

Chapter 1: Introduction to Computer

Theory: 3 hrs | Lab: 3 hrs | NIELIT CCC Revision 3 (w.e.f. June 2019)

Hardware

Software

IT Gadgets

Evolution

MCQ Practice

Learning Objectives

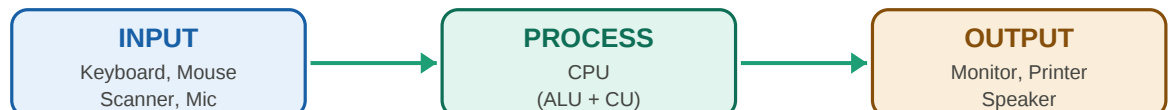
After completing this chapter, students will be able to:

- Identify computers, IT gadgets and explain their evolution and applications
- Get familiar with Input, Output, and Hardware components of a computer including storage devices
- Understand various types of software, utilities used for computers, and mobile apps

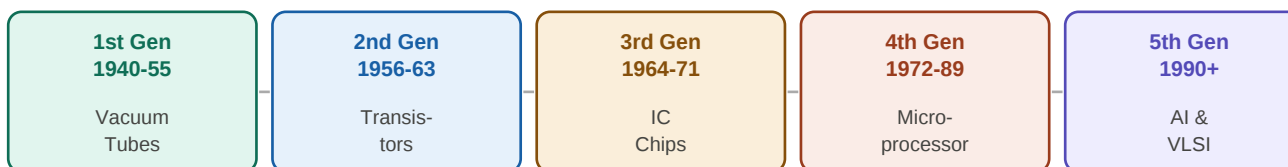
1.1 What is a Computer?

A **computer** is an electronic device that **accepts data as input**, **processes** it according to given instructions (program), and produces meaningful **output**. It can also **store** data and results for future use. The word 'computer' comes from the Latin word *computare* meaning 'to calculate'.

Key Concept — IPO Cycle: Input → Process → Output (the fundamental working principle of every computer)



1.2 Evolution of Computers



Generation	Period	Technology Used	Key Features	Examples
1st	1940–1955	Vacuum Tubes	Very large, slow, costly, lots of heat	ENIAC, UNIVAC
2nd	1956–1963	Transistors	Smaller, faster, less heat, cheaper	IBM 1401, CDC 1604
3rd	1964–1971	IC (Integrated Circuit)	Multiple transistors on single chip	IBM 360, PDP-8
4th	1972–1989	Microprocessor (VLSI)	Personal computers, GUI introduced	Apple II, Intel 8086

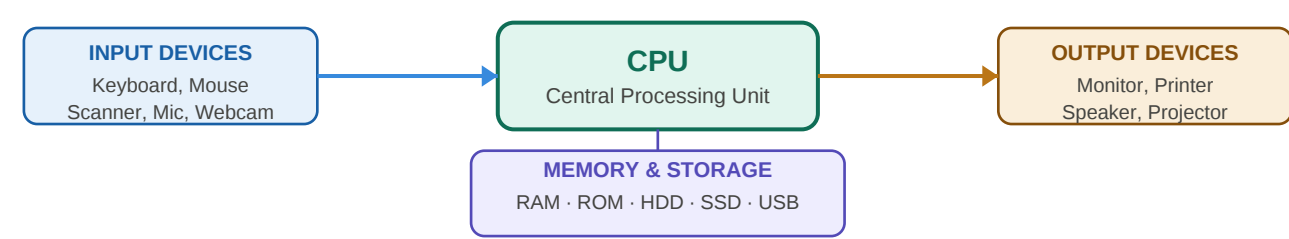
5th	1990–Present	AI, ULSI, Parallel Processing	AI, speech recognition, robotics	Modern PCs, Smartphones
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1.3 IT Gadgets and Applications

Device	Type	Key Uses
Desktop Computer	Personal Computer	Office work, gaming, home use
Laptop	Portable Computer	Travel, students, professionals
Tablet	Touch-screen device	Reading, media, education
Smartphone	Mobile Computer	Communication, internet, apps
Smart TV	IoT Gadget	Streaming, internet browsing
Server	Powerful Computer	Stores and serves data over network
Smartwatch	Wearable Device	Health tracking, notifications

1.4 Hardware Components

Hardware refers to the physical, tangible parts of a computer that you can touch and see. It includes all input devices, output devices, the processing unit (CPU), and storage devices.



CPU — The Brain of the Computer

Component	Full Form	Function
ALU	Arithmetic Logic Unit	Performs arithmetic (+, −, ×, ÷) and logical operations (AND, OR, NOT, comp
CU	Control Unit	Fetches, decodes & executes instructions; coordinates all operations
Registers	—	Ultra-fast temporary storage inside the CPU that holds data being processed
Cache	—	Very fast memory between CPU and RAM; stores frequently used data

Input & Output Devices

Input Devices	Output Devices
Keyboard — typing text and commands	Monitor — displays text and images
Mouse — pointing and clicking	Printer — produces hard copies
Scanner — converts documents to digital	Speaker — produces audio output

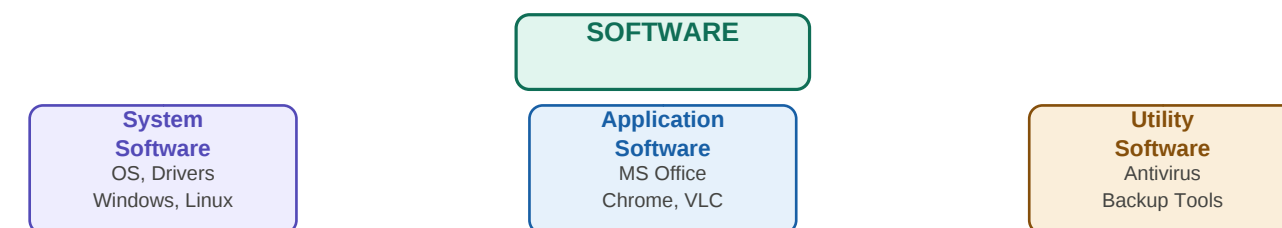
Microphone — records voice/audio	Projector — displays on large screen
Webcam — captures video/images	Plotter — draws large diagrams/maps
Joystick — gaming and simulations	Headphones — personal audio output
Touchscreen — touch input	

Memory and Storage Devices

Type	Full Form	Category	Volatile?	Key Feature
RAM	Random Access Memory	Primary	Yes	Temporary working memory; lost on power off
ROM	Read Only Memory	Primary	No	Stores BIOS; permanent, cannot be easily changed
Cache	—	Primary	Yes	Fastest memory between CPU and RAM
HDD	Hard Disk Drive	Secondary	No	Large capacity; magnetic storage; slower
SSD	Solid State Drive	Secondary	No	Fast, no moving parts; flash-based storage
Pen Drive	USB Flash Drive	Portable	No	Portable; plug and play via USB port
CD/DVD	Compact/Digital Video Disc	Optical	No	Read/write using laser; 700MB to 8.5GB
SD Card	Secure Digital Card	Portable	No	Used in cameras, phones, tablets

1.5 Software

Software is a set of programs, instructions, and data that tells the computer hardware what to do. Without software, hardware cannot perform any useful task. Software is broadly classified into three types:



Type	Description	Examples
System Software	Manages hardware resources and provides a platform for running other OSs	Windows 10/11, Linux, macOS, Android, iOS, Unix
Application Software	Performs specific tasks directly for the end user	MS Word, Excel, Chrome, VLC, WhatsApp, Tally, Zoom
Utility Software	Maintains, optimises, and protects the computer system	Antivirus, WinZip, Disk Cleanup, CCleaner, Norton
Open Source	Source code is freely available; anyone can use, modify or improve it	Linux, LibreOffice, Mozilla Firefox, VLC, GIMP
Proprietary	Paid, closed-source software; source code not available publicly	MS Office, Adobe Photoshop, Tally
Mobile Apps	Apps designed for smartphones and tablets	WhatsApp, Paytm, BHIM, DigiLocker, Google Maps, Zoom

Quick Revision — Key Terms

Term	Meaning
Computer	Electronic device that processes data (IPO cycle)
Hardware	Physical components of a computer (CPU, RAM, keyboard, etc.)
Software	Programs/instructions that run on hardware
CPU	Central Processing Unit — brain of the computer
ALU	Arithmetic Logic Unit — performs calculations and comparisons
RAM	Random Access Memory — temporary, volatile primary memory
ROM	Read Only Memory — permanent, non-volatile memory for BIOS
Input Device	Sends data to computer (keyboard, mouse, scanner)
Output Device	Receives processed data from computer (monitor, printer)
Open Source	Free software with publicly available source code
Operating System	System software managing hardware & software (Windows, Linux)

MULTIPLE CHOICE QUESTIONS — Chapter 1 | 20 Questions

Q1. Which part of the CPU performs arithmetic and logical operations?

- (A) Control Unit
- (B) Registers
- (C) ALU
- (D) Cache

Answer: (C) | ALU (Arithmetic Logic Unit) handles all math (+, −, ×, ÷) and logical operations (AND, OR, NOT).

Q2. ENIAC and UNIVAC are examples of which generation of computers?

- (A) 2nd Generation
- (B) 3rd Generation
- (C) 1st Generation
- (D) 4th Generation

Answer: (C) | ENIAC and UNIVAC used vacuum tubes — they belong to the 1st generation (1940–1955).

Q3. Which of the following is volatile memory?

- (A) ROM
- (B) HDD
- (C) RAM
- (D) SSD

Answer: (C) | RAM is volatile — all data is lost when the computer is switched off.

Q4. The full form of CPU is:

- (A) Central Program Unit
- (B) Control Processing Unit
- (C) Computer Power Unit
- (D) Central Processing Unit

Answer: (D) | CPU = Central Processing Unit — the 'brain' of the computer.

Q5. Which technology was used in 2nd generation computers?

- (A) Vacuum Tubes
- (B) Transistors
- (C) Integrated Circuits
- (D) Microprocessors

Answer: (B) | Transistors replaced vacuum tubes in the 2nd generation (1956–1963), making computers smaller and more efficient.

Q6. Which of the following is Open Source Software?

- (A) Microsoft Windows
- (B) MS Office
- (C) LibreOffice
- (D) Adobe Photoshop

Answer: (C) | LibreOffice is free and open source. Its source code is publicly available for anyone to use or modify.

Q7. A keyboard is an example of which type of device?

- (A) Output device
- (B) Storage device
- (C) Input device
- (D) Processing device

Answer: (C) | A keyboard is an input device used to enter data and commands into the computer.

Q8. Which storage device provides the fastest data access speed?

- (A) HDD
- (B) CD-ROM
- (C) SSD
- (D) USB Pen Drive

Answer: (C) | SSD (Solid State Drive) uses flash memory chips and is significantly faster than a traditional HDD.

Q9. ROM stands for:

- (A) Read Only Memory
- (B) Random Output Memory
- (C) Read Output Memory
- (D) Run Only Memory

Answer: (A) | ROM = Read Only Memory. It permanently stores the BIOS/boot instructions and is non-volatile.

Q10. Which of the following is an example of System Software?

- (A) MS Word
- (B) Google Chrome
- (C) Windows OS
- (D) VLC Media Player

Answer: (C) | Windows OS is system software. It manages hardware and provides a platform for application programs.

Q11. Which generation of computers introduced microprocessors?

- (A) 2nd Generation
- (B) 3rd Generation
- (C) 4th Generation
- (D) 5th Generation

Answer: (C) | The 4th generation (1972–1989) introduced VLSI-based microprocessors, enabling personal computers.

Q12. The basic working principle of a computer is:

- (A) Input–Store–Output
- (B) Input–Process–Output
- (C) Process–Input–Output
- (D) Store–Process–Print

Answer: (B) | IPO Cycle: Input → Process → Output is the fundamental working principle of every computer.

Q13. Which of the following is NOT an input device?

- (A) Scanner
- (B) Joystick
- (C) Printer
- (D) Microphone

Answer: (C) | A Printer is an output device. Scanner, Joystick, and Microphone are all input devices.

Q14. Android apps are downloaded from:

- (A) Apple App Store
- (B) Google Play Store
- (C) Microsoft Store
- (D) Samsung Store

Answer: (B) | Android apps are available on the Google Play Store. iOS apps use the Apple App Store.

Q15. Which memory stores the BIOS of a computer?

- (A) RAM
- (B) Cache
- (C) HDD
- (D) ROM

Answer: (D) | ROM stores the BIOS (Basic Input Output System), which initializes hardware when the computer boots.

Q16. Antivirus software is an example of:

- (A) Application Software
- (B) System Software
- (C) Utility Software
- (D) Open Source Software

Answer: (C) | Antivirus is utility software — it maintains and protects the computer system from threats.

Q17. Which technology is used in 5th generation computers?

- (A) Transistors
- (B) Vacuum Tubes
- (C) Artificial Intelligence
- (D) Integrated Circuits

Answer: (C) | 5th generation computers (1990–present) use AI, ULSI, and parallel processing technologies.

Q18. A monitor is classified as which type of device?

- (A) Input device
- (B) Storage device
- (C) Output device
- (D) Processing device

Answer: (C) | A monitor is an output device — it displays the results of data processed by the CPU.

Q19. The Control Unit (CU) of the CPU is responsible for:

- (A) Performing arithmetic calculations
- (B) Storing data permanently
- (C) Directing and coordinating all operations
- (D) Managing internet connection

Answer: (C) | The CU fetches instructions from memory, decodes them, and directs the entire CPU operation.

Q20. Which of the following is a portable storage device?

- (A) RAM
- (B) CPU
- (C) USB Pen Drive
- (D) Monitor

Answer: (C) | A USB Pen Drive is a portable flash storage device that connects via USB and can be carried easily.