WORLD'S KEY

Computer

LEVEL 4



COMPUTER

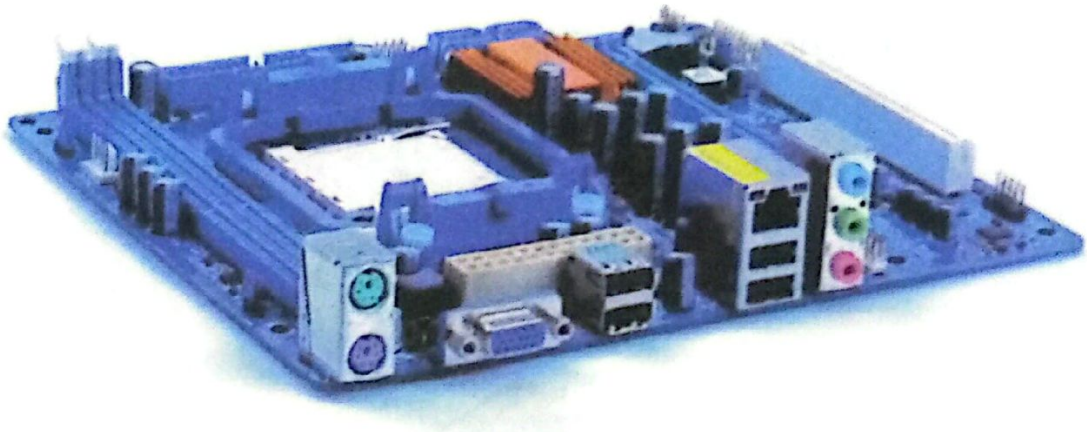
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LESSON 1 MOTHERBOARD

What is a Motherboard?

A **motherboard** is a circuit board (a meeting point) that connects all the internal and external parts of a computer.



Common Names for the Motherboard

- Mainboard
- Circuit board
- System board

Most electronic devices contain a mainboard, such as TVs, printers, and phones.

Components of a Motherboard

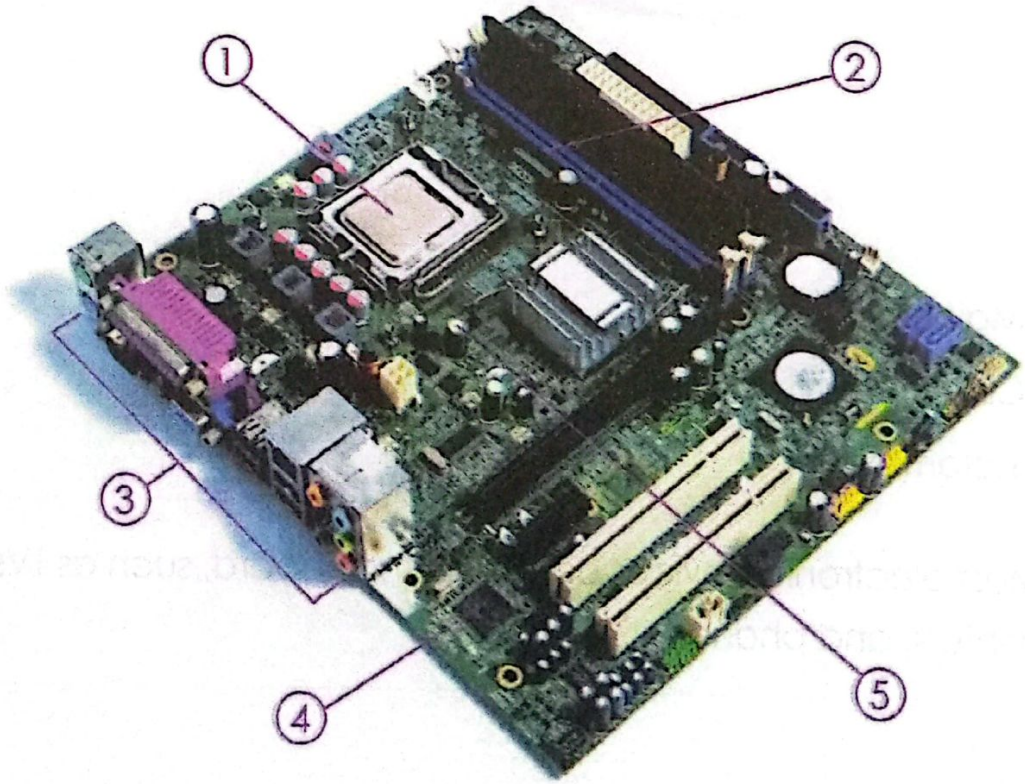
1 CPU socket

2 RAM slot

3 Peripheral connectors

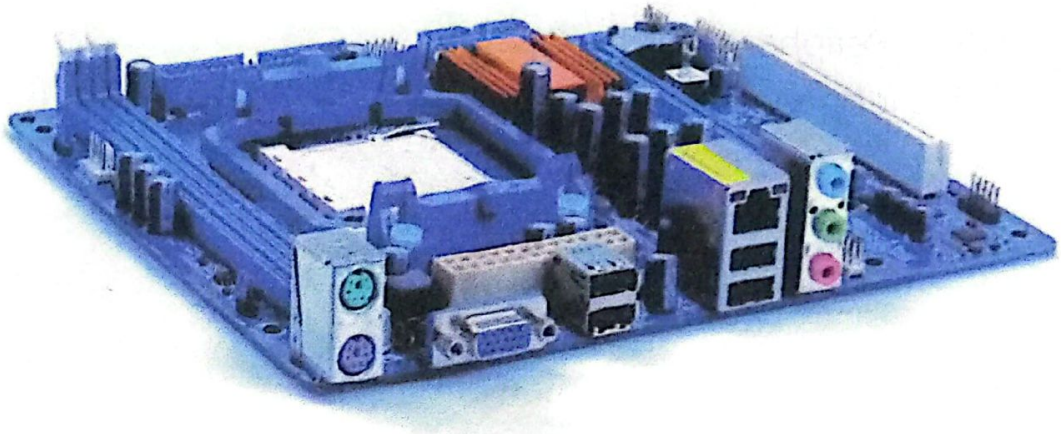
4 Chipset

5 Transistor and capacitor



What is a Motherboard?

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Common Names for the Motherboard

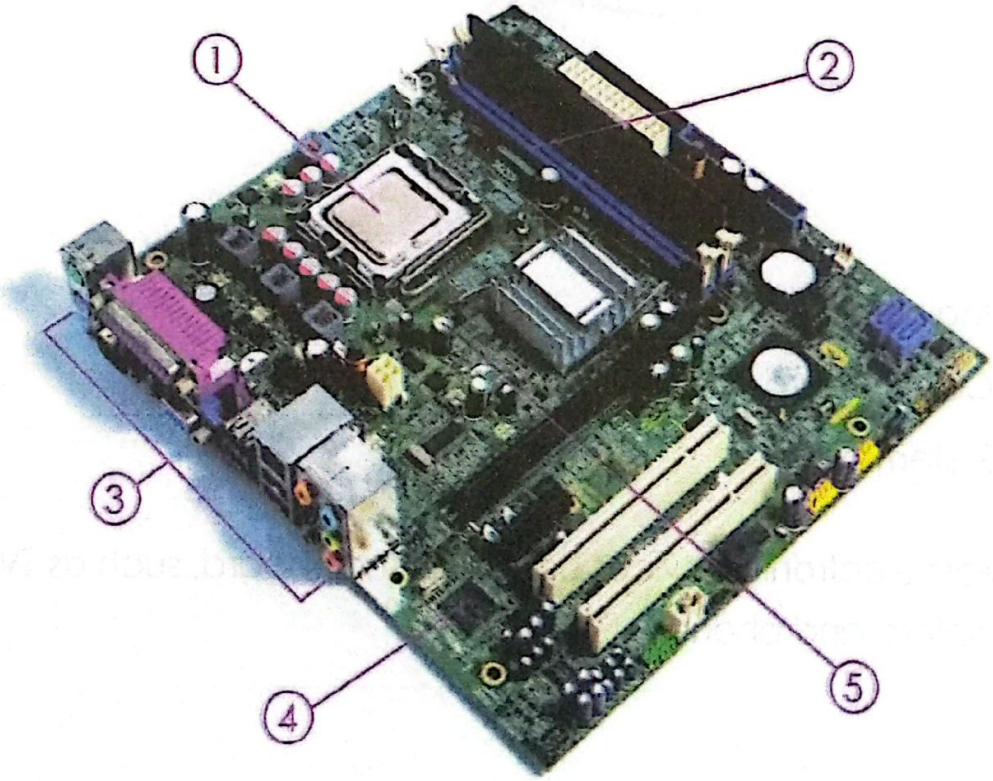
- Mainboard
- Circuit board
- System board

Most electronic devices contain a mainboard, such as TVs, printers, and phones.

Components of a Motherboard

1	CPU socket	2	RAM slot
3	Peripheral connectors	4	Chipset

5 Transistor and capacitor



LESSON 1 MOTHERBOARD

ACTIVITY

A. **Choose** the correct answer to each of the following questions.

1. Which of the following is another name for a motherboard?

a processor board

b mainboard

c memory board

2. What is the function of a motherboard?

a It displays images on the screen.

b It connects all parts of the computer.

c It controls the printer.

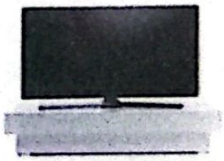
3. Which of the following objects contains a mainboard?



a Scooter



b Books



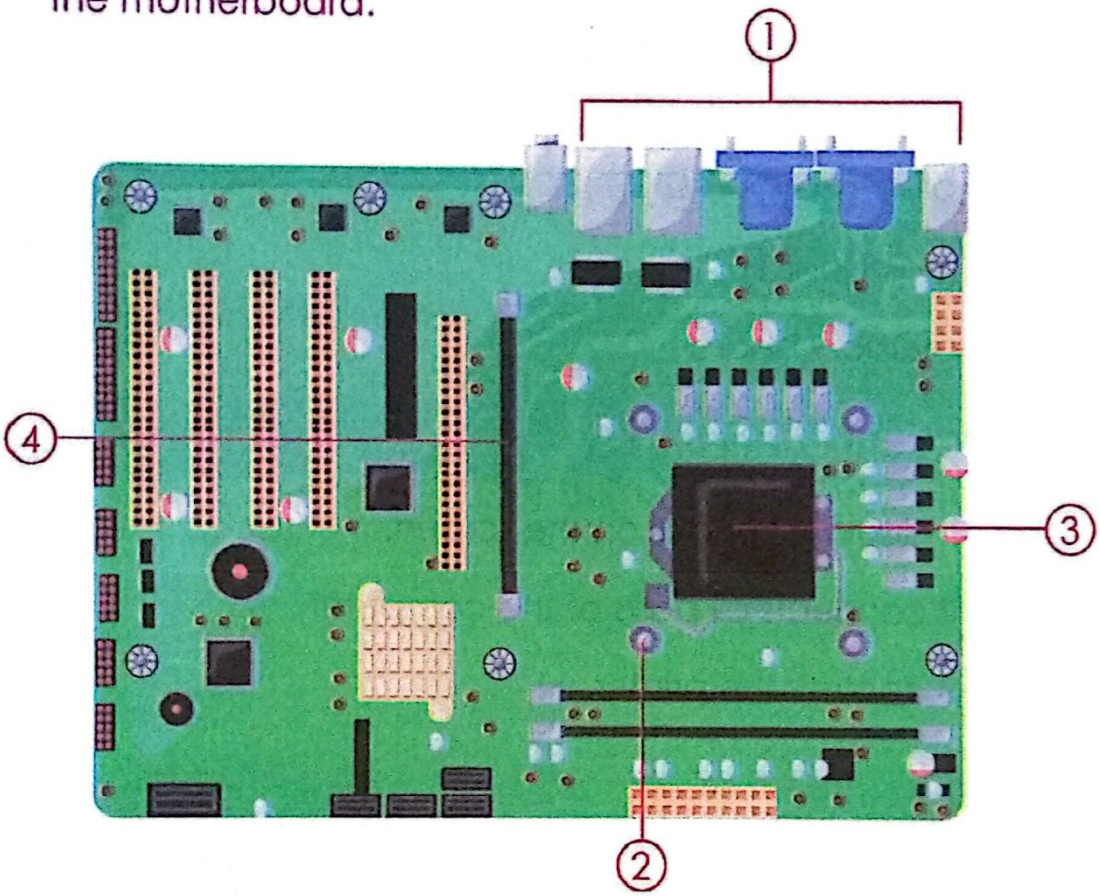
c TV



d Light bulb

ACTIVITY

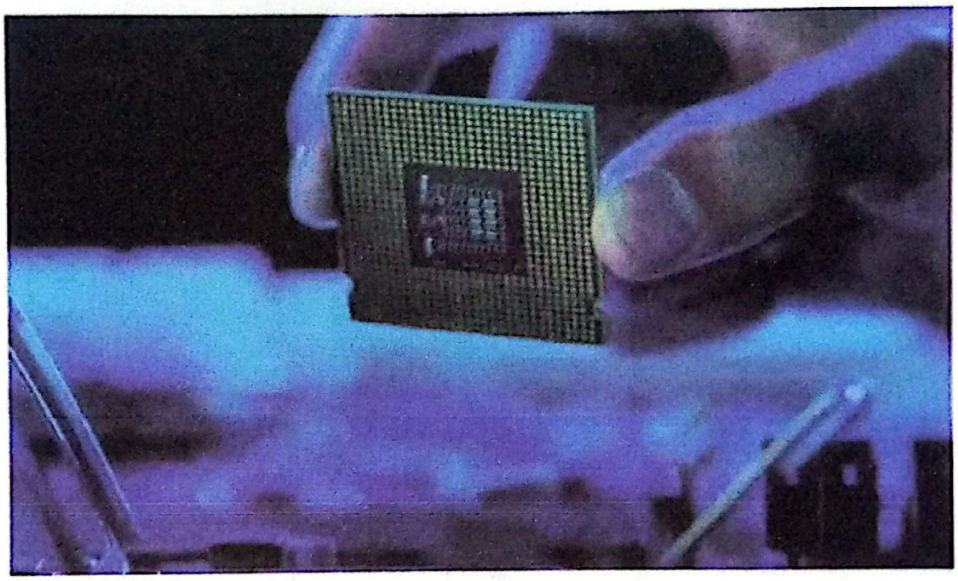
B. **Fill in** the box with the correct number for each part of the motherboard.



☐	CPU socket	☐	Peripheral connectors
☐	RAM slot	☐	Transistor

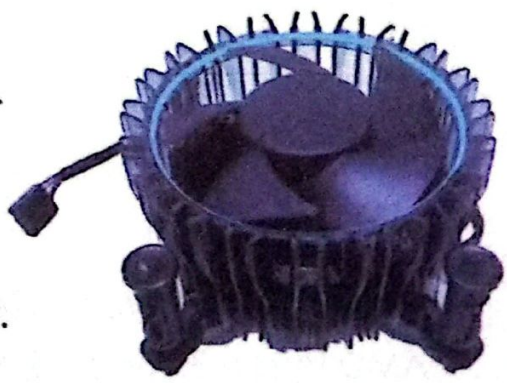
CPU (Central Processing Unit)

The **CPU**, also called the **processor**, is a small chip and the most important part of a computer. It functions like the brain because it tells each part of the computer what to do.



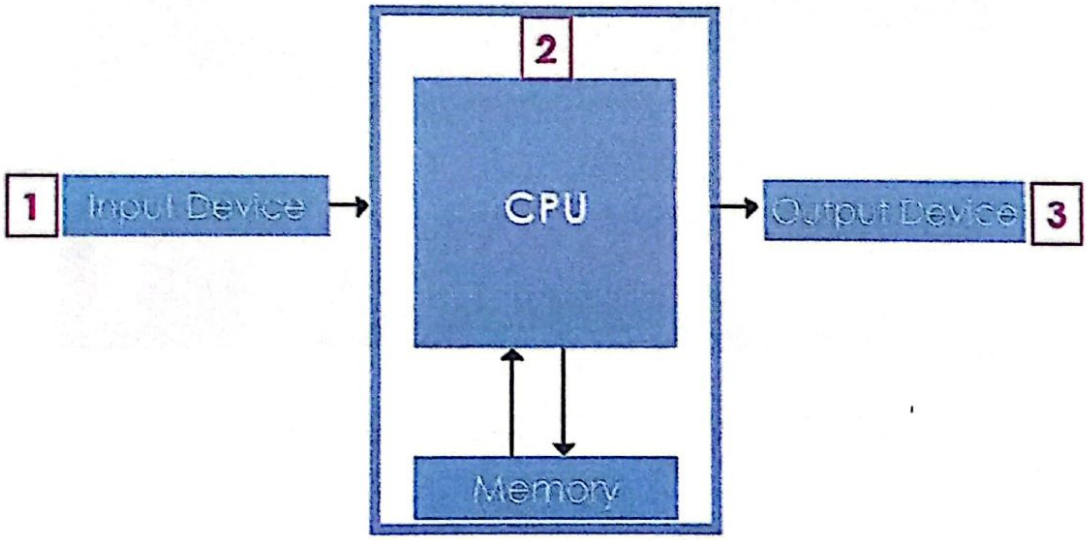
The CPU speed is measured in gigahertz (GHz).

The CPU needs a fan to cool it and prevent overheating. If the CPU's temperature rises too high, the computer may slow down, crash, or restart.



Functions of the CPU

1. It takes instructions from the input device.
2. It processes instructions (calculating, printing, deleting, etc.).
3. It transmits the results to the output device.



Types of CPU

- Intel Celeron
- Intel Core i3, Core i5, Core i7, and Core i9
- AMD Ryzen 3, Ryzen 5, Ryzen 7, and Ryzen 9

ACTIVITY

A. **Choose** the correct answer.

1. What does CPU stand for?

a Central Processing Unit

b Computer Processing Unit

c Central Power Unit

2. Why is the CPU compared to the brain?

a because it is small

b because it controls the other computer parts

c because it has the shape of the brain

3. What may happen if the CPU temperature increases?

a The computer may speed up.

b The computer may slow down.

c The computer may catch fire.

4. The CPU speed is measured in _____.

a megabyte

b gigahertz

ACTIVITY

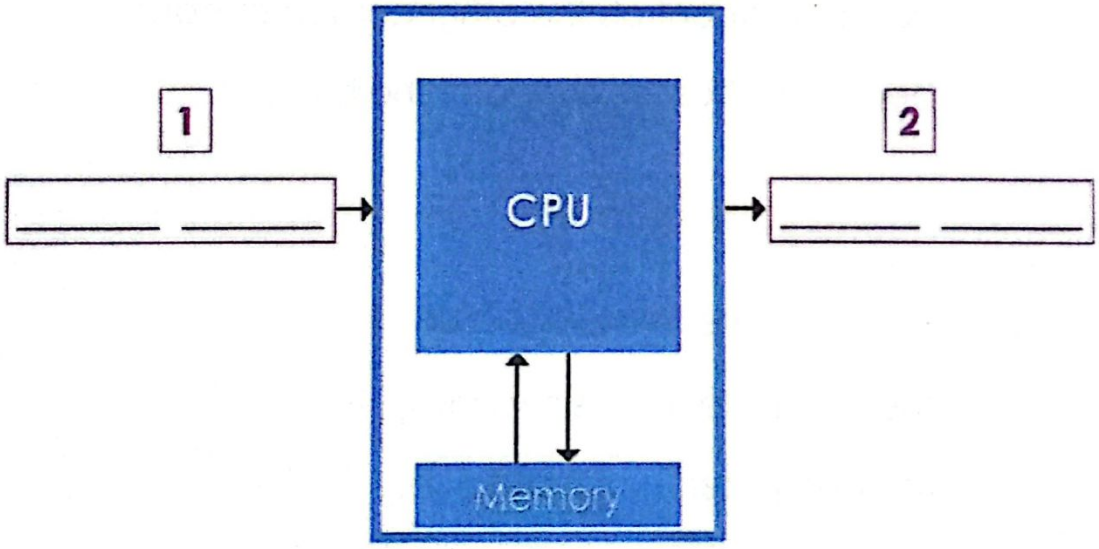
5. What is the first function of the CPU?

a It takes instructions from the keyboard or the mouse.

b It takes instructions from the monitor.

c It takes instructions from the speakers.

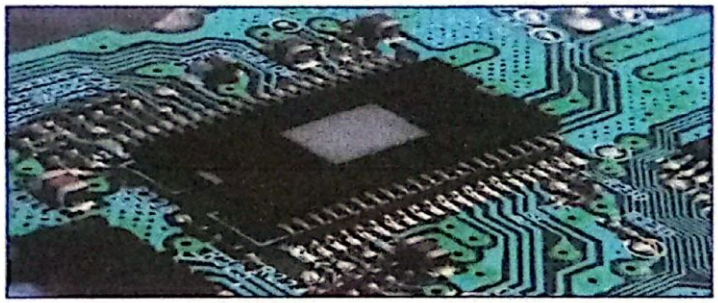
B. **Name** the following parts in the image below.



ROM and **RAM** are essential parts of a computer's memory system.

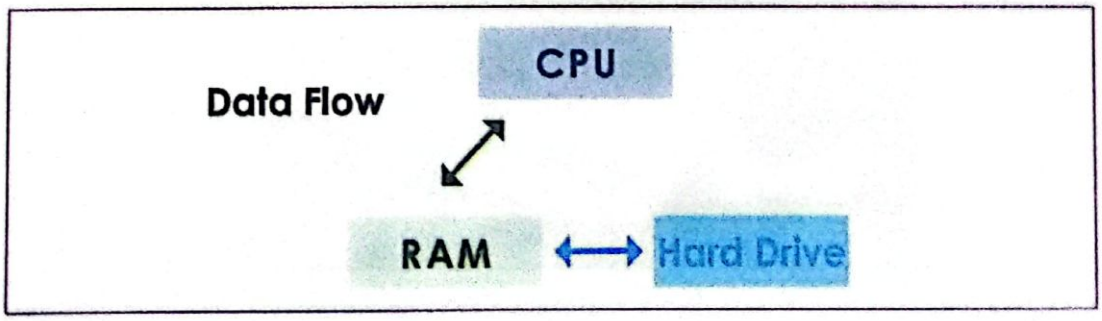
ROM (Read-Only Memory)

ROM contains important instructions and data that a computer needs to start up, such as the Basic Input/Output System (BIOS).
It performs the essential functions before loading the operating system.

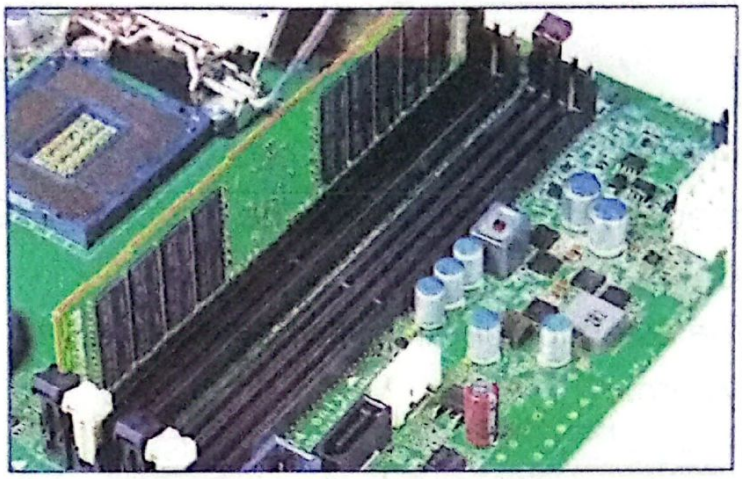


RAM (Random Access Memory)

RAM allows the computer to access data quickly because it does not have to wait for the hard drive to retrieve data.

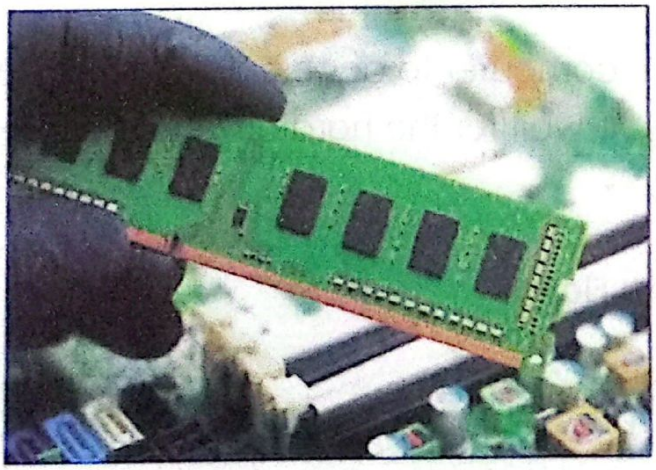


When you open a program or a file, the computer stores data in RAM for faster access.



RAM comes in different sizes, such as 2 GB, 4 GB, 8 GB, 16 GB, 32 GB, and more.

You can install more than one RAM module in a computer to handle more tasks, improve overall performance, and increase speed.

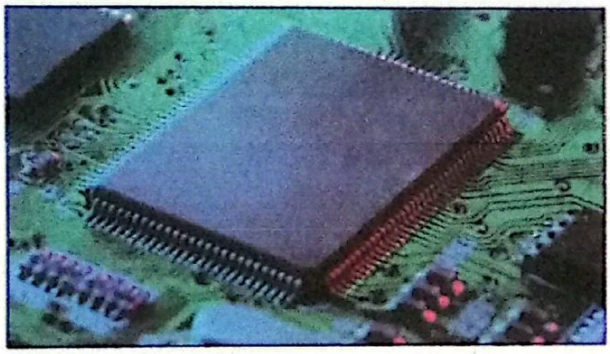


ACTIVITY

A. **Name** each of the following images.



_____



_____

B. **Choose** the correct answer to each of the following questions.

1. Why does RAM allow a computer to access data quickly?

a because it stores data permanently

b because it does not have to wait for the hard drive

c because it has a slow processing speed

ACTIVITY

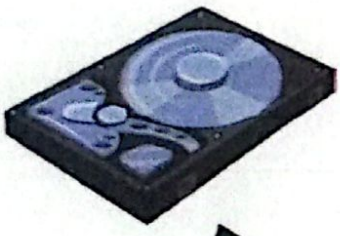
2. What happens when you open a program or a file?

a. The computer shuts down.

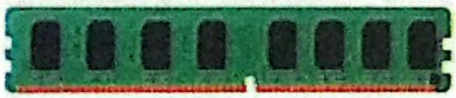
b. Data is stored in ROM.

c. Data is stored in RAM.

C. **Name** the following devices in the data flow diagram.



1. _____

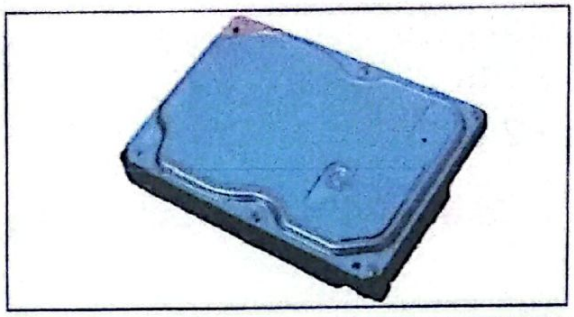


2. _____



3. _____

A **hard disk** is a computer storage device that provides a place to store data permanently.

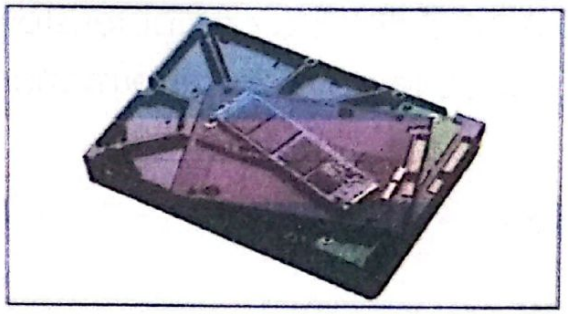
Hard disk in a desktop	
Hard disk in a laptop	

In the hard disk, we can store the operating system, install programs, and save files.



Capacity of Hard Disk

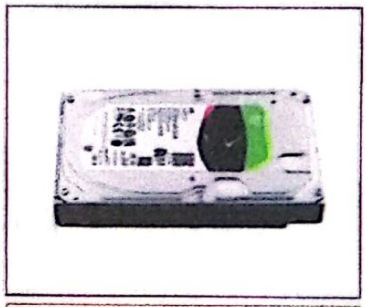
- 120 GB and 128 GB
- 240 GB and 256 GB
- 512 GB
- 1 TB
- 2 TB



Internal Storage Technology Types

HDD

Hard disk drive is the slowest compared to SSDs and other types. It uses many magnetic disks to store data and offers a large storage capacity.



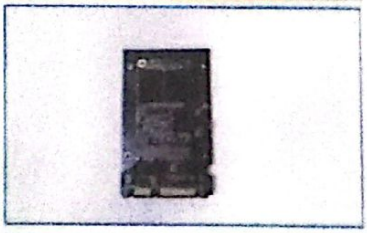
SSD

A solid-state drive is faster than HDD. It uses flash memory to store data.



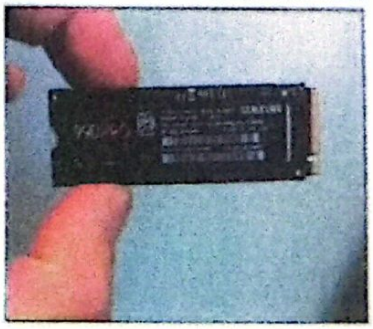
mSATA

Mini Serial ATA is designed to fit into devices with limited space, such as ultrabooks and slim laptops.



NVMe

Non-Volatile Memory Express is used in devices with limited space. It offers faster data transfer speeds compared to other types.



ACTIVITY

A. **Choose** the correct answer to each of the following questions.

1. Which of the following is a type of hard disk?

a CPU

b RAM

c HDD

2. Which type of memory does SSD primarily use?

a magnetic memory

b flash memory

c optical memory

3. Which type of memory storage technology offers the fastest data transfer speeds?

a HDD

b SSD

c NVMe

ACTIVITY

B. **Write** the letter of each type of memory storage technology next to its description.

a	HDD	c	mSATA
b	SSD	d	NVMe

1	It is designed for devices with limited space.	....
2	It uses a flash memory for data storage.	....
3	It is the slowest compared to SSDs and other types of disks.	....
4	It offers faster data transfer speed compared to others.	....

C. **Answer** with true (T) or false (F).

1	HDD is faster than SSD.	....
2	NVMe is designed to fit into devices with limited space.	....

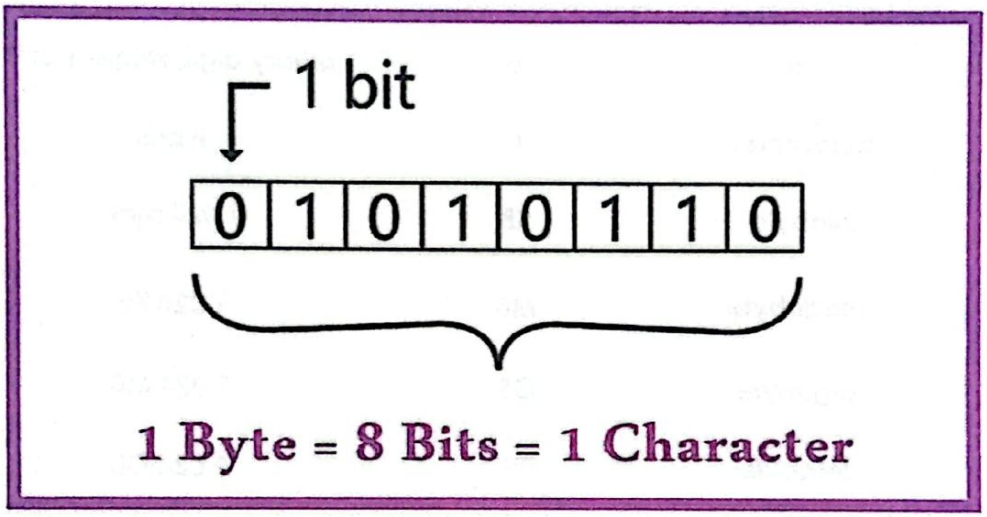
Computers use special units to measure data and storage capacity.

Memory Capacity Hierarchy		
Unit	**Abbreviation**	**Approximate Size**
bit	b	binary digit, single 1 or 0
byte/octet	B	8 bits
kilobyte	KB	1,024 byte
megabyte	MB	1,024 KB
gigabyte	GB	1,024 MB
terabyte	TB	1,024 GB
petabyte	PB	1,024 TB
exabyte	EB	1,024 PB
zettabyte	ZB	1,024 EB
yottabyte	YB	1,024 ZB

- A **bit** is the smallest unit of data in the computer system. It represents a single binary digit, either 0 or 1.

- A **byte** consists of 8 bits and is used to represent a character, a number, or a symbol.

Example:
Letter V in byte = 01010110
Letter T in byte = 01010100



Memory Capacity

CD	700 MB
DVD	4.7 GB or 8.5 GB
Hard Disk	1 TB
Flash Memory	32 GB or 64 GB
Memory Card	32 GB or 64 GB

ACTIVITY

A. **Choose** the correct answer to each of the following questions.

1. How many bits make up one byte?

a 4 bits

b 6 bits

c 8 bits

2. Which unit of measurement represents 1,024 bytes?

a kilobyte

b megabyte

c gigabyte

3. How many bits are needed to represent the letter 'A' in binary?

a 6 bits

b 8 bits

c 10 bits

4. Which unit of measurement is larger?

a megabyte

b gigabyte

ACTIVITY

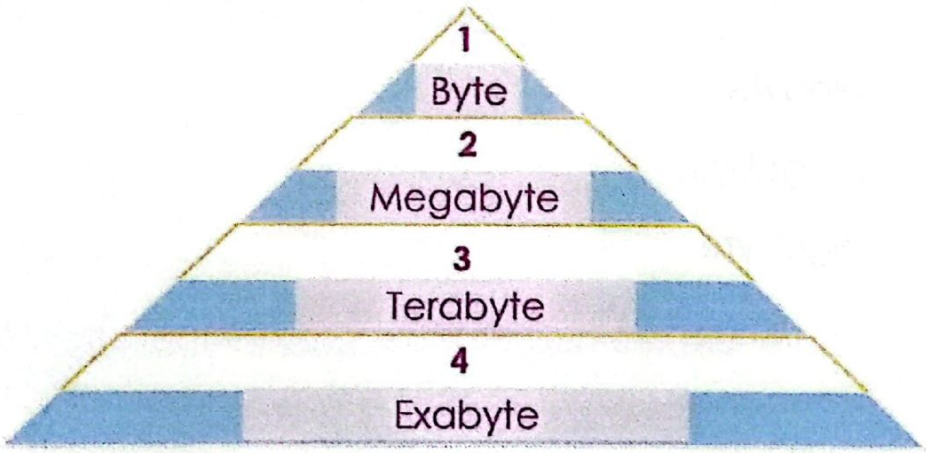
5. Which is the storage capacity of a typical CD?

a 700 MB

b 4.7 GB

c 9 GB

B. **Write** down the missing units.



1	_____
2	_____
3	_____
4	_____

What is the Power Supply Unit (PSU)?

The **Power Supply Unit** (PSU) is a component inside a computer to convert electricity from the **alternating current** (AC) to the **direct current** (DC).



Alternating Current

- 110 volts
- 220 volts

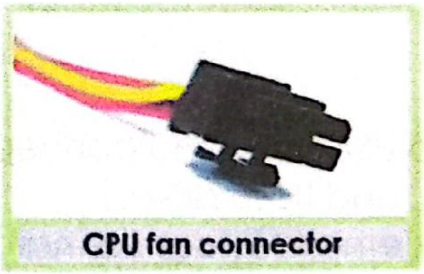
Direct Current

- **5 volts:** This provides power to USB ports and connected devices like mice, keyboards, and flash drives.
- **9 volts:** This is used in some external devices like hard drives or specialized peripherals.
- **12 volts:** This powers the CPU, graphics cards (GPU), hard drives, cooling fans, optical drives, and other components.

The computer parts typically operate using **low voltages**, which the PSU provides after converting the **higher AC voltage** from the wall outlet.

Low Voltage	Components like the USB ports operate at low voltage.
Moderate Voltage	Hard drives have moderate voltage requirements.
High Voltage	GPUs typically require a high voltage.

Power Supply Connectors



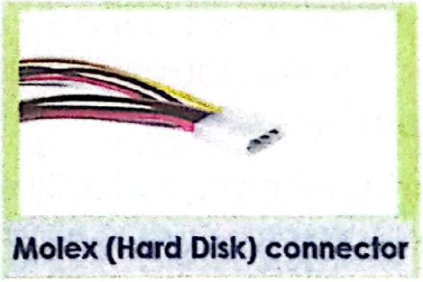
CPU fan connector



Motherboard connector



SATA (Hard Disk) connector



Molex (Hard Disk) connector

ACTIVITY

A. **Choose** the correct answer.

1. What is the function of a Power Supply Unit in a computer?

a. It converts electricity from DC to AC.

b. It converts electricity from AC to DC.

c. It stores data in a computer.

2. Which component requires high voltage for operation?

a. CPU

b. GPU

c. both of the above

3. Which type of power supply connector provides power to storage drives like hard drives?

a. Motherboard connector

b. CPU connector

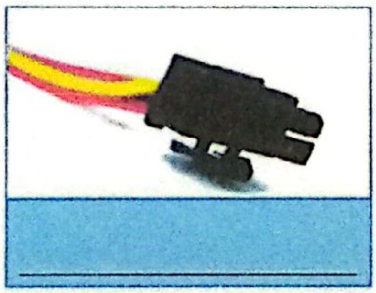
c. SATA connector

ACTIVITY

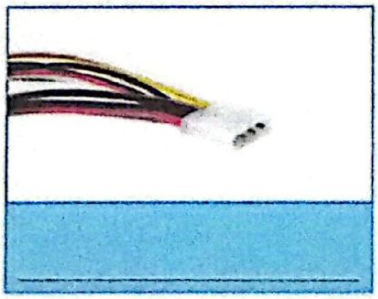
B. **Match** the following voltage levels with their functions by writing the corresponding letters.

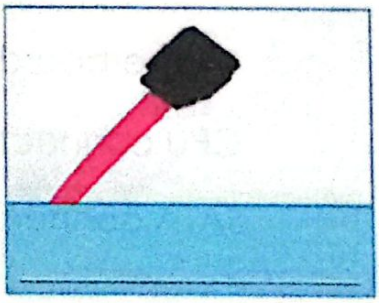
a	9 volts	....	provides power to the USB ports
b	5 volts	....	is used for hard drives and cooling fans
c	12 volts	....	is used in some external devices

C. **Name** the following connectors.

1 

2 

3 

4 

LESSON 7 THE CASE

A **computer case**, a chassis or a tower, is an enclosure that houses the internal components of a computer.



Functions of a Computer Case

Protection:
The case protects the internal components from dust and accidental damage.

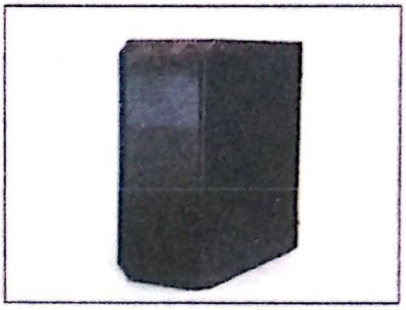
Organization:
The case organizes components for easier assembly and maintenance.

Cooling:
Many cases come with fans and ventilation systems to keep the components cool during operation.

Types of Computer Cases

Tower Case

This is the most common type of case, standing upright like a tower.



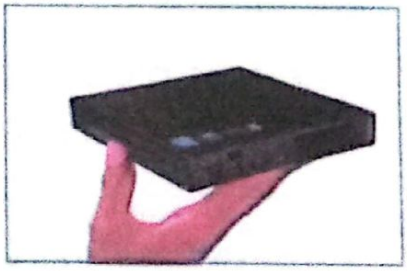
Desktop Case

This case lies flat on the desk and is more compact than the tower case. It is suitable for smaller spaces.



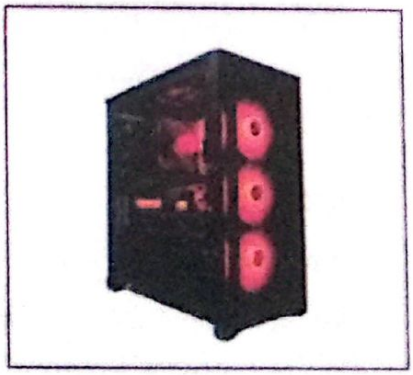
Mini-Case

This case is even smaller and more compact for portable systems.



Gaming Case

It is designed for cooling in gaming systems, often featuring flashy designs, RGB lighting, and enhanced airflow to support high-performance gaming rigs.



ACTIVITY

A. **Choose** the correct answer.

1. What is the other name for a computer case?

a a box
b a tower
c a cover

2. What is the main advantage of a mini-case?

a being heavy
b being portable
c being large

3. The _____ cases lie flat on the desk.

a desktop
b tower
c gaming

ACTIVITY

4. The _____ case is often featured with RGB lighting and enhanced airflow.

a desktop

b tower

c gaming

B. **Write** the type of each computer case shown below.







1 _____ _____

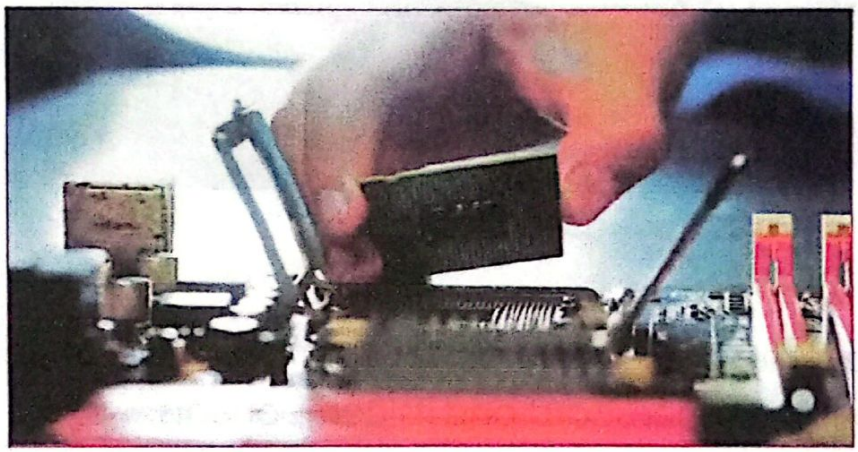
2 _____ _____

3 _____ _____

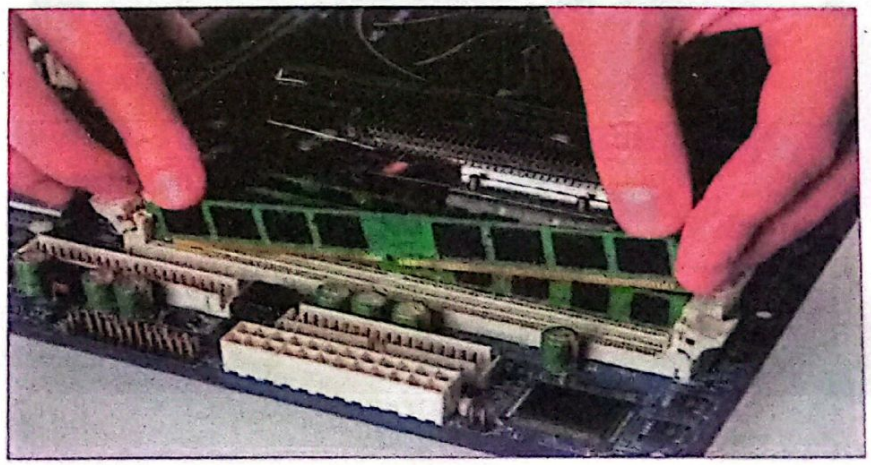
The essential components of a computer are the motherboard, CPU, RAM, hard disk, and power supply.

Step-by-Step Assembly

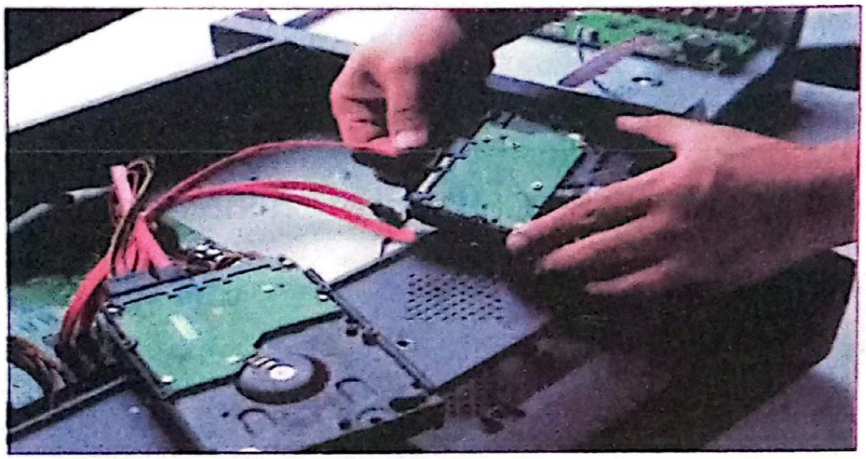
- Prepare the motherboard.
- Install the CPU into the CPU socket on the motherboard.



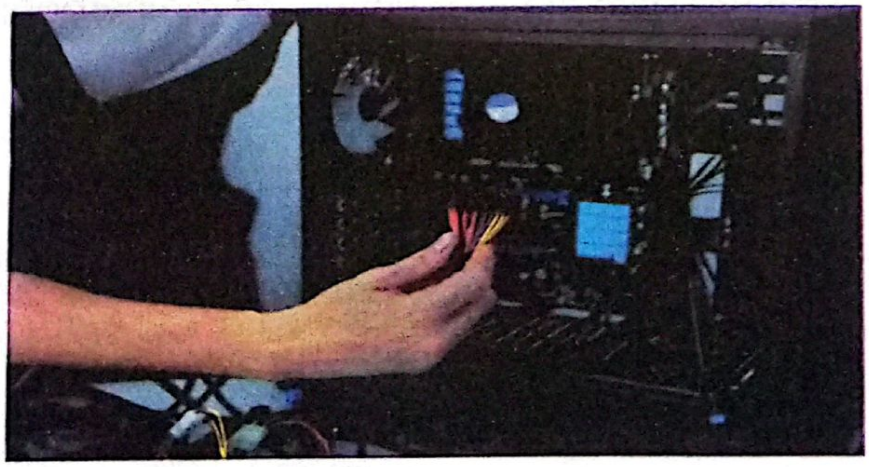
- Install the RAM into the RAM slot on the motherboard.



- Connect the hard disk drive (HDD) or solid-state drive (SSD) to the motherboard with cables.



- Connect the power connectors from the power supply unit to the motherboard and its components.



ACTIVITY

A. **Write** the letter of each component next to its installation step.

a	Ram	....	Step 2
b	HDD/SSD	....	Step 3
c	CPU	....	Step 4

B. **Choose** the correct answer.

1. The reason behind connecting the power connectors from the power supply unit is to provide power to the _____.

a RAM

b CPU

c motherboard and its components

2. Step 1 of the assembly process involves preparing the _____.

a CPU

b motherboard

c RAM

ACTIVITY

3. Which component is responsible for storing data in a computer?

a CPU

b HDD/SSD

c power supply

C. **Write** the letter of each acronym next to its description.

a	SSD	....	It is a type of storage device that uses spinning disks to store data.
b	HDD	....	It is a type of storage device that uses flash memory chips to store data.
c	CPU socket	....	It is a socket on the motherboard where the CPU is installed.

Artificial Intelligence (AI) is a technology that helps computers learn from data sets. Generative AI, like ChatGPT, Google Gemini, and Microsoft Copilot, can create content and solve problems by replicating human intelligence.

AI Hardware Requirements

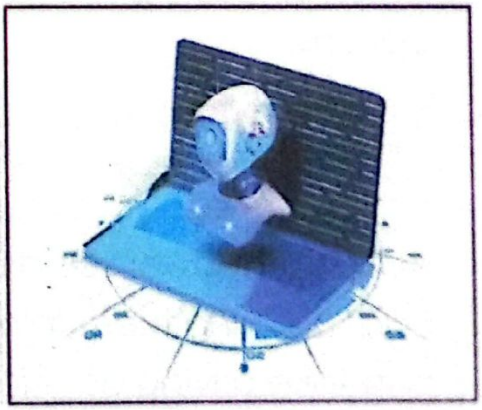
To run AI software efficiently, computers require robust hardware, including:

- Fast processors (CPUs)
- High-capacity memory (RAM)
- Graphics processing unit (GPU) for complex calculations

Applications of AI

1. Virtual Assistants

AI-powered virtual assistants, like Siri and Google Assistant, can respond to inquiries and execute actions based on voice commands.



2. Image Recognition

AI can recognize objects, faces, and patterns in images, which is useful for facial recognition, background editing, and automatic photo tagging.



3. Medical Diagnosis

AI can analyze medical data, such as X-rays, test results, and patient records to help physicians diagnose diseases and prescribe treatment options.



4. Autonomous Vehicles

AI can empower self-driving cars, allowing them to navigate and take driving decisions independently.



ACTIVITY

A. **Match** the following AI applications with their functions.

Virtual Assistants	•	• analyzing medical data to assist doctors
Image Recognition	•	• recognizing objects, faces, and patterns in images
Medical Diagnosis	•	• enabling self-driving cars to navigate roads
Autonomous Vehicles	•	• answering questions and performing tasks based on voice commands

B. **Choose** the correct answer.

1. What is the primary use of Artificial Intelligence (AI)?

a creating physical artwork

b replicating human intelligence

c sorting and distributing mail

ACTIVITY

2. Which of the following choices applies AI in transportation?

a managing physical vehicle inspections

b navigating roads

c removing image background

3. Which of the following options is an application of AI?

a traditional handcrafting

b virtual assistants

c manual agriculture

4. AI-powered virtual assistants, like Siri and Google Assistant, can respond to inquiries and perform tasks based on _____.

a voice commands

b animal speech

c physical movements

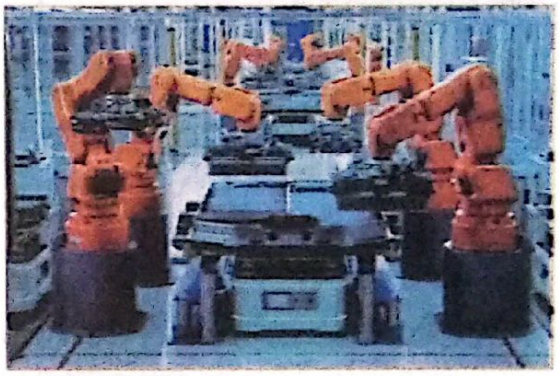
LESSON 10 ROBOTICS

A robot is a machine capable of movement and speech, and it is programmable to perform specific tasks.

Types of Robots

Industrial Robots

They are used in factories and manufacturing plants.



Service Robots

They assist humans with tasks, such as cleaning, delivery, and companionship.



Educational Robots

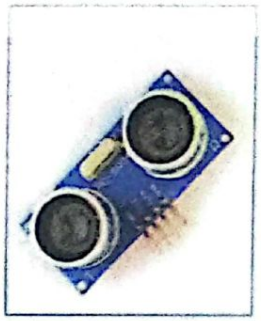
They are used in schools for teaching, offering various options.



Robot Parts

Sensors

They act as the robot's sensory organs or tools, enabling it to perceive and interpret its environment through cameras, touch sensors, and microphones.

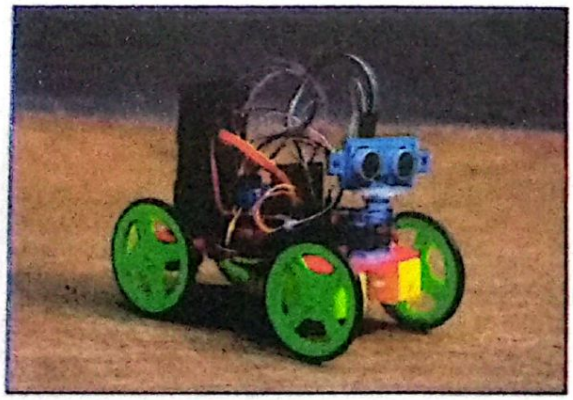


Brains

Robots use onboard computers to process sensory data and determine their actions accordingly.

Physical Components

Robots perform tasks using motors, wheels, arms, and grippers, enabling them to move, construct objects, perform cleaning duties, and explore space.



ACTIVITY

A. **Choose** the correct answer.

1. What is a robot?

a a type of animal

b a machine that can move and perform tasks

c a type of vehicle

2. Industrial robots are commonly used in _____.

a schools

b factories and manufacturing plants

c offices

3. What is the role of sensors in a robot?

a to explore space

b to perceive and interpret the environment

c to control the temperature

ACTIVITY

4. Robots use _____ to act based on the data they sense.

a motors

b wheels

c computers or brains

5. Which concepts and skills do students learn from educational robots?

a history

b robotics and programming

c driving cars

B. **Match** the following types of robots with their functions.

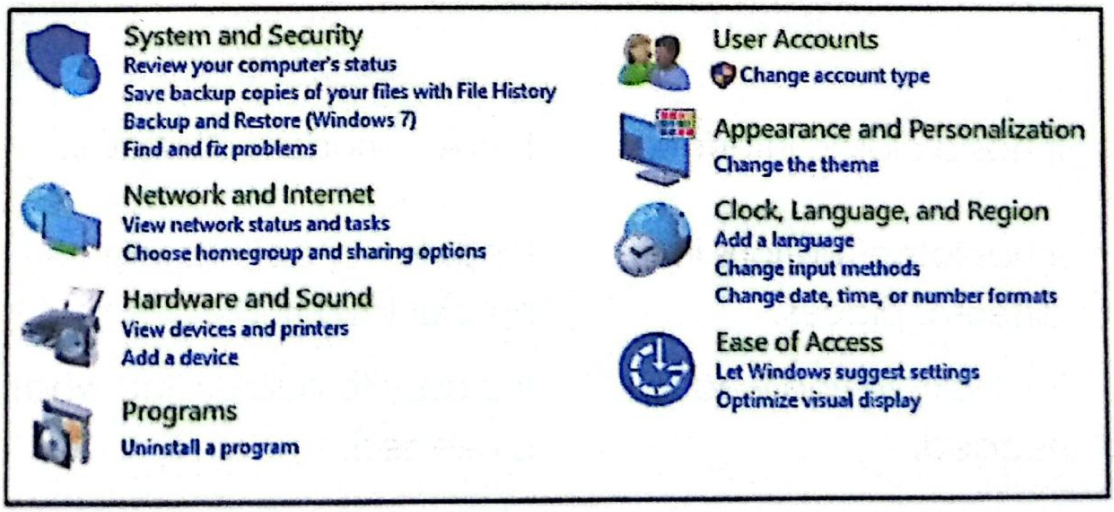
Industrial robots	•	• used to assist humans in various tasks
Service robots	•	• used in factories
Educational robots	•	• used in schools to teach students about robotics

LESSON 11 CONTROL PANEL

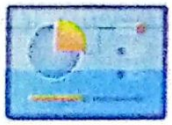
The **Control Panel** is a system management tool in Microsoft Windows operating systems. It configures the system settings. In Windows 10 and Windows 11, users can access the Control Panel by typing "Control Panel" in the search bar.

Key Components of the Control Panel

- System and Security
- Network and Internet
- Hardware and Sound
- Programs
- User Accounts
- Appearance and Personalization
- Clock, Language, and Region
- Ease of Access



Navigating the Control Panel



We can view the control panel icons in different ways:

- **Category View:** It shows settings grouped by categories, making it easier to find related options.

- **Large Icon / Small Icon:** It displays all settings in a grid format, which can be more direct if browsers know what they are looking for.

Control Panel and Settings

The Control Panel and Settings are interfaces for customizing computer options, but each targets different aspects.

Control Panel	Settings
It has a classic interface.	It has a modern interface.
It has lots of options in different places.	It has fewer options in a simpler layout.
It is tricky to find what is needed.	It is easy to quickly find what is needed.

ACTIVITY

A. **Match** the categories of the settings available in the Control Panel with their functions.

System and Security	•	• adding a device
Network and Internet	•	• controlling system security and performance
Programs	•	• configuring network connections and internet options
Hardware and Sound	•	• deleting installed programs

B. **Choose** the correct answer to each of the following questions.

1. What is the Control Panel?

a. a video game

b. a central hub in Windows for adjusting the system settings

c. a type of vehicle

2. What is the main difference between Control Panel and Settings?

a. The Control Panel is for beginners, while Settings is for advanced users.

b. The Control Panel is modern, while Settings is classic.

c. While the Control Panel has numerous options spread across various sections, Settings offers a simpler layout with fewer options.

C. **Match** the categories of settings available in the Control Panel with their functions.

Category	•	• displaying larger icons for easier viewing
Large icons	•	• displaying smaller icons for a more compact layout
Small icons	•	• displaying icons in a classic windowed layout with categories

Computer Specifications

Computer specifications include information about the hardware and software components of a computer, such as:

Processor: It is the component that executes instructions.

Memory (RAM): It is the temporary memory for quick data access.

Storage: It is the component that permanently holds data and files on a computer.

Graphics Card (GPU): It processes and renders images and videos for display.

Operating System: It manages the computer's hardware and software.

How to Check Computer Specifications

- **First method:**

- Press the (Windows key + R) to open the Run dialog box.
- Type msinfo32 and press **Enter** to open the **System Information** window.

- **Second method:**

- Right-click on the **Start** button (Windows key + X) and select **System** from the menu.

- **Third method:**

- Right-click on **This PC**  and select **Properties.**

- **Fourth method:**

- Right-click on the taskbar and select **Task Manager** or press (Ctrl + Shift + Esc) from the menu.
- In Task Manager, click on the **Performance** tab to view basic performance information about CPU, memory, disk, and network usage.

- **Fifth method:**

- Open the **Settings** from the **Start** button.
- Go to **System** and select **About** from the sidebar.

- **Sixth method:**

- In the search bar, type "info" and select **System Information.**

Sample about Computer Specifications

Device specifications

Device name	DESKTOP-1AI3N3J
Processor	Intel(R) Core(TM) i7-7600U CPU @2.80G 2.90 GHz
Installed RAM	8.00 GB (7.88 GB usable)
Device ID	8E6BE0A3-847C-4C60-8850-34D71ED5E7E2
Product ID	00330-50102-13259-AAOEM
System type	64-bit operating system, x64-based processor
Pen and touch	No pen or touch input is available for this display

Core i7: Processor

7600: generation: 7

8.00 GB: RAM

U: Ultra-Low Power is designed for ultra-low power consumption and is optimized for portable devices.

Suffix letters like 'U', 'M', 'Q', and 'H' signify specific processor traits, like power consumption and performance.

ACTIVITY

Choose the correct answer.

1. What is a processor?

a. It is the main component responsible for processing data and executing instructions.

b. It is a temporary memory used for running applications and processes.

c. It is a storage device used for saving data and applications.

2. Memory (RAM) is _____.

a. a storage device used for saving data and applications

b. a component that connects the computer to the internet

c. a temporary memory used for running applications and processes

3. Storage is _____.

a. the main component responsible for processing data and executing instructions

b. a hardware component responsible for rendering images and videos

c. a device used for saving data and applications

4. Graphics card is _____.

a. a hardware component responsible for rendering images and videos

b. a component that connects the computer to the internet

c. software that manages hardware resources and provides services for programs

5. What is an operating system?

a. It is software that manages hardware resources and provides services for programs.

b. It is a hardware part that creates images and videos.

c. It is a component that connects the computer to the internet.

6. Which of the following methods can be used to open the System Information window?

a. Press the Windows key + R, type msinfo32, and press **Enter.**

b. Right-click on the **Start** button and select **System.**

c. both of the above

What are Microsoft Windows Applications?

A Microsoft Windows application is a software program designed to operate on the Microsoft Windows operating system. These applications are crafted to use the resources provided by Windows.

Types of Applications

1. Productivity Apps

These software applications help users finish their tasks more easily and quickly. For example, Microsoft Office Suite (Word, Excel, and PowerPoint) offers tools for word processing, making spreadsheets, and creating presentations, which are useful for students, professionals, and businesses.

2. Entertainment Apps

These software applications offer users entertainment and relaxation through digital content, like videos, music, games, and social interactions. Examples include Netflix, YouTube, and games.

3. Communication Apps

These apps keep users connected by allowing them to exchange messages, make voice or video calls, and share files. Examples include Microsoft Teams, WhatsApp, and Zoom.

4. Utility Apps

These apps perform specific system maintenance tasks, optimize system performance, and troubleshoot issues. Examples include Disk Cleanup, Task Manager, and Control Panel.

Where to Install an Application

- Microsoft Store
- Websites
- CD, DVD, or flash memory

How to Uninstall an Application

1- Open the **Control panel**.
2- Go to **Programs** or **Programs and Features**.
3- Find the app you want to uninstall in the list of installed programs.
4- Select the app, and then click the **Uninstall** button at the top of the list.

ACTIVITY

A. **Choose** the correct answer to each of the following questions.

1. What are applications also known as?

a hardware

b programs

c systems

2. What type of apps are Netflix and YouTube?

a Productivity Apps

b Entertainment Apps

c Communication Apps

3. Which of the following is a communication app?

a Microsoft Word

b Zoom

c YouTube

ACTIVITY

4. Which of the following is a productivity app?

a Netflix

b Microsoft Word

c WhatsApp

B. **Fill in** the table below to specify the categories of the following applications.

WhatsApp - Microsoft PowerPoint - Task Manager - YouTube - Microsoft Teams - Netflix - Microsoft Word - Disk Cleanup

Productivity Apps	
Entertainment Apps	
Communication Apps	
Utility Apps	

LESSON 14 SOUNDS IN SCRATCH

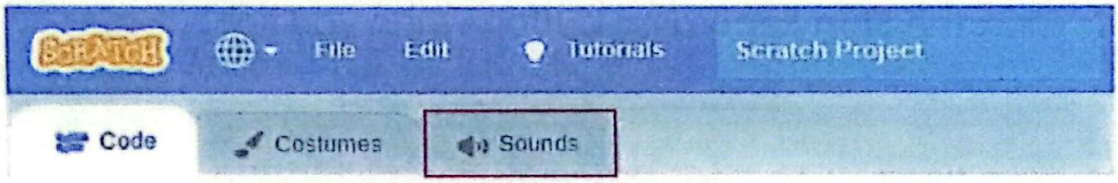
In Scratch, users can add sounds, record their own sounds, or upload sounds from their computers.

How to Record a Sound in Scratch

In Scratch, users can record a sound by following these steps:

Step 1: Go to the **Sounds** tab.

Click on the **Sounds** tab located at the top-left corner of the interface.

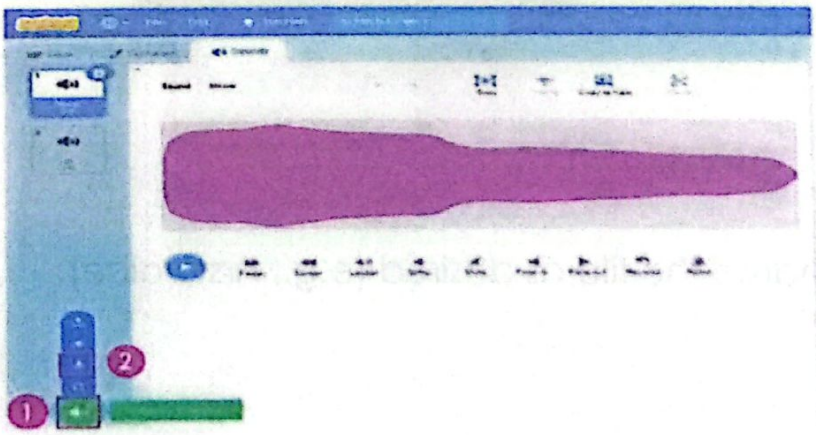


Step 2: Add a new sound.

1- Place the cursor on the **Choose a Sound** button at the bottom of the **Sounds** tab.

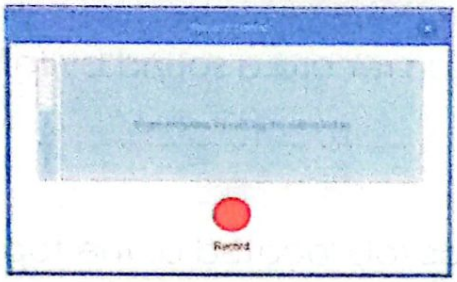
2- In the library, click on the **Record** button.

This is usually represented by a microphone icon.

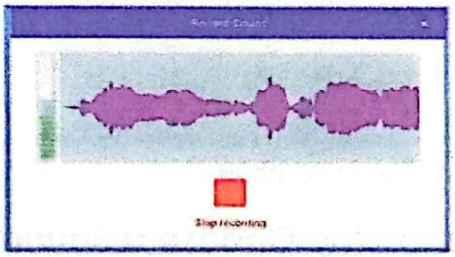


Step 3: Record a sound.

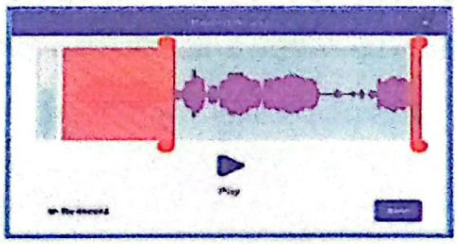
- A recording dialogue will appear. Click the **Record** button to record.



- Speak or make the sound you want to record.
- Click the **Stop Recording** button when you finish.



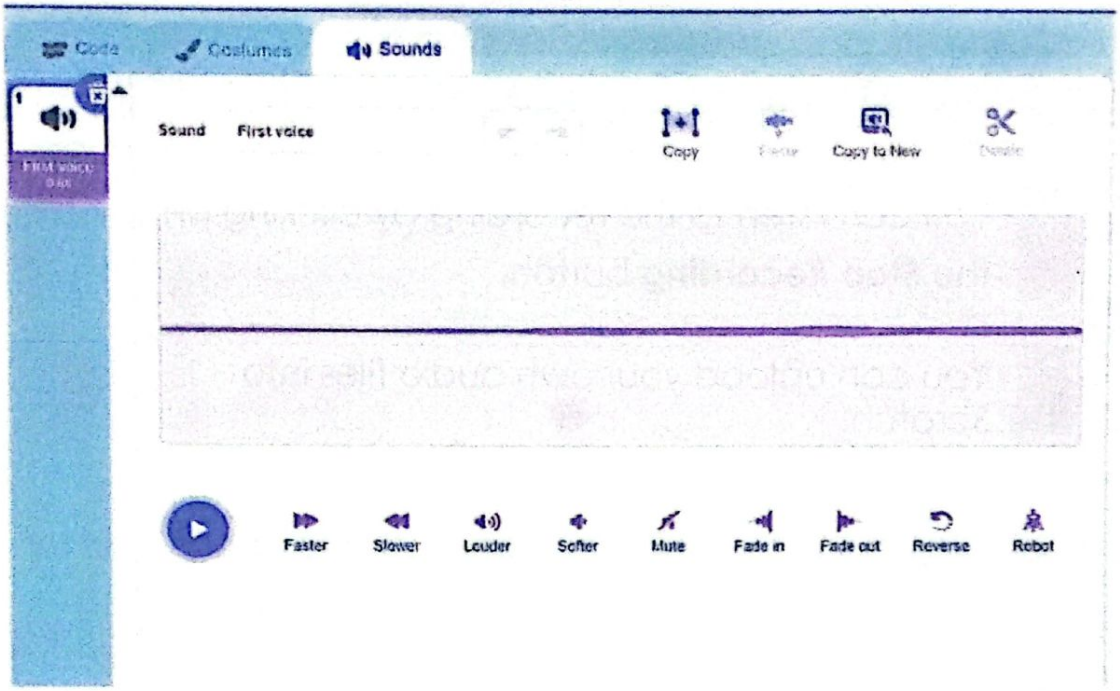
- You can listen to the recording by clicking the **Play** button.
- If you are satisfied with the recording, click **Save**.



- Rename the file as desired (e.g., First voice).



LESSON 14 SOUNDS IN SCRATCH



How to Play a Sound in Scratch

- After recording and saving a sound, go to the **Code** tab.
- Drag **when green flag clicked** block from the **Events** category to the scripting area.
- Attach the **play sound** "First voice" block to it from **Sound**.
- When you click the green flag to start your project, the recorded sound will start playing.



ACTIVITY

A. **Answer** with true (T) or false (F).

1	You can listen to the recording by clicking on the **Stop Recording** button.	
2	You can upload your own audio files into Scratch.	

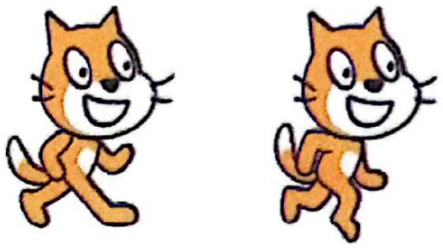
B. **Use** the required blocks to play the **Horse** sound, **wait** for two seconds, and then **play** the **Rain** sound.

C. **Record** the following sentence in your voice, and then play it back.
"Welcome, we are glad you are here to learn about our project."
Rename the recording to "Welcome".

In Scratch, some sprites can be equipped with multiple costumes and different visual looks to create animation by switching these images.

Example 1

The cat's costumes create the illusion of running.



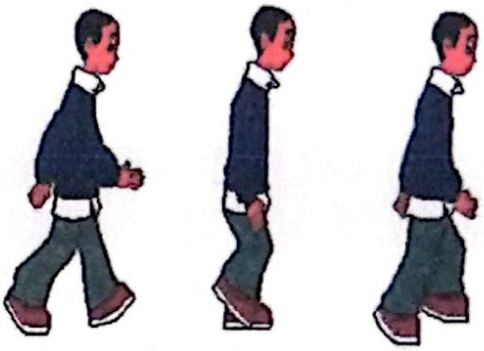
Example 2

The dove's costumes give the impression that it is flying.



Example 3

James's costumes create the illusion of walking.



How to Manage Sprite Costumes

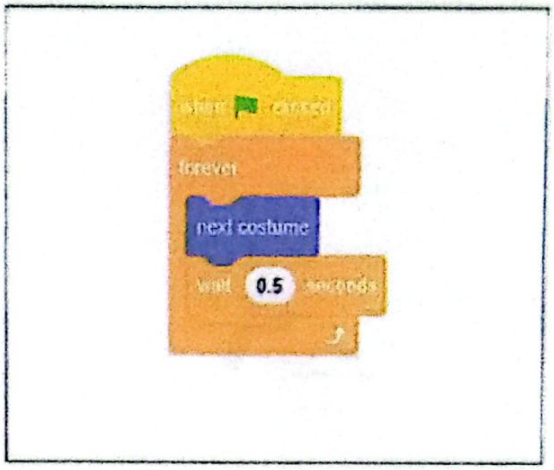
Step 1: Select a sprite and open the "Costumes" tab.

Example:
Select the sprite ***Avery Walk....***
This sprite has 4 costumes that create the illusion of walking.



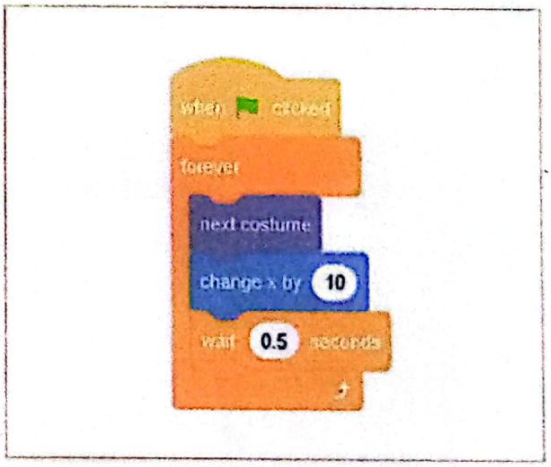
Step 2: Create a script to switch costumes.

This script will display each costume in order, pausing for half a second between them.



Step 3: Animate the sprite when switching costumes.

Use this code to move the sprite 10 steps with each costume change, creating a walking animation.



ACTIVITY

Answer the following questions.

1- How many costumes does this sprite have?

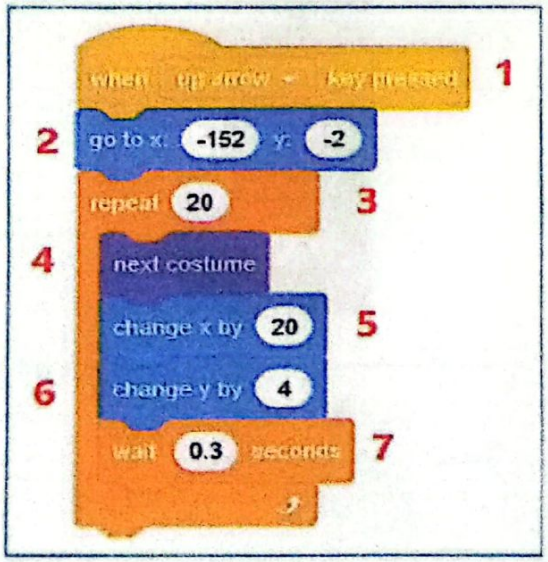


Batter

_____

_____

2- Describe the following script.



1- _____

2- _____

3- _____

4- _____

5- _____

6- _____

7- _____

Text to Speech in Scratch

This tool enables characters to communicate audibly, facilitating the creation of interactive projects, such as storytelling within spoken dialogue between sprites.

1- From the bottom-left corner, click the **Add Extension** button.

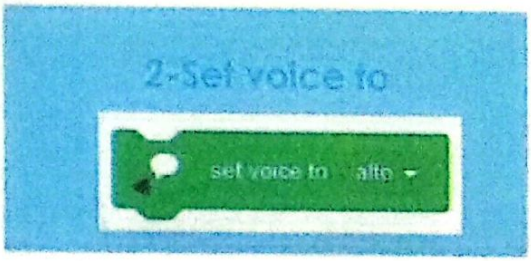
2- From the list, select the **Text to Speech** extension.



This extension contains the following blocks:



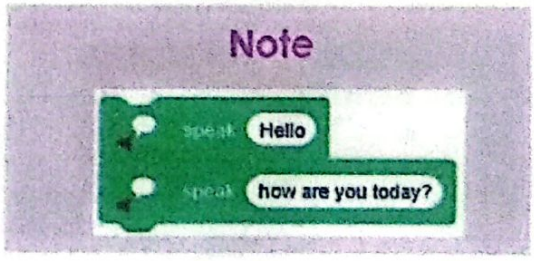
We can replace the word "hello" with any other word or sentence to make the sprite say it.



In this block, we can change the speaker's voice by placing it before "speak" block.



In this block, we can change the language options, such as Arabic and French.



We can use more than one "speak" block consecutively to create a conversation.

ACTIVITY

A. What is the function of each block in this script?

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



1- _____

2- _____

3- _____

4- _____

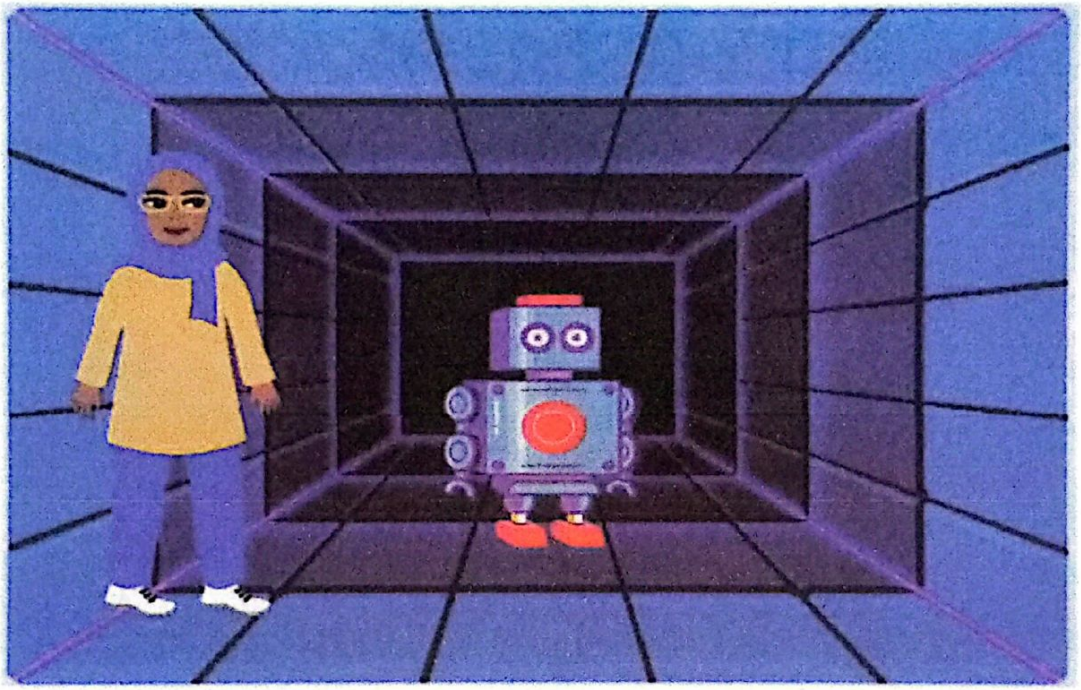
5- _____

6- _____

7- _____

ACTIVITY

B. **Use** the necessary blocks to create a conversation between these two characters and **rename** them "Alice and Robot".



When you click the green flag, Alice and Robot will have a short conversation.

Alice: Hello, Robot! How are you today?
Robot: Hi, Alice! I'm doing well, thank you.
Alice: That sounds great! What are you up to?
Robot: I'm working on a new project.

LESSON 17 OPERATOR BLOCKS

In Scratch, **Operator Blocks** are green blocks designed for conducting mathematical calculations, comparisons, and string operations.

Types of Operator Blocks

1- Arithmetic Operators are used for basic mathematical calculations.

- Addition (+) 

- Subtraction (-) 

- Multiplication (*) 

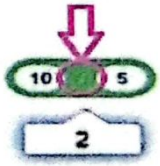
- Division (/) 

2- Comparison Operators are used to compare values, where the result is always "true" or "false".

- Equal to (=) 

- Greater than (>) 

- Less than (<) 

To see the result, click on this location: 

Variables

A **variable** is a named storage location that can store a value. It is used to track scores, counts, and positions throughout the program.

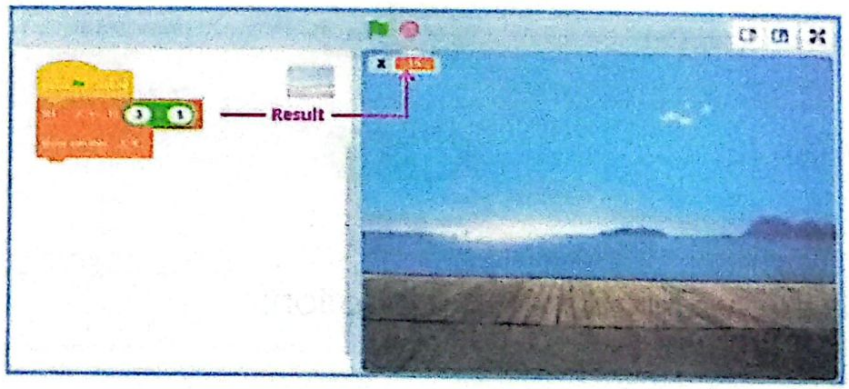
Use this button to create multiple variables. 



If you select **my variable**, its value will be displayed on the stage to show the score.
This block sets the variable's value and allows you to rename it. 

How to Combine Operators and Variables

In Scratch, to combine operators with variables, use the **set my variable to** block and place an **operator** block inside the value.



ACTIVITY

A. **Follow** the steps below to create the project.

Step 1

Create the following variable. **(Make a variable)**

- X
- Y
- Sum

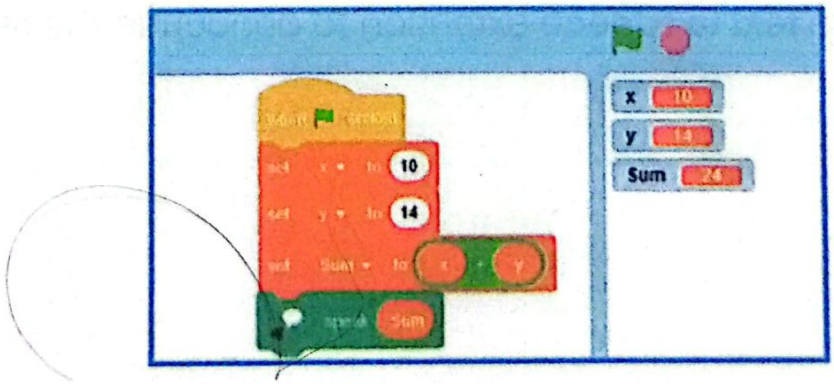
Step 2

Initialize these variables. **(Set my variable to)**

- X = 10
- Y = 14

Step 3

Add the following blocks.



ACTIVITY

B. **Create** a Scratch project to solve the following equations.

Equation 1

Q = 4 * a

Set "a" = 6

Use the **text to speech** extension to announce the result of **Q**.

Equation 2

Q = a – 2b

Set "a" = 50

Set "b" = 10

Use the **text to speech** extension to announce the result of **Q**.

Editing tools in **Microsoft Word** include Undo, Redo, Copy, Cut, Paste, and the Clipboard.

Undo/Redo

Undo: Revert the last action or change made.
To undo an action, either click the **Undo** button on the toolbar  or press Ctrl + Z.

Undo Multiple Actions: Click the small arrow next to the **Undo** button . This displays a list of recent actions. Select the specific action you want to undo.

Redo: Reapply the last undone action.
To redo an action, either click the **Redo** button on the toolbar  or press Ctrl + Y.

Copy, Cut, and Paste

Copy: Select the text or object to copy, right-click, and choose Copy  or press Ctrl + C on the keyboard.
Cut: Remove the selected text and place it on the Clipboard.
- Select the text or object you want to cut.

- Right-click and choose Cut  or press Ctrl + X on the keyboard.

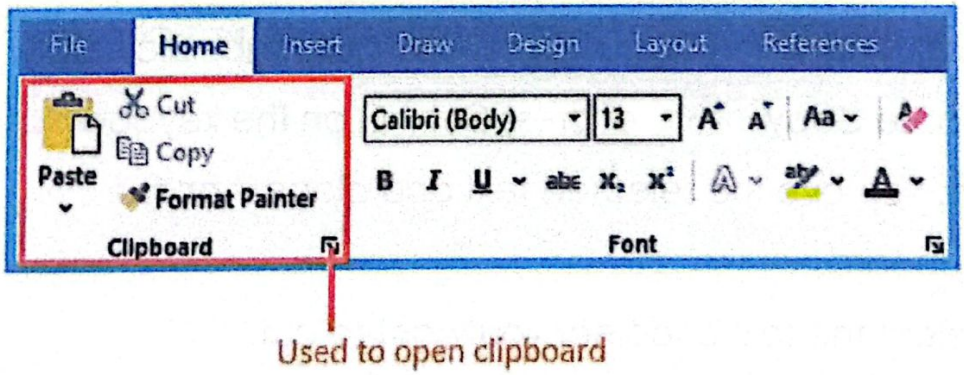
Paste: To paste a text in Microsoft Word:

- Place the Cursor: Click to position the cursor where the text should be inserted.
- Paste the Text: Click the **Paste** button  in the **Home** tab on the Ribbon or press Ctrl + V.

The previously cut or copied text will be inserted at the cursor's location.

Using a Clipboard

It temporarily holds the most recent copied or cut content for pasting.



ACTIVITY

A. **Use** the following text editing tools to modify and organize the document below.

1- Open Microsoft Word, create a new blank document, and enter the following text.

Microsoft Word is powerful word processing software. It allows creating, editing, and sharing documents.

2- Change the words "powerful word processing software" to "advanced document processing software".

- Undo the change (Ctrl + Z) to revert to "powerful word processing software".
- Redo the change (Ctrl + Y) to get "advanced document processing software" again.

3- Select the sentence "It allows creating, editing, and sharing documents."

- Copy the selected sentence.
- Place the cursor at the end of the document and paste the copied sentence below the original paragraph.

ACTIVITY

B. **Open** the Microsoft Word document "Lesson 18" and **copy/paste** the word next to its corresponding image.

Bee - Bird - Rabbit -Joystick - AirPods



_____



_____



_____



_____



_____

Insert Tab in Microsoft Word

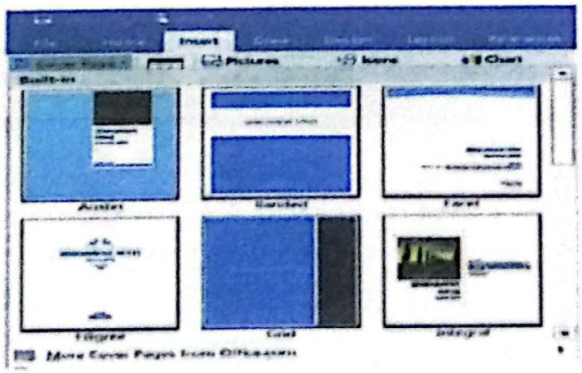
The **Insert** tab in Microsoft Word provides tools for adding various elements to a document, such as cover pages, tables, images, charts, links, and headers and footers.

1. Insert a Cover Page

A cover page is the first page of a document that typically includes a title, a subtitle, an author's name, a date, and other relevant information. Microsoft Word provides a variety of pre-designed cover page templates that you can easily insert and customize.

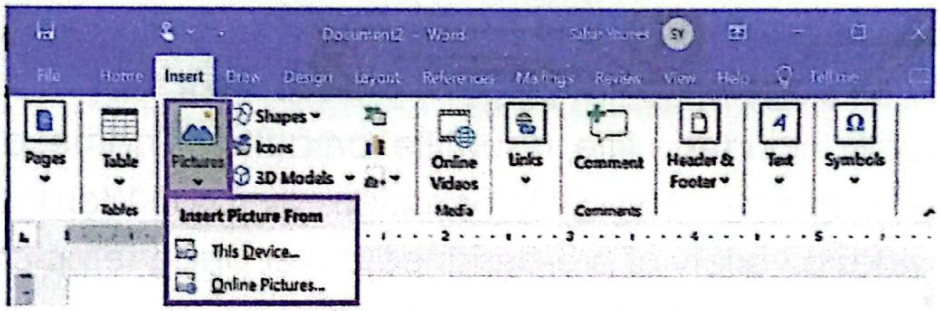
Follow these steps to Insert a cover page in Microsoft Word:

- Go to the **Insert** tab.
- Click **Cover Page.**
- Choose a **Page Template.**



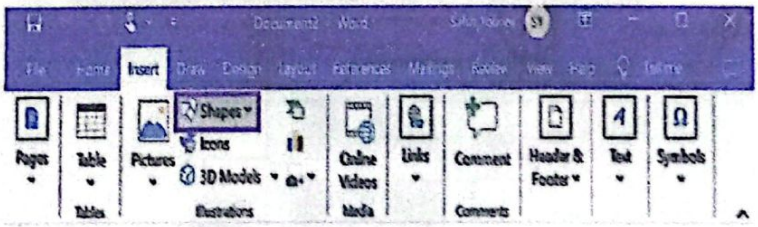
2- Insert Pictures

To insert a picture, click the **Pictures** button in the **Insert** tab. Select pictures from the device or from online sources.

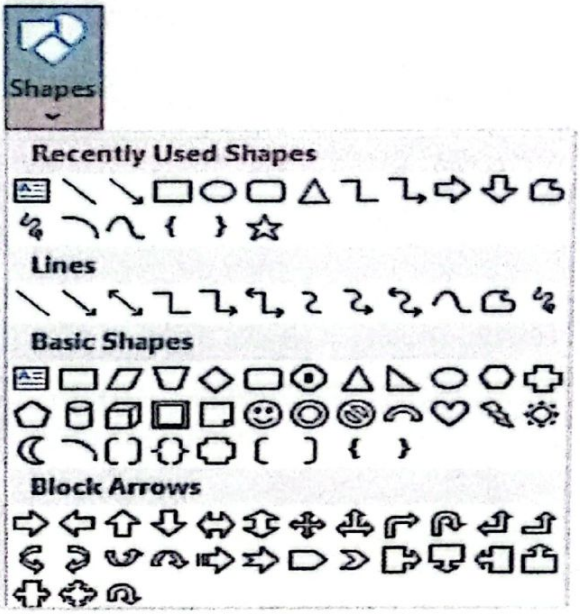


3- Insert Shapes

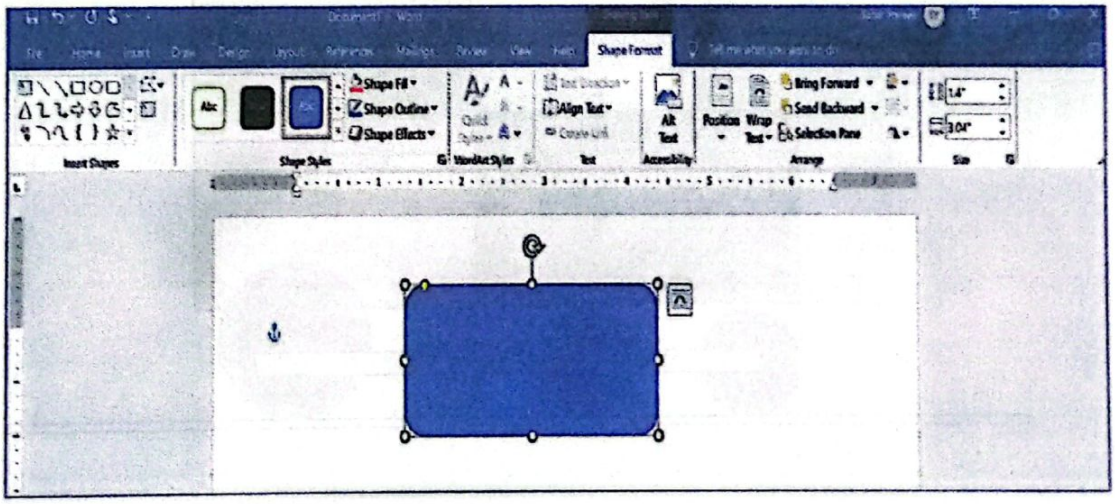
To insert a shape, click the **Shapes** button in the **Insert** tab.



Select different shapes, such as rectangles, lines, circles, arrows, and more.



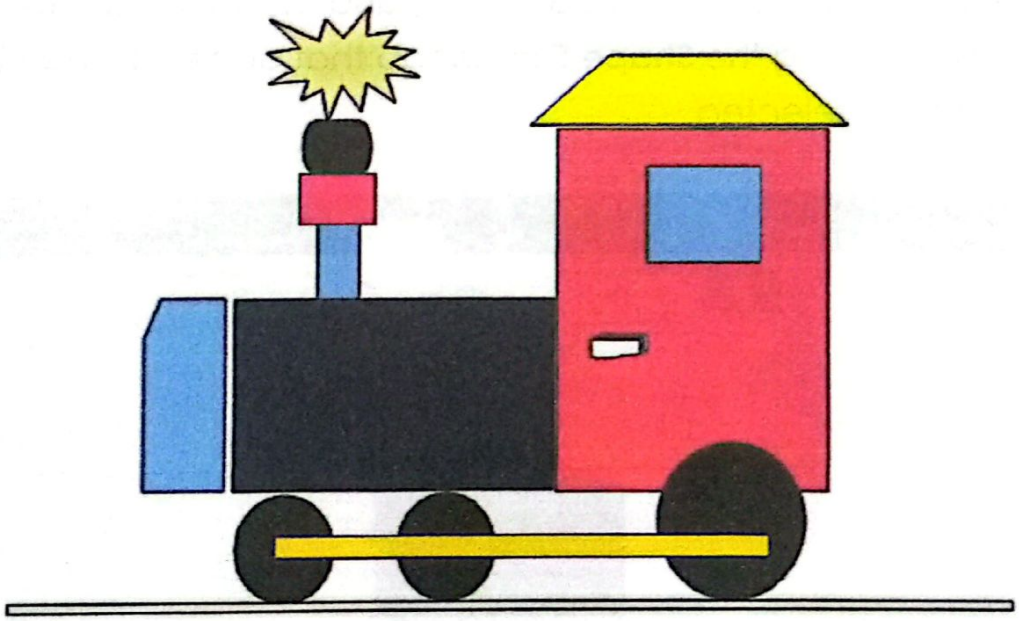
Customize the shape's size, color, and other formatting options using the **Shape Format** tab that appears when the shape is selected.



ACTIVITY

Use Microsoft Word to draw the following image by using shapes. **Color** the shapes with the same colors, as shown in the image.

Note: Insert the shapes in the right order, placing the backward shapes before the forward ones.



Insert Table in Microsoft Word

Tables arrange text, numbers, and other data in rows and columns.

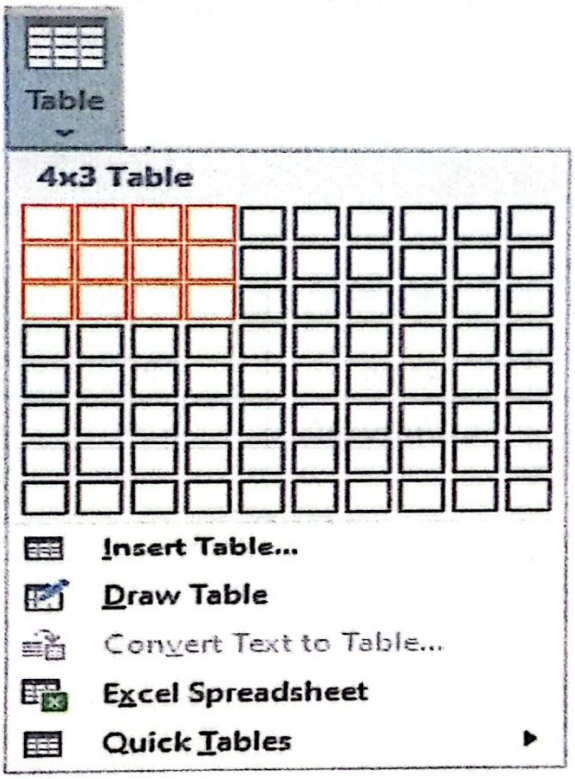
Example:

Book Code	Title	Price	Quantity
1213	Atlas	$20	23
2234	Computer	$14	12

Steps to Insert a Table

- Click the **Insert** tab.
- From the Tables group, click the **Table** button to open a dropdown menu.
- Move the mouse over the grid in the dropdown menu to highlight the number of rows and columns for the table.

For example, to create a table with 4 columns and 3 rows, move the mouse to highlight a 4x3 area on the grid.



- Click to insert the table into the document.
- Click inside any cell of the table to start typing.
- Format the cells and design your table.

ACTIVITY

A. **Choose** the correct answer to each of the following questions.

1. Which tab in Microsoft Word do you click to start inserting a table?

a the Home tab

b the Insert tab

c the Design tab

2. After inserting a table, where do you click to start typing inside it?

a outside the table

b in the margin

c inside any cell of the table

B. **Answer** with true (T) or false (F).

Create a table by moving the mouse over a grid to highlight the number of desired rows and columns.	_____

ACTIVITY

C. **Follow** the steps below to insert a basic table.

- Open Microsoft Word.
- Click the **Insert** tab.
- From the **Tables** group, click the **Table** button to open a dropdown menu.
- Move the mouse over the grid to highlight a 4x3 area (4 columns and 3 rows).
- Click to insert the table into the document.
- Type the following information into the table.

Book Code	Title	Price	Quantity
1213	Atlas	$20	23
2234	Computer	$14	12

Microsoft PowerPoint is presentation software to create presentations from simple slideshows. It is widely used for business presentations, educational lectures, training sessions, and more.

Opening Microsoft PowerPoint

- **Via Start Menu**: Click on the **Start** button (or press the **Windows** key), type **PowerPoint** into the search bar, and select **Microsoft PowerPoint** from the search results.

Via Desktop Shortcut: Double-click the **Microsoft PowerPoint** icon on the desktop if it is available.

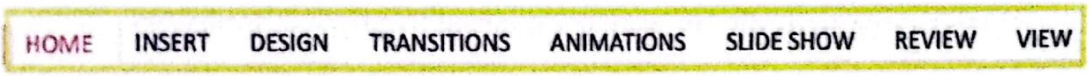
Via Taskbar: Click the **Microsoft PowerPoint** icon on the taskbar if it is pinned.

The PowerPoint Interface

Title Bar: It displays the name of the presentation and the program.



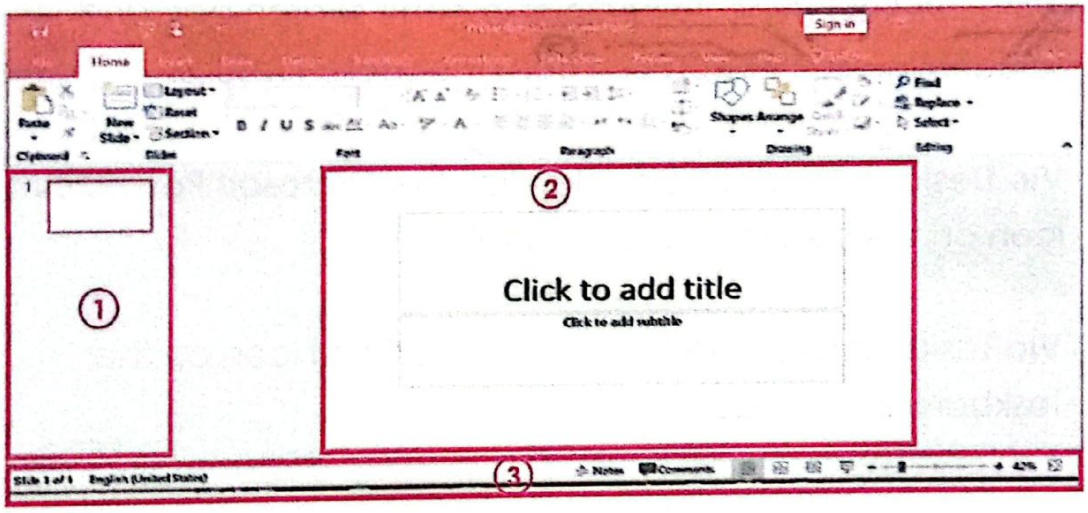
Ribbon: It contains tabs with various tools and features, such as Home, Insert, and Design.



1- Slide pane: It shows the slides in the presentation.

2- Slide area: It creates and edits individual slides.

3- Status bar: It displays information about the presentation and provides quick access to certain features.



Slide Layouts in Microsoft PowerPoint

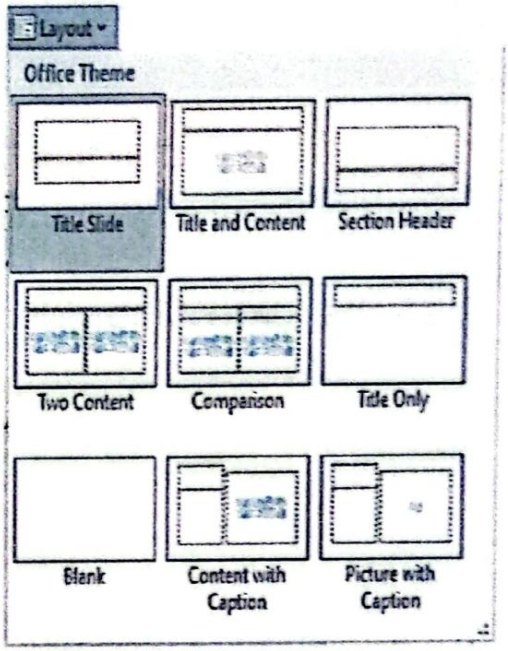
Each slide in **PowerPoint** can be formatted in different layouts to fit content needs. Some common slide layouts include:

Title and Content Layout: This layout features a title placeholder at the top and a content placeholder below. The content area is used for text, images, charts, or other objects.

Two Content Layout: It divides the slide into two side-by-side content areas.

Title Only Layout: It features a single placeholder for a title only, without any content placeholders.

Blank Layout: It provides a completely blank slide with no placeholders.



Changing the Slide Layout

- Right-click on the slide.
- Select **Layout** from the context menu.
- Choose the desired layout from the options provided.

Adding Slides

- Click the **Home** tab.
- Click **New Slide.**
- Choose different slide layouts, such as **Title Slide, Title and Content**, and **Two Content.**

ACTIVITY

Create a PowerPoint presentation from 2 slides.

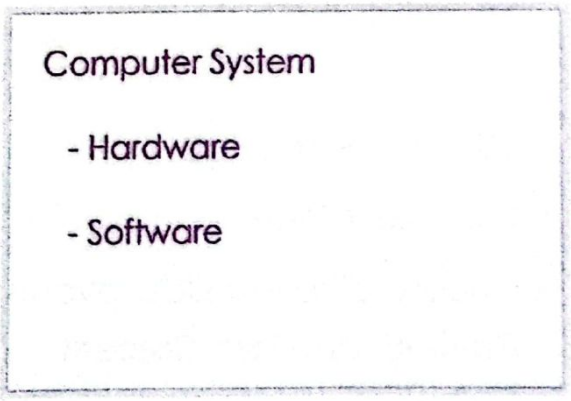
First slide
- Layout: **Title Only**
- Title: **Welcome to Our Presentation**

This is the form of the slide:



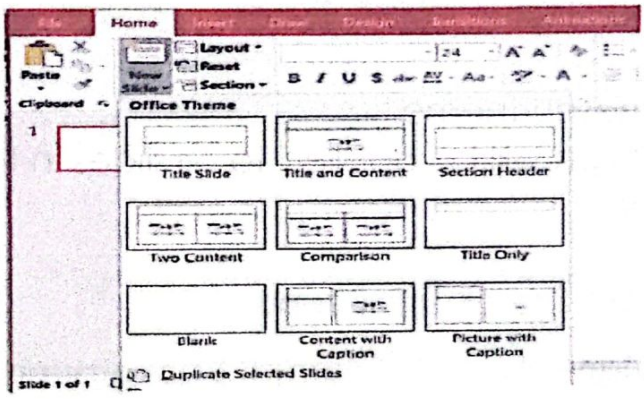
Second slide
- Layout: **Title and Content**
- Title: **Computer System**
- Content:
  - Hardware
  - Software

This is the form of the slide:

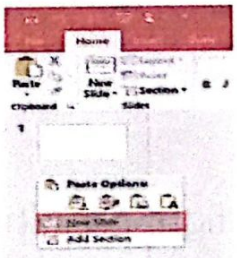


Adding Slides

- Click the **Home** tab.
- Click **New Slide.**
- Choose different slide layouts, such as **Title Slide, Title and Content**, or **Two Content**, based on your needs.



- Another option is to right-click on the Slides pane, and then click **New Slide.**

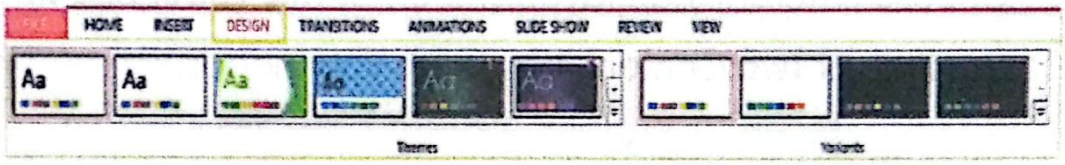


Changing the Slide Design (Design Template)

Changing the slide design or template in a presentation can make the slides more appealing.

Follow these steps:

- Click the **Design** tab in the Ribbon at the top of the window.
- Choose a New Theme: Browse through the available themes displayed in the **Themes** gallery.



- Click the chosen theme.
  The new design will be applied to all slides in the presentation.

Changing the Slide Background

From the **Design** tab, select **Format Background** to open the task pane.



Another option is to right-click the slide, and then select **Format Background**.

Adding a Transition

A **transition** is a special effect used to introduce a slide during a slideshow.
Click the **Transition** tab, and then select a transition effect.

ACTIVITY

A. **Choose** the correct answer to each of the following questions.

1. Which tab do you use to change the slide design or theme?

a the Insert tab

b the Home tab

c the Design tab

2. What is a transition in a presentation?

a It is a special effect used to introduce a slide during a slideshow.

b It is a design template applied to all slides in a presentation.

c It is an animation applied to text or objects on a slide.

B. **Follow** the steps below to add a new slide.

- Open a presentation in **Microsoft PowerPoint.**
- Go to the **Home** tab.
- Click **New Slide.**

ACTIVITY

- Choose the **Title Slide** layout for the new slide.
- Enter a title and subtitle for the new slide.

C. **Follow** the steps below to add multiple slides.

- Add two more slides with different layouts:
  - Slide 2: **Title and Content** layout
  - Slide 3: **Two Content** layout
- Enter appropriate content for each slide.

D. **Follow** the steps below to change the slide design.

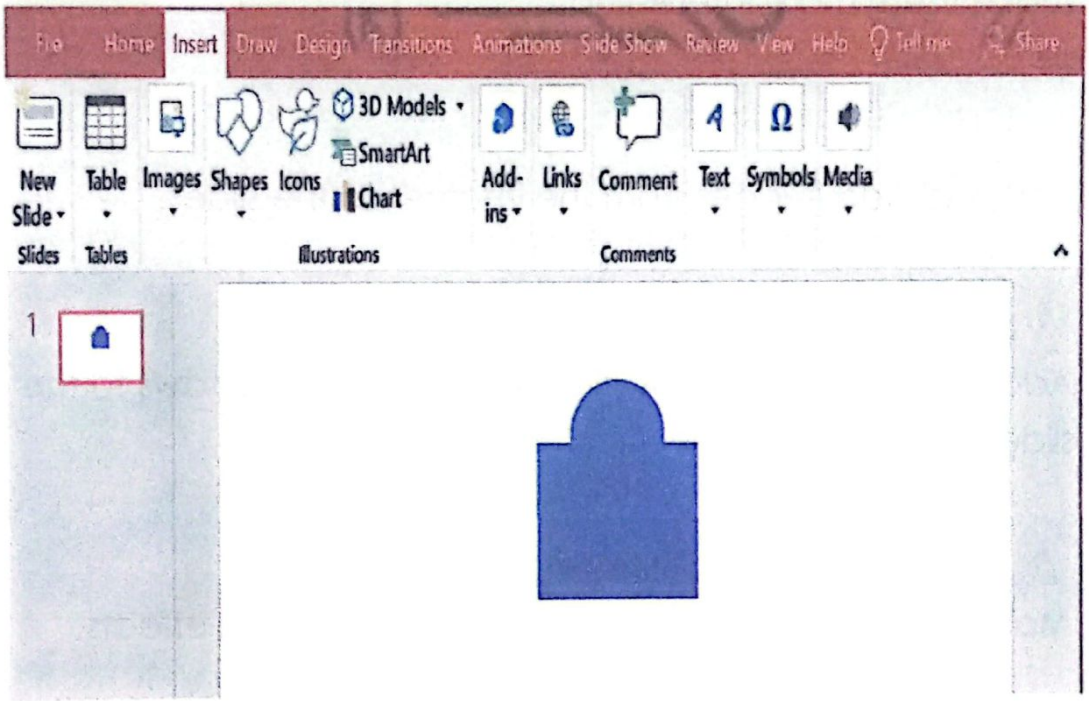
- Go to the **Design** tab.
- Select a new theme for your slides.
- Apply the theme to all slides in the presentation.

E. **Follow** the steps below to change the slide background.

- Right-click on Slide 2.
- Select **Format Background**.
- Change the background color to light blue.
- Apply the change to Slide 2 only.

Insert Objects

Insert objects into a **PowerPoint** presentation to illustrate the chosen points more effectively.



1. Insert New Slide

Add a new blank slide to a PowerPoint presentation.

2. Insert Table

Put a grid with rows and columns into a slide.

3. Insert Pictures

Add photos or images from the computer to the slides to make them more interesting.

4. Insert Online Pictures

Find and add images from the internet to the slides.

5. Insert Shapes

Add different shapes like circles, squares, and arrows to the slides.

6. Insert WordArt

Make a text look fancy and colorful with special effects.

7. Insert Video

Add a video from the computer to the slide to make it more engaging and appealing.

8. Insert Audio

Insert audio from the computer into the slide or add record audio with a microphone to enhance the presentation's impact.

ACTIVITY

A. **Choose** the correct answer to each of the following questions.

1. Which of the following options do you use to add a new blank page to your PowerPoint presentation?

a Insert Table

b Insert Pictures

c Insert New Slide

2. Which option would you use to find and add images from the internet to your slide?

a Insert Table

b Insert Online Pictures

c Insert Shapes

3. Which option allows you to add sounds or music to your slide?

a Insert Table

b Insert Audio

c Insert Shapes

ACTIVITY

B. **Follow** the steps below to insert a picture.

- Go to the **Insert** tab.
- Click the **Pictures** button.
- Choose a picture from your device and insert it into the slide.
- Resize and position the picture appropriately.

C. **Follow** the steps below to insert online pictures.

- Go to the **Insert** tab.
- Click the **Online Pictures** button.
- Search for an image related to your presentation topic and insert it into the slide.

D. **Follow** the steps below to insert WordArt.

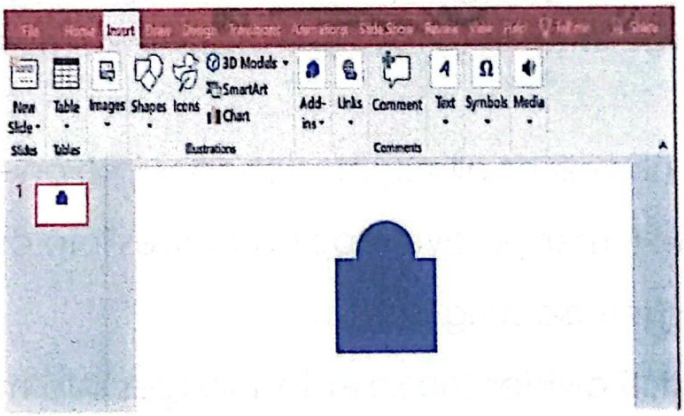
- Go to the **Insert** tab.
- Click **WordArt**.
- Choose a WordArt style and type **Welcome** in the text box.
- Position the WordArt on your slide.

How to Merge Shapes in PowerPoint

Merging shapes in PowerPoint allows users to create custom shapes and designs by combining or subtracting from existing shapes.

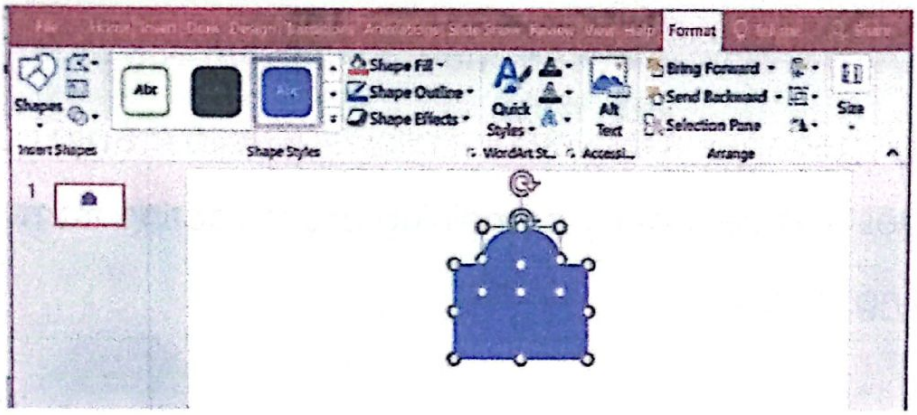
1. Insert Shapes

- Go to the **Insert** tab on the Ribbon.
- Click **Shapes** and select the shapes to merge.
- Draw the shapes on the slide.



2. Select the Shapes

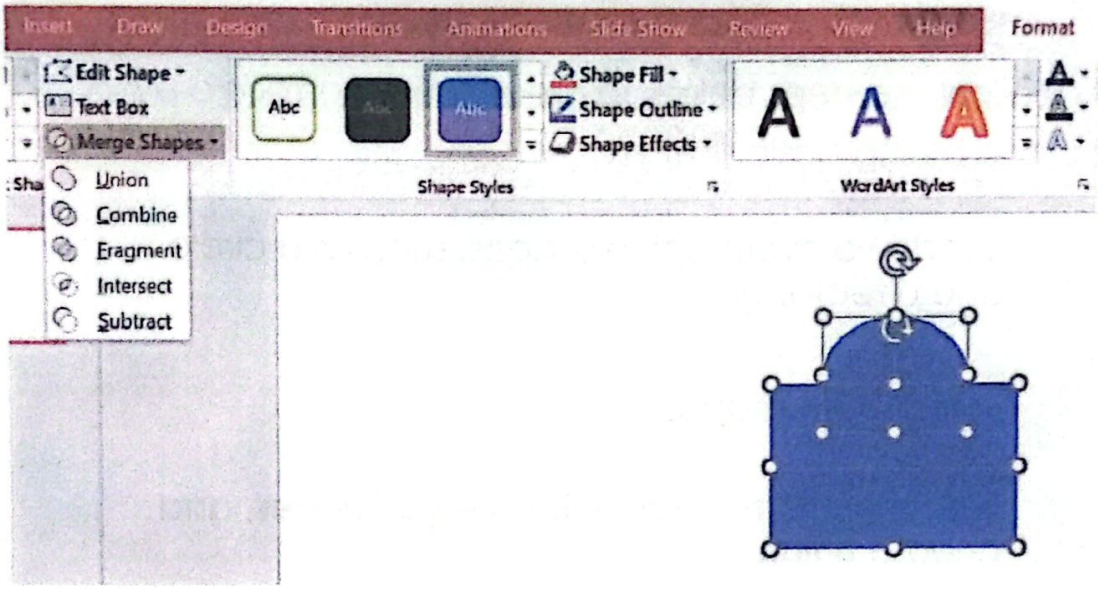
Click on the first shape, hold down the **Shift** key, and click on each additional shape to merge. All selected shapes should now have a border.



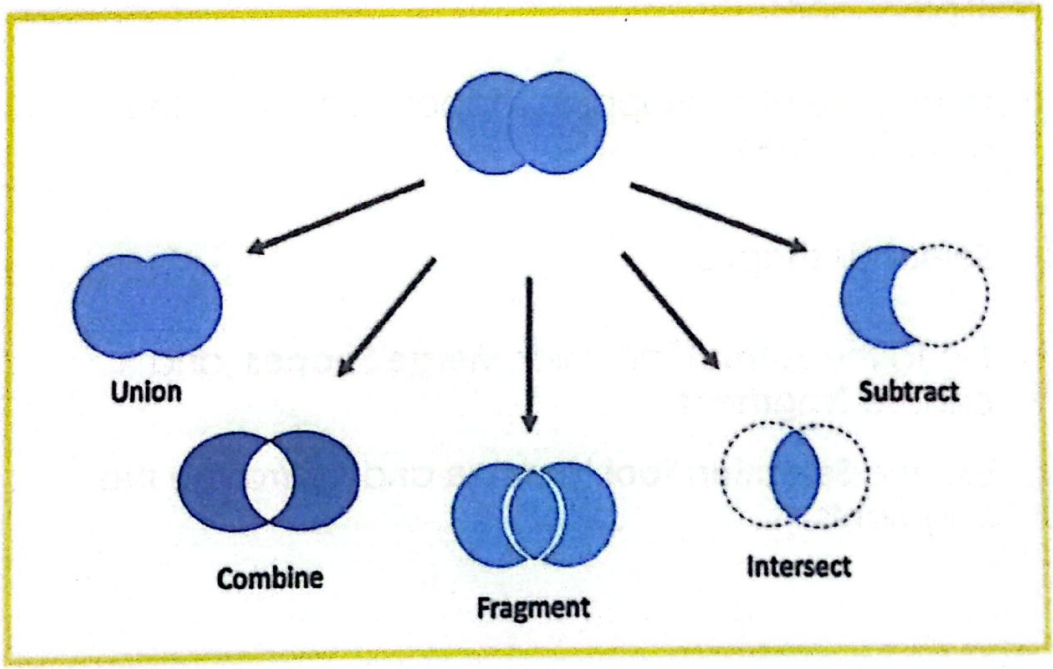
3. Merge the Shapes

- With the selected shapes, go to the **Format** tab on the Ribbon. This tab appears when shapes are selected.
- In the **Insert Shapes** group, find the **Merge Shapes** button.
- Click **Merge Shapes** to reveal a dropdown menu with options:

- **Union**: It combines all selected shapes into one shape.
- **Combine**: It merges overlapping shapes into one, removing intersecting areas.
- **Fragment**: It divides the selected shapes into multiple parts where they intersect.
- **Intersect**: It creates a shape from the overlapping area of the selected shapes.
- **Subtract**: It removes the top shape from the bottom shape.



The following is an illustration of what each option in **Merge Shapes** does.



ACTIVITY

A. **Follow** the steps below to create a custom logo by combining basic shapes.

1	Insert two overlapping shapes, such as a circle and a rectangle.
2	Select both shapes.
3	Go to the **Format** tab, click **Merge Shapes**, and choose **Union**.
4	Adjust the color and size of the newly merged shape to finalize your logo.

B. **Follow** the steps below to create a mosaic effect using multiple shapes.

1	Insert several overlapping shapes, such as circles of various sizes.
2	Select all shapes.
3	Go to the **Format** tab, click **Merge Shapes**, and choose **Fragment**.
4	Use the **Selection Tool** to move and rearrange the fragments.