

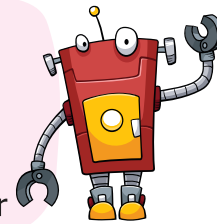


# Exploring the Computer System



## Learning in this chapter

- ❖ Computer System
- ❖ Buttons and ports on the Computer
- ❖ Inside the System Unit
- ❖ Knowing the Configuration of Your Computer



## COMPUTER SYSTEM

A computer is an electronic machine that can perform a variety of operations according to a set of instructions called programs. The computer system works on the principle of the Input-Process-Output (IPO) Cycle. In this cycle, the computer system.

- receives input in the form of data in instructions.
- processes the data on the basis of the instructions and
- displays the processed data as output.

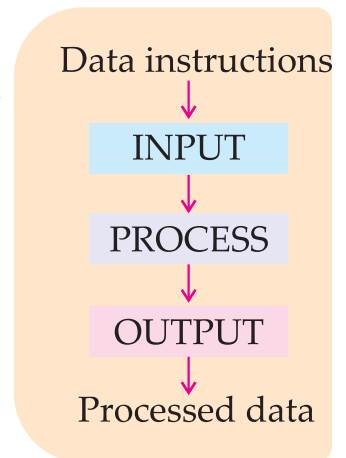
We say that a computer is a system because it is a group of integrated parts which work together to give the desired output. The computer system is made up of the following components :

- Hardware
- Software

**Hardware** refers to any physical part of the computer that we can touch and hold. All the input/output devices, memory, storage and processing devices, components inside the system unit, wires, cables, cases, and so on are hardware components of a computer.

**Software** refers to the programs that are loaded on the computer. We cannot touch or hold them but they help us to give instructions to the hardware and work on the computer. Some examples of software include MS Word, MS PowerPoint, MS Excel, Adobe Flash and so on.

Anything we do on the computer requires the use of both hardware and software. For example to play a game on the computer we will need both a mouse (hardware) and gaming software.





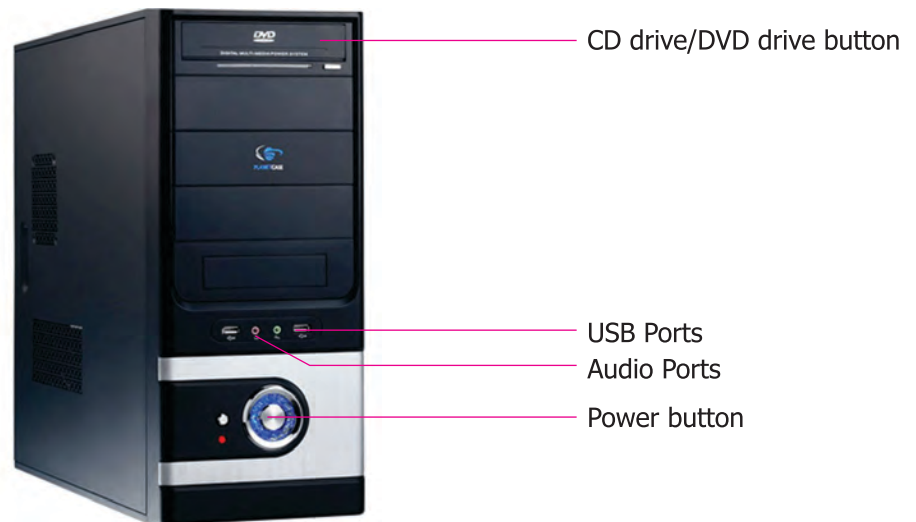
## BUTTONS AND PORTS ON THE COMPUTER

Observe the front and back side of your computer's system unit. You will observe a number of buttons and sockets or ports. Let us learn about some common buttons and ports that are found in almost all modern computers.

### Front of the system Unit

The following picture shows some buttons and ports that we will see on the front side of a typical desktop computer's system unit.

A port is an interface that allows you to connect a peripheral device (mouse, keyboard, printer, speakers, and so on) to the computer.



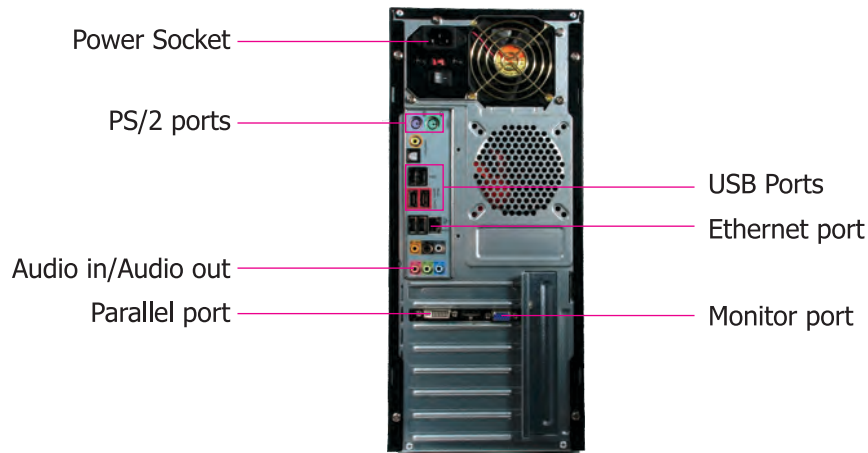
Front of System Unit

- The **power button** is used to power the computer ON and OFF. In some computers, the power button may have additional energy saving features like hibernate, sleep and stand by.
- The **CD drive/DVD** drive button can be pressed to make the CD/DVD tray slide in and out.
- Front **USB ports** allow you to connect USB drives and other devices with the USB ports to the computer, easily.
- Some computers have **audio ports** in the front that allow us to connect speakers, headphones and microphone easily to the computer.

### Back of the System Unit

At the back of the computer's system unit we find many different types of ports that allow us to connect a variety of devices to the computer. Some of the ports may be color coded to match a color on the device that we will connect to the computer.





Back of the System Unit

- The **Power Socket** is where you will connect the power cable to the computer.
- **Audio ports (Audio in/Audio out)** help you to connect audio devices like microphone, speakers, and headphones and so on to the computer. Every computer has two or more audio ports.
- An **Ethernet cable** is plugged into the **Ethernet port** to connect the computer to a network or to the Internet.
- **PS/2 ports** are generally used for connecting a mouse and keyboard to the computer. Typically, the mouse port is green in colour while the keyboard port is purple in colour.
- Most of the **USB ports** in a computer are situated on the back side of the system unit. You can use these devices to connect a pen drive, USB mouse or keyboard and other USB devices.
- The monitor is connected to the system unit through the **Monitor port**. A power cable connects the monitor to the power supply as well.
- A printer is connected to the computer's system unit through the **Parallel port** or the Printer port. A power cable also connects the printer to the main power supply.



### Remember

- In modern computers these days, ports like PS/2, printer port, serial port and so on are being replaced by the USB ports.

## Activity

Match the columns correctly :

- |                   |                       |
|-------------------|-----------------------|
| 1. PS/2 Port      | a. Microphone         |
| 2. USB port       | b. Networking cable   |
| 3. Parallel port  | c. Speakers           |
| 4. Ethernet port  | d. Pen drive          |
| 5. Audio in port  | e. Keyboard and mouse |
| 6. Audio out port | f. Printer            |





## INSIDE THE SYSTEM UNIT

Have you ever looked inside the system unit? Does it look like a complex maze of wires, circuits and electronic components to you? Do not worry! Here we will try to simplify things for you and help you to learn about the inner parts of the computer.

### Power Supply Unit

The **Power supply** unit, also known as the **Switched Mode Power Supply (SMPS)** unit. Converts power coming from a wall socket into a form that is needed by the computer. It supplies the power to the motherboard and other computer components through wires.

### Motherboard

The main circuit board of the computer that lies inside the system unit is known as the **motherboard**. All critical components of the computer system including the CPU and Memory (RAM and ROM) are either fixed or printed on the motherboard.

**Expansion slots**, where video, sound and networking cards are inserted also lie on the motherboard. The Hard disk, CD/DVD drive and all the ports have their connections on the motherboard and, infact, every port of the computer is directly or indirectly connected to the motherboard.



Motherboard



### Remember

- The CPU uses the circuits, components and pathways on the motherboard to transfer signals and control the overall working of the computer.

### Central Processing Unit (CPU)

The **Central Processing Unit (CPU)** or the processor is the 'brain' of a computer. In PCs, it is contained on a single integrated circuit or chip known as a microprocessor. The Microprocessor is the main processing device of the computer.

All the real processing work inside a computer is done by the CPU, with the help of its two main parts- the Control Unit (CU) and the Arithmetic Logic Unit (ALU).

1. **Control Unit (CU)** controls the flow of binary data/information in the computer.
2. **Arithmetic Logic Unit (ALU)** performs the actual mathematical and logical computations on data to process it.



CPU

### DO YOU KNOW?

**Gordon Moore** and **Robert Noyce** are the founders of **INTEL**. The Intel Corporation was founded in 1968. Intel stands for integrated Electronic. Intel Core i7 is the latest core processor.

Icon-X-7



## ROM BIOS Chip

The **Rom** or **Read Only Memory** is a small chip fixed on the motherboard. It contains BIOS or Basic Input/Output System instructions to boot up or start up the computer every time we switch it ON. These days BIOS instructions are written on a flash memory chip rather than on a ROM chip. This allows the instructions to be changed or updated which was not possible on the ROM.



ROM BIOS CHIP

## RAM Chip

All computer motherboards come fitted with certain amount of workspace memory in the form of a **RAM** or **Random Access Memory** chip. It is also known as the Direct Access Memory since it can be directly accessed by the CPU for storing inputs, processing data or running programs. All the work that we do on the computer is stored in the RAM until we save it to the hard disk or some other storage device. The RAM is a temporary memory. Everything stored in the RAM gets erased as soon as we switch the computer OFF. So, before



RAM

turning the computer OFF, we must save all our work to a permanent storage device such as hard disk and USB flash drive so that we can use it in future.



Cache is a type of high speed RAM built directly on the CPU or very close to it. It can transfer data to the CPU much greater speed than the RAM. It is used for storing that part of the data which is frequently used by the CPU.

## Hard Disk Drive

The **Hard Disk Drive** connects to the motherboard through a connector cable. It is the main storage device of the computer and stores all the programs installed on the computer as well as the work that we do on the computer.



Hard Disk Drive

## Expansion Cards

All motherboards have **expansion slots** to allow us to add different type of **expansion cards** to enhance the performance of our computer or to expand the capabilities of an older computer. Video cards, sound cards, network cards and Bluetooth cards are some of the expansion cards that are commonly put onto the motherboard.



Expansion card slots



## DO YOU KNOW?

The expansion cards are also known as the Peripheral Component Interconnect cards of PCI cards.

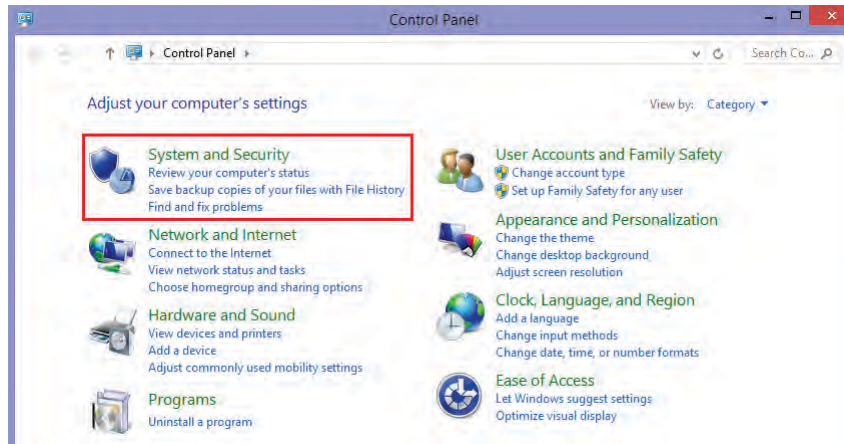
## KNOWING THE CONFIGURATION OF YOUR COMPUTER

We should know the configuration of our computer system. Configuration includes four important things about our computer system.

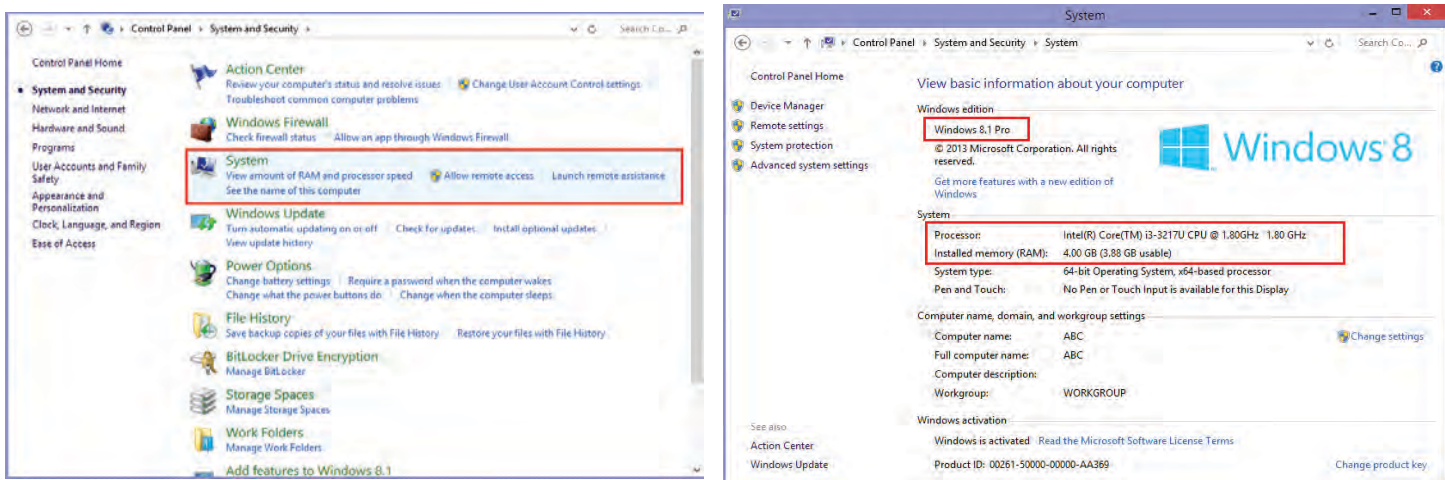
- Version of operating system
- Kind of processor (CPU)
- Total memory (RAM) installed
- Capacity of hard-disk drive


Following are the steps to know the configuration of computer system :

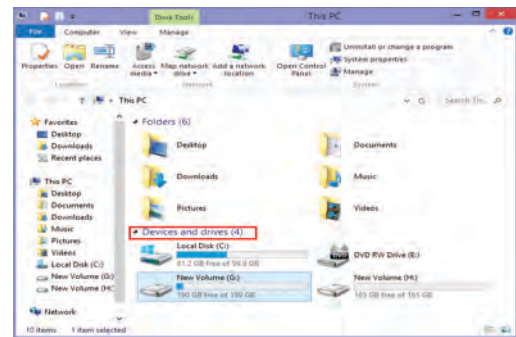
**Step 1 :** Open **Control Panel** and click **System and Security**. The **System and Security** window appears.



**Step 2 :** Click **System** option. The **System** window appears. You can view basic information about your computer like version of operating system, type of processor and total memory installed.



Double-click This PC  Icon on the Desktop to get information about the capacity of hard disk drive. The **This PC** window appears. Under **Devices and drives** section on the right pane, you will see the names of the disks along with the information like free space and total size.



## Activity

Read the clues and name each of the following :

1. The main circuit board of the computer. \_\_\_\_\_
2. It supplies power to the computer's main circuit board. \_\_\_\_\_
3. This is called the main working memory of the computer. \_\_\_\_\_
4. These can be added to enhance the performance of the computer system. \_\_\_\_\_
5. The main storage device of the computer. \_\_\_\_\_



## POINTS to Recall

- A computer is an electronic machine they can receive, store, retrieve, process and output data/ instructions.
- The physical parts of the computer are called hardware. Software are the programs installed on the computer to allow you do work on it.
- Ports are sockets in the front or back side of computer's system unit that help you to connect the various peripheral devices to the computer.
- The motherboard is the main circuit board of the computer. It lies inside the system unit and holds many important parts like the CPU, RAM, connections to ports, drives and so on.
- The ROM BIOS chip contains instructions to boot up the computer.
- The RAM is the memory that the computer uses to process data and run programs.



## TERMS to Learn

- **PS/2 Port** : A type of port that connects a mouse or keyboard to a personal computer.
- **USB Port** : A port that supports a Universal Serial Bus (USB) connector. It can be used to connect about 127 different types of peripheral devices.
- **Ethernet Port** : A port where in Ethernet cables (networking cables) are plugged.
- **SMPS** : Switched Mode Power Supply (SMPS) is a small device that converts electricity from th wall socket into the needed by the computer.
- **Cache** : A type of high speed RAM built close to the CPU.
- **Expansion Cards** : A type of smaller circuit board that can be inserted in a computer's motherboard to enhance its performance.



## Multiple Choice Questions

### A. Tick (✓) the correct answer.

- A \_\_\_\_\_ is an interface that allows you to connect a peripheral device to the computer.
 

(a) Port	<input type="radio"/>	(b) Plotter	<input type="radio"/>	(c) Button	<input type="radio"/>
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- Which of these is not a port?
 

(a) PHP	<input type="radio"/>	(b) PS/2	<input type="radio"/>	(c) USB	<input type="radio"/>
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- Which of these cannot be connected to a PS/2 port?
 

(a) Keyboard	<input type="radio"/>	(b) Mouse	<input type="radio"/>	(c) Pen Drive	<input type="radio"/>
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- Where do you connect a monitor?
 

(a) PS/2	<input type="radio"/>	(b) Parallel port	<input type="radio"/>	(c) Monitor port	<input type="radio"/>
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- Which of these is a temporary memory?
 

(a) RAM	<input type="radio"/>	(b) ROM	<input type="radio"/>	(c) Hard disk	<input type="radio"/>
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### B. Fill in the blanks with the help of given hints.

- Programs installed on the computer are called \_\_\_\_\_ .
- Printer, monitor, CPU and keyboard are examples of computer \_\_\_\_\_ .
- A \_\_\_\_\_ is an interface that allows you to connect a peripheral device to the computer.
- To connect a pen drive to the computer you should insert it into the \_\_\_\_\_ .
- The \_\_\_\_\_ is known as the main circuit board of a computer.
- The \_\_\_\_\_ chip contains instructions to boot up a computer.
- The \_\_\_\_\_ port is also known as the Printer port.

**HINTS:** Software   Hardware   USB Port   Parallel Port   Motherboard   ROM

### C. Write 'T' for true statements and 'F' for false statements in the .

- Most of the USB ports in a computer are situated on the front side.
- The Microphone should be connected to the audio in port as its job is to input sound into the computer.
- MS word and Ms Excel are examples of computer hardware.
- The Ethernet port allows you to connect a networking cable to the computer.
- The printer can be connected to a computer only through the serial port.





**D. Very Short Answer Questions.**

1. Which port is used to connect USB devices to the computer?

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2. Which port is used to connect printer to the computer?

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3. Write full form of BIOS?

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**E. Short Answer Questions.**

1. What is hardware?

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2. What is software?

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3. What is a motherboard?

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4. What are the two main parts of the CPU?

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**F. Long Answer Questions.**

1. Distinguish between USB and PS/2 ports.

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2. Describe any three buttons/ports that you may find in the front part of the system unit.

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3. Describe any three ports that you will find on the back side of the system unit.

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4. What is RAM? Describe its function.

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## Activity Time

**Practical 1:** Observing connectors and ports on a desktop computer.

1. Under the supervision of you teacher/parents, observe the various ports and connectors in the front and back of your desktop PC.
2. Under the supervision of your teacher/parents, carefully remove the mouse and keyboard connectors from the system unit. Observe the type of connectors they use and then insert them back into their port/slot carefully again.
3. Similarly observe the peripheral devices such as printer, microphone, speakers, USB drive and so on and practice connecting them into the slots.

**Note :** Before doing the above exercises make sure that you have completely disconnected the computer from the power supply (both the main power and the UPS).

**Practical 2 :** Observing connectors and ports on a laptop computer.

1. Observe the ports and connectors on the left and right sides of a laptop computer.
2. Try to identify them as USB port, Audio ports, Parallel port, Card slots, etc.
3. Learn how you can connect a charger to a laptop computer through the power connector.

