collaboration with developers. Communication skills are important for understanding client needs and presenting design solutions.

Please send your CV and a link to your online portfolio (where your best web designs are) to design-careers@pixelperfect.com.

	Job A	Job B
1 logical reasoning	☐	☐
2 patience and tenacity	☐	☐
3 being good with figures	☐	☐
4 imagination	☐	☐

	Job A	Job B
5 self-discipline	☐	☐
6 accuracy	☐	☐
7 leadership skills	☐	☐
8 efficiency	☐	☐
9 creativity	☐	☐
10 drawing skills	☐	☐

2. Read Job advertisement A (Full-Stack Developer) and Job advertisement B (Web Designer) again.
Then look at the two online profiles below. For each profile, decide which of the two jobs (Job A or Job B) is most appropriate for them. Explain your reasoning.

Candidate Profile 1:
Sofia Alto, 25 years old
Professional Summary
I graduated in 2022 with a Bachelor's degree in Computer Science from Lviv Polytechnic National University. During my studies, I completed several personal projects involving web development, using React for the frontend and Node.js for backend APIs.
Since 2023, I've been working as a Junior Software Developer at TechInnovate Solutions. My responsibilities include developing and maintaining server-side logic, working with SQL databases, and deploying applications to AWS. I'm always eager to learn new technologies and improve my coding skills.

Candidate Profile 2:
Maria Bryl, 24 years old
Professional Summary
I graduated in 2023 with a Diploma in Graphic Design and Digital Media from Kyiv Academy of Arts. My coursework focused on user interface design, user experience principles, and visual communication.
Since 2023, I've been a Junior Web Designer at CreativeFlow Agency, where I create website layouts, mockups, and interactive prototypes for various clients. I am proficient in Figma, Adobe XD, and Photoshop. I have a strong understanding of responsive design and love making websites look appealing and easy to use. I also have a portfolio of my work available online.

3. Discuss if you would like to apply for any of the jobs. Give your reasons.

APPLYING FOR A JOB
CURRICULUM VITAE

Discuss:

- How is a CV different from a resume?
- What sections should a good CV include?

Personal information
Name: Liam Gallagher
Address: 12 High Street, Manchester M1 1AB, UK
Telephone: +44 7700 900345
Email: liam.gallagher@email.com
Date of birth: 10/11/1999

Education and Training
2024 Certificate in Data Analytics, DataCamp (Online Platform)
2023 Introduction to SQL and Databases Course, Udemy (Online)
2017-2021 Bachelor's Degree in Mathematics with Statistics, University of Manchester (Manchester, UK)

Work experience
March 2024 – present Junior Data Analyst Intern at InsightHub Ltd; responsible for assisting with data cleaning, performing basic statistical analysis, and preparing reports using Excel and Google Sheets.
August 2021 – February 2024 Retail Assistant (Part-time) at "The Book Nook"; managed inventory data, handled customer orders, and assisted with sales reporting.

IT skills
Proficient in spreadsheet software (Microsoft Excel, Google Sheets); good understanding of SQL for data extraction; basic programming skills in Python (Pandas, Matplotlib); familiar with data visualization tools (Looker Studio basics); strong understanding of data entry and validation.

Personal skills
Highly analytical; detail-oriented; excellent problem-solving abilities; strong communication skills for team collaboration; quick learner.
Languages
English mother tongue; Spanish (intermediate conversational); French (basic)

Hobbies and Interests
Photography, playing football, reading crime novels

References
Available upon request.

1. Write your own CV in English, using the CV above as a guide.

2. Think of your dream job and write a letter of application for it. You may look for real job adverts and practise applying for one of them.

A LETTER OF APPLICATION

"Your letter is your voice when you're not in the room."

Discuss:

- How can a letter of application create a strong first impression?
- What do employers want to read in a cover letter?

1. Read the letter of application and answer these questions.

1 Which job is Sarah Brown applying for?
2 Where did she see the advertisement?
3 How long has she been working as a software engineer?
4 What type of programs/projects has she worked on?
5 When did she spend three months in Germany?

Dear Mr Scott,

I am writing to apply for the position of Senior Software Engineer (Backend), which was advertised on July 10, 2025, on DOU.ua.

I graduated in May 2018 with a Master's degree in Computer Science. After my studies, I worked for a year with Global Tech Solutions. I stayed in this job until May 2019.

For the past six years, I have been working as a Software Engineer at Innovate Systems. I have designed and developed robust microservices in Java for various financial platforms, and since January 2024, I have been leading a project focused on developing web applications using Python/Django for e-commerce clients. These projects have been highly successful, and our team has secured several new contracts in Ukraine and across Europe.

Two years ago (in 2023), I spent three months in Germany on a project, testing our applications and collaborating with international teams. I also made several visits to France, gaining a basic knowledge of German and French. I now feel ready for more responsibility and more challenging work, and would welcome the opportunity to learn about a new industry.

I enclose my curriculum vitae. I will be available for an interview at your earliest convenience.

I look forward to hearing from you.

Yours sincerely,

Sarah Brown

2. Look at the job advertisement for a Junior Frontend Developer at TechSolutions. Ivan Kovalenko is interested in applying. Use his curriculum vitae below to write a letter of application.

Structure:

Paragraph 1: reason for writing *I am writing to apply for the position of...*

Paragraph 2: education and training *I graduated in (date)... I completed a course in...*

Paragraph 3: work experience *For the past X years I have been... Since X I have been...*

Paragraph 4: personal skills *I spent X months in (country)..., so I have knowledge of (foreign languages). I can...*

Paragraph 5: reasons why you are applying for this job *I now feel ready to... and would welcome the opportunity to...*

Paragraph 6: closing / availability for interview *I enclose... I look forward to... I will be available for an interview...*

Vacancies at TechSolutions.com

Junior Frontend Developer

We are seeking a **Junior Frontend Developer** for TechSolutions.com, a growing company dedicated to creating engaging web applications.

The successful candidate will assist in building user interfaces, implementing new features, and maintaining existing front-end code. You will be responsible for ensuring responsiveness across various devices and collaborating with backend developers and UI/UX designers.

Experience with **HTML, CSS, and JavaScript is essential**. Familiarity with **React or Vue.js** is a significant advantage. Basic knowledge of version control (Git) and responsive design principles is required. The successful candidate will also have knowledge of modern web development tools.

Send your CV and a covering letter to Ms. Eleanor Vance, HR Manager, TechSolutions, 10 Tech Park, Oxford Road, Manchester M13 9PL, UK.

Glossary

1. **software engineer** – програмний інженер / розробник програмного забезпечення
2. **computer security specialist** – спеціаліст з комп'ютерної безпеки
3. **frontend developer** – фронтенд-розробник
4. **backend developer** – бекенд-розробник
5. **hardware engineer** – інженер з апаратного забезпечення
6. **network administrator** – мережевий адміністратор
7. **data analyst** – аналітик даних
8. **help desk technician** – спеціаліст технічної підтримки / фахівець служби підтримки
9. **IT devices** – IT-пристрої
10. **computer programs** – комп'ютерні програми
11. **applications** – застосунки / додатки

12. **visual part of websites** – візуальна частина вебсайтів
13. **web apps** – веб-застосунки / веб-додатки
14. **server-side logic** – серверна логіка
15. **databases** – бази даних
16. **APIs** – API (інтерфейси програмування застосунків)
17. **hardware** – апаратне забезпечення
18. **software** – програмне забезпечення
19. **network** – мережа
20. **secure computer systems** – безпечні комп'ютерні системи
21. **end-users** – кінцеві користувачі
22. **computer problems** – комп'ютерні проблеми
23. **collects, analyzes, and interprets data** – збирає, аналізує та інтерпретує дані
24. **decision-making** – прийняття рішень
25. **physical devices** – фізичні пристрої
26. **chips** – чіпи / мікросхеми
27. **boards** – плати
28. **computer components** – комп'ютерні компоненти
29. **code** – код
30. **functions properly** – працює належним чином
31. **buttons, layout, animations** – кнопки, макет, анімація
32. **server logic** – серверна логіка
33. **threats** – загрози
34. **hackers** – хакери
35. **viruses** – віруси
36. **routers** – маршрутизатори
37. **servers** – сервери
38. **running smoothly** – працює безперебійно
39. **large datasets** – великі набори даних
40. **trends** – тенденції
41. **support decisions** – підтримувати рішення / допомагати у прийнятті рішень
42. **circuit boards** – друковані плати
43. **cyber threats** – кіберзагрози
44. **internal networks** – внутрішні мережі
45. **logical reasoning** – логічне мислення / логічне міркування
46. **patience and tenacity** – терпіння та наполегливість / завзятість
47. **being good with figures** – вміння добре працювати з цифрами / бути хорошим у підрахунках
48. **imagination** – уява
49. **self-discipline** – самодисципліна
50. **accuracy** – точність
51. **leadership skills** – лідерські навички
52. **efficiency** – ефективність
53. **creativity** – креативність / творчість

54. **drawing skills** – навички малювання
55. **curriculum vitae** – резюме
56. **a letter of application -** лист-заява (на роботу)
57. **covering letter** / **cover letter** − супровідний лист

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ANSWER KEY

How Computers Are Transforming Our World Today

1. **Answer True / False questions**

1. **T**
2. **F**
3. **T**
4. **F**
5. **T**
6. **T**
7. **F**
8. **T**
9. **F**
10. **T**

2. Answer the questions

1. Smart devices automate routine tasks and make life more convenient.
2. AI is used for learning, predicting, assisting drivers, biometric security, and real-time translation.
3. Smart homes use IoT to connect devices like lights, thermostats, and security cameras for automation.
4. Cloud platforms allow people to edit, create, and collaborate globally in real time.
5. Telemedicine enables doctors to provide care and diagnosis remotely.
6. Remote work has transformed team collaboration and become a standard business practice.
7. Technologies like Wi-Fi 6 and 5G provide fast and reliable internet connectivity.
8. Cybersecurity protects data and ensures safe sharing in a connected world.
9. A digital ecosystem refers to interconnected digital devices and software that interact and evolve.
10. People decide how technology is used ethically and creatively for society's benefit.

Vocabulary Practice

1. Complete the sentences with the correct word from the list below.

1. artificial intelligence
2. biometric security
3. smartphone
4. telemedicine
5. wearables
6. cloud platform
7. 5G
8. cybersecurity
9. smart home
10. computing

2. Match the word to its correct definition.

1 – c) Technology that enables machines to mimic human intelligence
2 – d) Internet-based services for data storage and software
3 – e) Devices worn on the body that collect data
4 – a) A secure method using physical traits for authentication
5 – b) A connected home with automated devices

3. Complete the dialogues

Using cloud platforms means we can access files and apps from anywhere. It helps us work remotely and collaborate easily.
We use strong **cybersecurity** protocols, including firewalls and regular software updates, to keep data safe.
Biometric security uses things like fingerprints or facial recognition to ensure only authorized people can access sensitive areas or information.
Yes, 5G provides much faster and more reliable internet, which helps with video calls and large file transfers.
AI can automate routine tasks, analyze data faster, and even assist in decision-making, making our work more efficient.

4. Sample Sentences

1. **Daily Life and Technology**
   - I use my **smartphone** every day to check emails, chat with friends, and listen to music. I also wear a **fitness tracker** to monitor my steps and sleep.
   - A **smart home** could improve my life by turning off lights automatically when no one is in the room and adjusting the heating to save energy.
2. **Health and Medicine**
   - **Telemedicine** helps patients see doctors from home, which is very convenient, especially during bad weather or for people with mobility problems.
   - **Biometric security** in hospitals ensures only authorized staff access patient records, protecting sensitive health information.
3. **Work and Education**

- Since my parents started **remote work**, they have a better work-life balance but sometimes miss face-to-face meetings.
- **Cloud platforms** allow students and teachers to share documents easily and attend virtual classes from anywhere.

4. **Future of Technology**
   - In 10 years, **artificial intelligence** might help with everyday decisions, like planning our schedules or driving cars safely.
   - **5G** will make the internet much faster, but it could be expensive to install everywhere, especially in rural areas.
5. **Safety and Privacy**
   - **Cybersecurity** is important because hackers can steal personal information and cause financial loss.
   - People should use strong passwords, update software regularly, and avoid sharing sensitive data on unsecured websites.
6. **Technology in Society**
   - A **digital ecosystem** connects devices like phones, computers, and smart appliances, allowing them to work together smoothly.
   - Technology helps us stay connected with friends and family, but sometimes it can reduce face-to-face interactions.

Computer Architecture

1. Scan the text to find this information.

1. What is the memory size (RAM) of this PC?
   16GB DDR5 RAM is clearly stated.
2. What storage devices are included?
   1TB NVMe SSD (Gen 4) is specified as the primary storage.
3. What is the size and resolution of the display screen?
   27-inch 4K UHD IPS monitor (3840 × 2160) is detailed.
4. How fast is the processor?
   Intel Core i7 14th Gen with speeds **up to 5.2GHz Turbo Boost** is mentioned.
5. What is the capacity and type of the hard drive?
   1TB and **NVMe Gen 4 SSD** — both capacity and type are covered.
6. What type of graphics card does the computer use?
   NVIDIA GeForce RTX 4060 with 8GB GDDR6 VRAM is described.
7. What operating system does the computer run?
   Windows 11 Pro is included and highlighted.
8. **What multimedia features does this computer offer?**
   7.1 surround sound, **Blu-ray RW drive**, and **USB-C 3.2** — all qualify as multimedia features.
9. **What types of ports and optical drives are available?**
   Mentions **USB 3.2**, **USB-C**, and **Blu-ray RW optical drive**.

2. Match the component with its function. Then describe its function in two ways.

1 – i	**6 – h**
2 – f	**7 – g**
3 – c	**8 – e**
4 – a	**9 – g**
5 – b	**10 – d**

3. Work in pairs. Find out as much as you can about your partner's computer and fill in the table.

4. Example Answer (for Lena, the designer):
I recommend a computer with an Intel Core i7 or AMD Ryzen 7 CPU, at least 32 GB of DDR5 RAM, and a dedicated GPU like NVIDIA RTX 4060. Since she works with large files, she needs a 1 TB SSD and a 4K monitor for accurate color display. These components support heavy graphic tasks and smooth performance.

Peripheral Devices and Their Interaction with a Computer

Vocabulary Practice

1. Match the terms with their definitions.
1–b, 2–a, 3–c, 4–d, 5–e

2. Complete the sentences using the correct word.
1–input, 2–store, 3–monitor, 4–port, 5–peripheral

3. Complete the dialogue using appropriate vocabulary.
1–wired, 2–port, 3–driver, 4–Bluetooth, 5–device

4. Choose the correct answer.
1**:** b) Monitor

2**:** c) Store data
3**:** b) Driver
4**:** c) Bluetooth

Operating Systems: Types, Functions, and Principles of Operation

1. Answer the questions:

1. An operating system is software that manages computer hardware and software resources and provides services for computer programs.
2. Main functions include process management, memory management, and file system management.
3. Command line interface and graphical user interface.
4. Process management involves managing running applications and processes, including multitasking.
5. Multitasking is the ability of an operating system to run multiple processes at the same time.
6. Examples include operating systems used in medical devices or industrial machines.
7. Device drivers allow the operating system to communicate with hardware devices.
8. Memory management controls and allocates computer memory to processes and applications.
9. Virtual memory is a memory management technique that uses disk space to extend RAM capacity.
10. File system management organizes and controls how data is stored and retrieved.
11. Batch processing systems handle jobs in batches without user interaction, while network operating systems manage network resources and allow multiple computers to communicate.
12. The kernel is the core part of the operating system that controls hardware and system resources.
13. Security protects the system from unauthorized access and threats.
14. Task scheduling organizes processes to run efficiently and fairly on the CPU.
15. Input/output management controls communication between the system and peripheral devices.

Vocabulary Practice

1. Fill in the right word:

1. kernel
2. graphical user interface
3. memory
4. device
5. multitasking
6. virtual
7. batch
8. file system
9. interaction
10. unauthorized

1. Guess the term:

1. scheduler
2. command-line interface
3. virtual memory
4. driver
5. network operating system

2. Translate into English:

1. memory management
2. graphical user interface
3. multitasking
4. device driver
5. virtual memory
6. operating system kernel
7. protection against unauthorized access
8. batch processing
9. file system
10. input/output management

3. Design Your Own Operating System

Sample answer:

1. My OS will use a **monolithic kernel**, which manages hardware resources and system processes efficiently by running all core services in one space.
2. It will have both a **graphical user interface** (GUI) and a **command-line interface** (CLI) to give users flexibility in how they interact with the system. The GUI will be user-friendly for beginners, while the CLI will offer power users more control.
3. The OS will handle **memory management** by allocating RAM to programs dynamically and will support **virtual memory** to extend available memory using disk space.

4. It will support **multitasking**, allowing several programs to run at the same time without slowing down the system.
5. To communicate with external devices, my OS will use specific **device drivers** that enable interaction with printers, keyboards, and other peripherals.
6. For storing data, it will use a modern **file system** that organizes files efficiently and supports quick access and security features.
7. The OS will include strong **security** protocols to prevent **unauthorized access**, such as password protection, encryption, and user permissions.
8. It will support **batch processing** so that users can automate repetitive tasks, increasing productivity for businesses.
9. **Input/output management** will coordinate data flow between software and hardware devices, ensuring smooth performance.
10. My OS will be a **network operating system**, supporting communication between multiple computers to share resources like files and printers easily.

Technical Support and Maintenance of Computer Systems

1. True or False:

1. False – Technical support helps with both hardware and software issues.
2. True – The text mentions that remote work is possible.
3. False – Regular cleaning of components is necessary for better performance.
4. True – Backups protect data from cyber threats.
5. True – Monitoring helps detect problems earlier.

2. Answer the questions:

1. It helps users solve computer problems and use their systems better.
2. They use remote desktop tools.
3. Because it protects systems from viruses and cyber threats.
4. To save important data in case something goes wrong.
5. They monitor system performance and resource usage.

Vocabulary Practice

1. Match the term with its definition:

1.C	6.A
2.B	7.G
3.F	8.J
4.H	9.D
5.I	10.E

2. Complete the sentences with the correct word (ключові слова):

1. antivirus
2. remote
3. maintenance
4. backup
5. updates
6. monitoring

3. Choose the correct option:

1.B
2.C
3.A

1. The computer won't start. I will check the power supply, cables, and hardware connections.
If everything is connected correctly, I might try to reset the BIOS or test the power supply unit. It's also a good idea to listen for any beeping sounds that could indicate hardware errors.
2. The printer is not responding. I will restart the printer, check the drivers, and ensure it's connected properly.
I may also reinstall the printer software or try printing from a different device to see if the issue is with the printer or the computer.
3. A virus has infected the system. I will run a full antivirus scan and remove any threats.
After that, I will update the antivirus software and avoid opening unknown attachments or suspicious websites.
4. The internet connection is unstable. I will check the router, restart the modem, and test the connection speed.
If the problem continues, I might contact the internet service provider or try using a wired connection instead of Wi-Fi.
5. The computer is slow and freezes. I will close background apps, clean temporary files, and scan for malware.
I might also check how much RAM is being used and consider upgrading hardware if the system is outdated.

Software Development Life Cycle

Reading Comprehension

1. Read the text and identify how many stages the software development life cycle has. Name them.

Six stages: Planning, Analysis, Design, Implementation, Testing, Maintenance.

2. Determine at which stage

a) Planning
b) Analysis
c) Implementation
d) Testing
e) Implementation (Deployment)
f) Maintenance

3. Answer the questions

a) Planning sets clear goals and prepares the project for success.
b) Testing finds and fixes bugs to improve software quality.
c) Maintenance updates and repairs software after release.
d) Design creates a detailed plan for programmers to follow.

Vocabulary Practice

1. Match the words with their definitions

1 — b
2 — e
3 — d
4 — a
5 — c
6 — f
7 — g
8 — h

2. Fill in the blanks with the correct word

implementation
quality assurance (testing теж прийнятно)
maintenance
documentation
version control
user feedback

3. Choose the correct option

1. **b)** planning
2. **b)** deployment
3. **b)** debugging
4. **b)** to gather detailed system requirements
5. **c)** the system structure and UI are planned
6. **b)** the team writes the source code
7. **b)** design
8. **c)** to find and fix bugs
9. **c)** updating features and fixing bugs
10. **b)** defines goals, requirements, and estimates costs

4. Make sentences

Sample
Maintenance is important to keep software running smoothly after release.
Version control allows developers to track and manage code changes.
User feedback helps improve the quality of software.
Project management coordinates all phases of software development.
Quality assurance ensures the product meets the required standards.

5. (Example) I find testing most important because it helps find errors before users see the software. It improves the quality and reliability of the product. Testing saves time and money by preventing problems later.

User Interface and User Experience Design

Reading Comprehension

1. True or False

1. **False** – це опис UX, а не UI.
2. **True**
3. **False** – Wireframes — це статичні макети, не інтерактивні.
4. **False** – UX включає навігацію, емоції, функціональність тощо.

5. **True**
6. **True**
7. **False** – Accessibility (доступність) дуже важлива.

2. Answer the questions (Sample answers)

1. UI design focuses on the visual elements and layout of the product.
2. Typography, color scheme, icons, spacing, and layout.
3. A user persona is a fictional character that represents a typical user's needs and behavior.
4. Usability testing is important to identify and fix problems before release.
5. Microinteractions give feedback to users and improve interaction understanding.

Vocabulary Practice

1. Vocabulary Match

1. Fill in

1. grid
2. prototype
3. Accessibility
4. typography
5. navigation
6. responsive design
7. color scheme
8. mockup
9. Onboarding
10. call to action (CTA)

3. Guess the design element

1. white space
2. typography
3. grid
4. user flow
5. icon
6. wireframe
7. color scheme
8. contrast
9. button
10. navigation bar

5. Creative Task: Mini Project (Sample answers)

- **UI elements:** search bar, timetable button, announcements panel.
- **UX improvements:** clear navigation, feedback for user actions, fast loading.
- **Accessibility features:** text-to-speech support, contrast mode.

Images in Graphic Design

Reading Comprehension

1. Choose the correct answer:

a) **photograph** — a realistic picture taken with a camera.
b) **logo** — a special image representing a brand or company.
c) **icon** — a small, simple image used for navigation or representation.
d) **PNG** — an image format used for pictures with transparency.

2. True or False:

a) False — Photographs are realistic images, not drawings.
b) True — Logos help build a company's identity.
c) True — High-resolution images look clear and sharp.
d) False — Designers use color correction to improve colors, not worsen them.
e) True — White space helps make the design clean and professional.

Vocabulary Practice

1. Fill in the blanks:

a) **photo retouching** — tools used to improve or edit colors in images.
b) **grid** — a system that organizes images and elements evenly.
c) **icons** — small images that represent objects or actions.
d) **logo** — an image representing a brand.

e) **resolution** — refers to image quality, high or low clarity.
f) **transparency** — technique that allows layering images with see-through parts.

2. Match the terms with their definitions:
a) **Illustration** — 2. drawings or digital artwork made by designers
b) **Icon** — 3. small simple images that represent objects or actions
c) **Transparency** — 4. ability to see through parts of an image
d) **White space** — 1. empty space around images to avoid clutter
e) **Grid** — 5. layout system to align elements evenly
f) **Color scheme** — 6. selection of colors used to create harmony

3. Discussion
Sample answers:

1. High-resolution images are important because they look clear and sharp, which makes the design appear professional and visually pleasing. If an image is low resolution, it can look blurry or pixelated, making the design less attractive and harder to understand. Clear images improve user engagement and the overall quality of a design.

2. Color schemes affect the look and feel of a design by creating harmony between different elements. Matching images to the color scheme makes the design look balanced and professional. Colors can influence emotions and the message that the design communicates, so choosing the right colors is important for effective design.

3. Logos are important because they represent a company's identity and help customers recognize the brand easily. A good logo is simple, unique, and memorable, which helps build trust and attract clients. Logos often convey the company's values or mission in a visual way.

Web Development: Frontend (HTML, CSS, JavaScript)

Reading Comprehension
1. Read the statements and say if they are True or False

1. **False** – CSS is used for styling, not logic.
2. **True** – JavaScript is used to add interaction.
3. **False** – An API connects different systems, not just frontend websites.
4. **False** – Debugging means finding and fixing errors, not writing new code.
5. **False** – Cross-browser compatibility means the site works in **all** browsers, not just Chrome.
6. **False** – HTML is used for **structure**, not styling (styling is done with CSS).

7. True Frontend = look and feel for users
8. True HTML + CSS + JS work **together** to build the frontend.
9. True JavaScript can update the page **without reload** (e.g., DOM manipulation, AJAX).
10. True – APIs are used to **get/send data** between frontend and backend.
11. False – Version control **does** help track changes.
12. False – Debugging is important for **frontend** developers too.
13. False – Frontend developers **must** test websites on different devices.

3. Put the steps in the correct order when creating a simple webpage:
b → a → d → c

Vocabulary Practice

1. Match the term with its definition

A-4, B-1, C-5, D-7, E-3, F-2, G-6, H-8

2. Fill in the blanks.

1. tag, 2. spacing, 3. element, 4. image slider, 5. color, 6. interactivity, 7. style, 8. dynamic behavior

3. Choose the correct option to complete each sentence.
1-b, 2-c, 3-b, 4-b

4. What will you fix?

Sample:
*I will apply a **responsive layout** so it works well on all screen sizes.*
*I will add more **spacing** to improve readability.*
*I will add **form validation** to check the user's input.*
*I will replace the menu with a **dropdown menu** to save space.*
*I will add simple **animation** to make it more dynamic.*
*I will update the **style** and choose a better **colour scheme**.*
*I will change the image **format** and optimize each image **element**.*

Optional Follow-up:
A: Your page looks messy on tablets. I think the **layout** isn't responsive.
B: You're right. I'll **redesign** the layout and **apply** a responsive grid system.

A: The website feels static. There's not enough **interactivity** for users.
B: Good point. I'll **add** more interactivity with JavaScript, like hover effects and form responses.

A: The homepage doesn't feel modern. There's no **dynamic behavior** at all.
B: I agree. I'll **implement** some dynamic behavior, like loading new content without refreshing the page.

A: You promised a gallery, but I don't see any **image slider**.
B: Oh, I forgot! I'll **add** an image slider using a lightweight JavaScript plugin.

A: Some of the HTML elements are missing closing **tags**. That could cause display issues.
B: Thanks for noticing. I'll **fix** the tags and **validate** the HTML code.

Web Development: Backend (Servers and Databases)

Reading comprehension
1 True / False

1. **F (False)** – The backend **is the part of a website that users don't see**, not the visible part.
2. **T (True)** – **A server stores website files and handles requests** from browsers, as described.
3. **F (False)** – **MongoDB is a database**, not a programming language.
4. **T (True)** – **Python is one of the popular backend programming languages** mentioned in the text.
5. **T (True)** – Backend developers **write code that connects the website to the database and handles user requests**.
6. **T (True)** – **Security helps protect sensitive data**, such as passwords.
7. **F (False)** – **APIs are used to share data between systems**, not for designing the layout.
8. **T (True)** – Tools like **Git** are **version control systems** used in backend development.
9. **T (True)** – The backend must be **secure, efficient, and scalable** according to the text.
10. **F (False)** – **SQL is used with relational databases**, not for creating animations.

2 Answer the questions

1. The backend includes the server, the database, and the application logic.
2. A server stores website files and responds to user requests.
3. Databases are important for storing and managing data like user info or messages.
4. A backend developer connects the website to the database and handles logic and requests.
5. Python, Node.js, and PHP are examples of backend languages.
6. Security protects sensitive data such as passwords and user info.
7. Websites use APIs to get data from other services in real-time.
8. They use version control systems like Git, frameworks like Django, and cloud services like AWS.
9. Efficiency ensures the website works fast even with many users.
10. Scalability means the website can handle growth and more traffic.

Vocabulary Practice
1. Guess the term from its definition:

1. Handles browser requests and stores website files — f) server
2. Protects user information — g) secure
3. The part of the website users don't see — a) backend
4. Allows communication between systems — c) API
5. Keeps and organizes information — b) database
6. Supports many users without performance loss — d) scalable
7. A tool to manage code versions — e) version control
8. Manner of showing updates immediately — h) real-time
9. A language for working with databases — i) SQL
10. Online service used to host websites — j) cloud platform

2. Fill in the missing counterpart. Then provide context you might hear these words in.
secure → security
*The system must be secure to ensure user data protection.− We must improve the system's **security** to protect sensitive information.*
scalable → scalability

*We need a scalable infrastructure for our growing business. − The **scalability** of the platform ensures it can handle millions of users.*

efficient → efficiency

*The algorithm is efficient and saves processing time. − Its **efficiency** makes it ideal for real-time systems.*

reliable → reliability

*Reliable servers are important for customer trust. − The server's **reliability** reduces downtime.*

dynamic → dynamics

*Dynamic interfaces respond quickly to user actions. − Modern UI **dynamics** help create a better user experience.*

develop → development

*We develop web applications using modern frameworks. − Our team specializes in **frontend development**.*

communicate → communication

*APIs allow systems to communicate with each other.− **Communication** between services must be seamless.*

protect → protection

*Firewalls help protect the server from attacks. − We ensure strong **protection** against malware.*

connect → connection

*You must connect the app to the database. − The **connection** was lost during the data transfer.*

interact → interaction

*Users interact with the interface using gestures. − Smooth **interaction** improves usability.*

perform → performance

*The website must perform well during peak hours. − We optimized it for better **performance**.*

update → update

*Please update the app to the latest version − The recent **update** fixed major bugs.*

3. Word formation

1. scalable
2. communication
3. efficiency
4. development
5. updates
6. dynamics
7. implement
8. security
9. reliable
10. connection

5. B

1. A company's website keeps crashing when too many users visit at once. Which backend principle is being ignored? What solution would you suggest?

Answer: The principle of **scalability** is being ignored.

Suggested solution: Use **load balancing**, **auto-scaling infrastructure** (like AWS EC2 Auto Scaling), **caching layers** (e.g., Redis), and **database optimization** to handle increased traffic efficiently.

2. You need to connect your website to a third-party payment system. Which backend component or tool should you use and why?

Answer: Use a **third-party API** provided by the payment processor (e.g., Stripe, PayPal).

Why: APIs allow secure and standardized communication between your backend and the external payment service without handling sensitive data directly.

3. Your team is working on a project using different programming languages. How can version control help you manage this project?

Answer: A **version control system** (like Git) helps by:

- Tracking changes across all files and languages
- Allowing team collaboration through branches and merges
- Preventing code conflicts
- Keeping a detailed history of contributions

4. A user says the website is "too slow." What backend factors might be causing this, and how could you improve them?

Possible causes:

- Unoptimized database queries

- Lack of caching
- Inefficient code or logic
- Slow third-party API responses

Improvements:

- Optimize database queries and add indexes
- Use server-side caching (Redis or Memcached)
- Refactor slow parts of the code
- Use asynchronous processing or queue systems (like RabbitMQ)

5. Imagine your database contains sensitive customer data. Which security measures would you recommend, and why? Recommended measures:

- **Data encryption** at rest and in transit
- Use of **authentication and authorization** protocols (e.g., OAuth, JWT)
- **Prepared statements** to prevent SQL injection
- Regular **access audits** and **backups**

Why: To protect user privacy, prevent breaches, and comply with regulations (e.g., GDPR, HIPAA).

1. **The product team asks for real-time updates on the dashboard. What backend technologies would help implement this?**

Answer:

- **WebSockets** for real-time bidirectional communication
- **Server-Sent Events (SSE)** for one-way real-time updates
- **Realtime databases** (e.g., Firebase Realtime Database)
- **Message queues** or **pub/sub systems** like Kafka or Redis

2. **How does API integration improve user experience on modern websites? Give a specific example.**

Answer: API integration allows websites to access external services, enhancing functionality without rebuilding them.
Example: Using the **Google Maps API** to display maps directly on a website improves navigation and usability for users.

3. **If your website grows quickly and serves a global audience, what backend decisions must you review and possibly change?**

Answer:

- Use a **Content Delivery Network (CDN)** for static content
- Deploy servers in multiple regions (**geo-distributed architecture**)
- Implement **database replication and sharding**
- Review **autoscaling** and **caching strategies**

1. **Your database has grown very large. What can you do to maintain performance and efficiency?**

Answer:

- Archive old or infrequently accessed data
- Add **indexes** to frequently queried fields
- Use **read replicas** for load distribution
- Apply **database sharding**
- Implement **caching** for common queries

2. **What is the difference between a reliable and an efficient backend system? Can you think of a case when one is more important than the other?**

Answer:

- A **reliable** system is stable and always available
- An **efficient** system performs tasks quickly with minimal resource use

Example:
In banking or healthcare systems, **reliability** is more important than speed.
In real-time video streaming, **efficiency and low latency** are more critical for a good user experience.

Software Testing and Quality Assurance Methods

Reading Comprehension

1. Answerthe questions

1. The main goal of software testing is to verify that the software meets requirements and is free of defects.
2. The four levels of software testing are:
    - Unit testing: tests individual components.

- Integration testing: checks how modules work together.
- System testing: evaluates the entire system end-to-end.
- Acceptance testing: confirms the software meets business and user needs.

3. Functional testing verifies that the software behaves according to requirements, while non-functional testing checks performance, security, usability, and other attributes not related to specific functions.
4. Regression testing is important because it ensures that new code changes do not break existing functionality.
5. Quality Assurance includes improving development processes such as test automation, code reviews, continuous integration, and static code analysis.
6. Two common QA practices to improve code quality are code reviews and static code analysis.
7. Test automation allows running tests automatically, increasing efficiency and consistency, especially within CI/CD pipelines.

Vocabulary Practice

1. Match the terms with their definitions

a) unit testing — 4
b) integration testing — 3
c) system testing — 1
d) test automation — 2
e) regression testing — 5

2. Fill in

1. test case
2. static code analysis
3. mean time to repair
4. exploratory testing
5. test plan
6. defect density
7. continuous integration
8. bug

The QA Journey: Finding and Fixing Software Issues

1. True or False

1. **False** — A test case includes specific steps, inputs, and expected results, not random behavior.
2. **True**
3. **False** — UI bugs refer to visual or layout issues, not performance-related ones.
4. **True**
5. **False** — Bugs are fixed based on their severity and priority.
6. **True**
7. **False** — Exploratory testing is manual, based on the tester's intuition and experience, not automated.
8. **False** — Developers are responsible for fixing bugs reported by testers.

2. Short Answers

1. A test plan defines the scope, objectives, resources, and schedule of the testing process.
2. A tester might enter an incorrect password to check if the system shows the proper error message.
3. Testers verify form validation, navigation, data saving, and system behavior under load or errors.
4. UI bugs and logic bugs are two examples mentioned in the text.
5. Bug tracking tools like Jira are used to report and monitor bugs.
6. Regression testing ensures that fixing one issue does not introduce new bugs elsewhere in the system.
7. The backend logic or the formula used in the code might need to be corrected.

1:

1. a – 3
2. b – 1
3. c – 5
4. d – 4
5. e – 2

2:

1 – bug tracking system
2 – test plan
3 – performance bug
4 – test environment
5 – severity

6 – endpoint (extra)

3. What Kind of Bug Is It?:

1. functional bug
2. performance bug
3. logic bug
4. security bug
5. ui bug
6. integration bug

4. Match the problem with the fix

Tester 1: Also, the total price in the shopping cart is calculated incorrectly when applying discounts.
Tester 2: That's definitely a backend logic issue. We should update how the calculations are made.
Tester 1: When users try to submit a payment, the app doesn't get any response from the payment gateway, and an error occurs.
Tester 2: We need to check and fix the API responses or endpoint logic for the payment system.
Tester 1: There's a critical bug where users can submit the form without filling mandatory fields, causing the system to crash.
Tester 2: We should add proper validation rules for input fields to prevent that.
Tester 1: Also, when users enter wrong data, the error messages are confusing and unclear.
Tester 2: Yeah, improving error messages and user feedback is a must.
Tester 1: The app gets really slow when searching a large database.
Tester 2: We should optimize the database queries to improve performance.
Tester 1: And one more thing — unauthorized users can access pages meant only for admins.
Tester 2: That's a security risk. We need to add authorization checks to protect sensitive data.

6. Bug report

Example:

I tested the registration form and found three bugs. First, the "Submit" button doesn't work when clicked — this is a **functional bug**. The developers need to fix the backend logic that handles form submission. Second, the error messages are confusing and do not explain what went wrong. This is a **user feedback issue**, so improving error messages would help users. Third, on mobile devices, the form fields overlap and look messy. This is a **ui bug** that requires fixing the frontend layout and CSS styles. Specifically, the CSS media queries should be adjusted to make the layout responsive, and spacing/padding between fields should be corrected to avoid overlap.

Wired and Wireless Network Components

1. True or False?

1. **True** – Wi-Fi 6 and 6E support high speeds, lower latency, and more devices.
2. **False** – ADSL and cable modems are being replaced by fiber-optic modems and 5G routers.
3. **True** – Firewalls are used to protect the network from unauthorized access.
4. **False** – A switch and a router are different devices with different functions.
5. **False** – WEP is outdated and no longer secure.
6. **True** – Wireless access points allow mobile devices to connect to wired LANs.
7. **False** – Fiber-optic cables are used for long-distance, high-throughput connections.
8. **False** – Most modern routers support gigabit or even 10-gigabit Ethernet speeds.
9. **True** – Network administrators protect infrastructure by updating firmware and monitoring access.
10. **False** – Wired networks use physical cables, not radio signals.
11. **False** – Gigabit Ethernet is typically faster and more stable than Wi-Fi, depending on the situation.
12. **True** – A gateway enables communication between different network types (e.g., IPv4 and IPv6).

2. Answer the questions:

Twisted-pair Ethernet cables and fiber-optic cables.
They connect wireless devices to a wired LAN or the Internet.
Because they support high-speed, long-distance communication.
Higher speeds, lower latency, and support for more devices.
WPA3 encryption, firewalls, firmware updates, and access monitoring.

3. Table of advantages and disadvantages

Network Type	**Advantages** (at least 2)	**Disadvantages** (at least 1)
Wired Network	1. High-speed data transfer (Gigabit or 10-Gigabit Ethernet)	Requires physical cables and installation effort
	2. Reliable long-distance	

	communication (fiber-optic cables)	
Wireless Network	1. Easy connection for mobile devices	Potential security risks if outdated protocols used
	2. Wi-Fi 6/6E: high speed, low latency in crowded environments	

Voc practice

1. **Fill in the blanks (Vocabulary)"**:

1. Ethernet cables
2. access point
3. WPA3
4. router
5. WEP
6. backbone
7. gateway
8. 5G router
9. Wi-Fi 6
10. firewall

3. Discuss the questions.

1. A router directs data traffic between different networks. It connects a local network, like a home or office LAN, to the Internet or other networks. It is important because it manages data flow, assigns IP addresses, and ensures devices can communicate efficiently and securely.
2. A wired network connects devices using physical cables such as Ethernet or fiber-optic cables. A wireless network connects devices without cables, using radio signals. Wired networks offer more stable and faster connections, while wireless networks provide flexibility and convenience for mobile devices.
3. For a small office network, I would need routers to connect to the Internet, switches to connect multiple wired devices, wireless access points for mobile devices, and possibly a file server to share data. This setup ensures all employees can access resources and the Internet reliably.
4. Network security is important to protect sensitive data and prevent unauthorized access. To secure a wireless network, I would use WPA3 encryption, regularly update the firmware on devices, set strong passwords, and use a firewall to monitor traffic.
5. Fiber-optic cables improve network performance by transmitting data as light signals, which travel faster and over longer distances without losing quality compared to traditional copper cables. This results in higher speeds and better reliability, especially for backbone connections.

Writing:

Modern wireless standards like Wi-Fi 6 and WPA3 are better than older ones because they offer faster data speeds, lower latency, and can support more devices at the same time. WPA3 also provides stronger security, protecting networks from modern threats. These improvements make wireless networks more efficient and safer, especially in busy environments like offices or schools.

Protocols and Network Architecture

1. True or False

1. True
2. False
3. True
4. False
5. True
6. False
7. False
8. True

2. Answer the questions

1. To ensure reliable and organized data exchange between devices.
2. DNS, TCP/IP, HTTP
3. Translates domain names into IP addresses.
4. The structure and design of a computer network.
5. Client-server and peer-to-peer
6. Clients request services, servers provide them.
7. To explain the layers of network communication and help troubleshoot.
8. It helps diagnose and resolve communication problems.
9. Security, speed, scalability, and network size.
10. By using encryption, secure protocols, and access controls.
11. Data loss, miscommunication, or network failure.
12. It's reliable, scalable, and supports most internet communication.
13. Client-server: centralized control; P2P: shared resources and simplicity.

14. They show where problems happen and how to fix them.

Vocabulary Practice

1. Match the terms

1. protocol – **c**
2. consistent communication – **d**
3. network architecture – **e**
4. client-server – **f**
5. scalability – **a**
6. transmission of data – **b**
7. high-security environments – **g**
8. implement protocols – **h**

2. Fill in the blanks

1. peer-to-peer
2. network architecture
3. protocols
4. implement
5. communication
6. network
7. scalability
8. password
9. security
10. performance

3. Discussion (sample answers)

1. It simplifies problem-solving and separates functions.
2. It offers better control and security.
3. By using firewalls and encryption.
4. Both are important, but security prevents serious damage.
5. Yes – it could be DNS or server-side failure.
6. To design efficient systems and troubleshoot issues properly.

Computer Systems and Server Administration

1. Fill in the Blanks

1. update
2. intrusion detection system
3. system / server administration
4. configure
5. software patch
6. fix vulnerabilities
7. firewall
8. install
9. cyberattack
10. install (or configure – depending on how you interpret "before launching", both may work)

2. Match the terms with their denitions

1 – G
2 – I
3 – H
4 – A
5 – E
6 – D
7 – F
8 – C
9 – B
10 – J

3. Answer the questions

1. A firewall protects a network by monitoring and controlling incoming and outgoing network traffic to prevent unauthorized access.
2. A VPN creates a secure, encrypted connection over a public network, protecting data from interception and eavesdropping.
3. Network configuration is important because it sets up IP addresses, subnets, and other settings that enable devices to communicate properly.
4. Backup management involves creating and maintaining copies of data to recover information in case of loss or failure.
5. A protocol is a set of rules that defines how data is transmitted and received between devices, ensuring reliable communication in a network.

4. Respond to the question or statement

1. To improve security, we should install a stronger **firewall** and use an **intrusion detection system** to monitor suspicious activity.
2. You should set up regular **backup** procedures to save copies of your data and prevent loss.
3. Using a **VPN** will allow you to securely connect to the office network from anywhere.
4. Implementing **automation** with scripts can help reduce manual work and improve efficiency.
5. Dividing the network into smaller **subnets** and upgrading the **router** can improve speed and management.
6. Some websites might be blocked by the **firewall**, so checking its settings could solve the access problem.
7. To protect sensitive data over public networks, we should use a **VPN** for encrypted communication.
8. To avoid losing data when the system crashes, do regular **backups** and have a recovery plan.
9. You can use an **intrusion detection system** to monitor and alert us about suspicious activities, to find if someone tries to break into your network.
10. Creating smaller **subnets** and properly configuring **routers** can improve communication within a large network.

5. Network / System issues for discussion

Ideas to use in responses:

1. Check the router and bandwidth settings.
2. Restart the access point.
3. Update user permissions.
4. Reset the password.
5. Enable the firewall.
6. Scan for viruses or malware.
7. Install VPN for secure access.
8. Run system diagnostics.
9. Use backup to restore files.
10. Check the DNS settings.
11. Reassign IP addresses.
12. Update the router firmware.
13. Monitor traffic with IDS.
14. Divide the network into subnets.
15. Automate updates with scripts.
16. Review security logs.
17. Replace outdated hardware.
18. Check printer connection.
19. Configure remote access.
20. Block suspicious websites.

6. Sample dialogue:

Manager: We had some security breaches last month, and our network speed is slow. What do you suggest?
Administrator: We can start by installing a new **firewall** to better protect our network from attacks. Also, setting up a **VPN** will help secure connections for remote workers.
Manager: That sounds good. What about the slow network speed?
Administrator: Dividing the network into smaller **subnets** will reduce traffic congestion. Upgrading our **routers** can also improve performance.
Manager: Are there other steps we should take for data safety?
Administrator: Yes, we need to create regular **backups** and have a clear **disaster recovery** plan to restore data if something goes wrong.
Manager: What about managing all these tasks? It seems like a lot of work.
Administrator: We can use **automation** tools to run routine tasks like software updates and monitoring. This will save time and reduce errors.
Manager: Great. Who will be responsible for these changes?
Administrator: I will coordinate the installations and training. I'll also prepare a schedule for regular backups and system checks.
Manager: Perfect. Let's start this plan next week and review progress after a month.

Job hunting

IT professionals

1. Read each description and write the correct job title

1. hardware engineer
2. software engineer
3. frontend developer
4. backend developer

5. computer security specialist
6. network administrator
7. help desk technician
8. data analyst

2. IT Professions – Multiple Choice Quiz

1. A) hardware engineer
2. B) software engineer
3. B) frontend developer
4. A) backend developer
5. C) computer security specialist
6. B) network administrator
7. A) help desk technician
8. C) data analyst

JOB ADVERTISEMENTS

1. **The most important qualities and abilities for each job:**

The top 3 most important qualities for each job are marked with ★

No.	Quality / Ability	Job A: Full-Stack Developer	Job B: Web Designer
1	Logical reasoning	✓ ★	
2	Patience and tenacity	✓	✓
3	Being good with figures	✓	
4	Imagination		✓ ★
5	Self-discipline	✓	✓
6	Accuracy	✓ ★	✓
7	Leadership skills		
8	Efficiency	✓	✓
9	Creativity	✓	✓ ★
10	Drawing skills		✓

You could also add:

- For **Job A**:
  - Problem-solving
  - Knowledge of frameworks
  - Technical adaptability
- For **Job B**:
  - Visual communication
  - UI/UX empathy
  - Aesthetic sense