Basic Computer Fundamentals – Notes

1. Historical Evolution of Computers

A computer is defined by its ability to:

1. **Accept Input**: Receive data or instructions from users or other devices through input devices (e.g., keyboard, mouse, microphone, or sensors).
2. **Process Data**: Perform computations or manipulations on the input data using a central processing unit (CPU) or other processors, following a set of instructions (software).
3. **Store Data**: Save data temporarily (in RAM) or permanently (on hard drives, SSDs, or cloud storage) for future use.
4. **Produce Output**: Deliver processed results to the user or other systems through output devices (e.g., monitors, printers, or speakers).
5. **Communicate**: Exchange data with other computers or devices via networks (e.g., the internet, Wi-Fi, or Bluetooth).

- Abacus – First manual calculating device (3000 BC).
- Pascaline – Mechanical calculator by Blaise Pascal (1642).
- Analytical Engine – Concept of programmable computer by Charles Babbage (1837).
- ENIAC – First electronic general-purpose computer (1946).

2. Generations of Computers

Generation	Time Period	Technology Used	Example	Features
1st	1940–1956	Vacuum Tubes	ENIAC	Bulky, slow, machine language
2nd	1956–1963	Transistors	IBM 1401	Faster, used assembly language

3rd	1964–1971	Integrated Circuits	IBM 360	High-level languages, faster
4th	1971–Present	Microprocessors	Intel 4004	GUI OS, personal computers
5th	Present-Future	AI, Quantum Computing	AI systems	Robotics, machine learning

3. Classification of Computers

Based on Size:
- Supercomputer: Weather, research – Fastest.

- Mainframe: Banks, Airlines – Large organizations.

- Minicomputer: Medium businesses – Multiuser.

- Microcomputer: PC, Laptop – For personal use.

Based on Processor:
- Single Processor: One CPU (e.g., PC).
- Multiprocessor: Multiple CPUs (e.g., Servers).

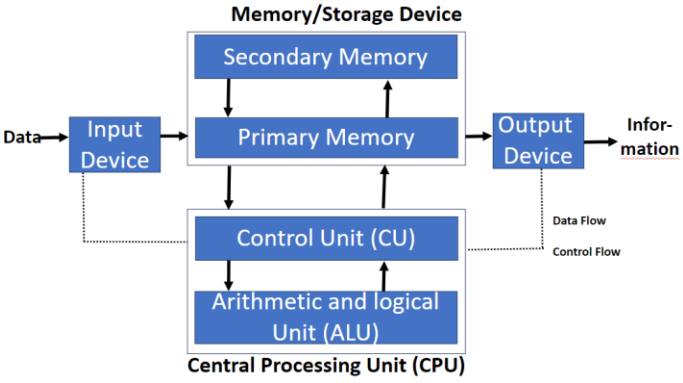
Based on Purpose:
- General Purpose: Word, Excel, Browsing.
- Special Purpose: ATMs, Calculators, Robots.

4. Applications of Computers

- Education: eLearning, Smart classes.
- Healthcare: EHR, diagnosis tools.
- Banking: ATMs, Online banking.
- Business: Billing, inventory, communication.
- Entertainment: Music, Games, Video editing.

5. Block Diagram of Computer

Components:
1. Input Unit: Keyboard, Mouse – Enters data.
2. CPU (Central Processing Unit):
   - ALU (Arithmetic Logic Unit): Performs calculations.
   - CU (Control Unit): Manages operations.
3. Memory Unit: Stores data.
4. Output Unit: Monitor, Printer – Displays results.



6. Primary and Secondary Storage

Primary Storage (Main Memory)

Definition: Temporary memory directly accessible by CPU for processing.

Functions:
- Stores current tasks and data.
- Volatile (data lost when power is off).

Type	Volatility	Function	Example
RAM	Volatile	Temporary storage during execution	DDR4 RAM
ROM	Non-Volatile	Stores booting instructions	BIOS
Cache	Volatile	Fast memory near CPU	L1, L2 cache

Registers	Volatile	Small storage in CPU	Instruction Reg.

Secondary Storage (Permanent Memory)

Definition: Non-volatile memory used for long-term data storage.

Functions:
- Stores OS, programs, files permanently.
- Indirectly accessible.

Examples: Hard Disk, SSD, CD/DVD, USB, SD Card

Comparison:

Feature	Primary Storage	Secondary Storage
Speed	High	Low to Medium
Volatile	Yes (mostly)	No
Use	Current data	Permanent storage
Size	Smaller	Larger

Types of ROM

Type	Description	Can it be Rewritten?	Use
ROM	Pre-written, cannot be changed	No	BIOS
PROM	Programmed once using special device	Once only	Embedded systems
EPROM	Can be erased by UV light and rewritten	Yes	Microcontrollers
EEPROM	Erased and rewritten electrically	Yes	Modern BIOS systems

8. Input and Output Devices

Input Devices:

Used to enter data into the computer.
- Keyboard: Typing
- Mouse: Pointing/Clicking
- Scanner: Scanning documents
- Microphone: Audio input
- Webcam: Capturing images/videos

Output Devices:

Used to display/print results.
- Monitor: Visual output
- Printer: Hard copy output
- Speaker: Audio output
- Projector: Enlarged screen display

50 MCQs on Basics of Computers

1. Which was the first mechanical calculating device?

- a) ENIAC
- b) Abacus
- c) Pascaline
- d) Analytical Engine

Ans: b

2. Who is known as the 'Father of Computers'?

- a) Alan Turing
- b) Charles Babbage
- c) Bill Gates
- d) Steve Jobs

Ans: b

3. The Analytical Engine was designed by:

- a) John von Neumann
- b) Blaise Pascal
- c) Charles Babbage
- d) Ada Lovelace

Ans: c

4. Which generation of computers used vacuum tubes?

- a) First
- b) Second
- c) Third
- d) Fourth

Ans: a

5. In which generation were microprocessors first used?

- a) First
- b) Second
- c) Third

- d) Fourth

Ans: d

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6. Who developed the concept of stored program?

- a) Alan Turing
- b) John von Neumann
- c) Steve Jobs
- d) Charles Babbage

Ans: b

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7. Transistors were used in which generation?

- a) First
- b) Second
- c) Third
- d) Fourth

Ans: b

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8. ICs (Integrated Circuits) were introduced in which generation?

- a) Second
- b) Third
- c) Fourth
- d) Fifth

Ans: b

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9. Which generation is based on Artificial Intelligence?

- a) Second
- b) Third
- c) Fourth
- d) Fifth

Ans: d

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10. Which of the following is a feature of fourth generation computers?

- a) Magnetic core memory
- b) Transistors
- c) Microprocessors

- d) Vacuum tubes

Ans: c

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11. Which of the following is a supercomputer?

- a) Apple Mac
- b) IBM Watson
- c) Param
- d) Raspberry Pi

Ans: c

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12. Mini computers are mostly used in:

- a) Scientific applications
- b) Personal use
- c) Large organizations
- d) Control systems

Ans: d

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13. Which computer is designed for single-user tasks?

- a) Mainframe
- b) Mini computer
- c) Microcomputer
- d) Supercomputer

Ans: c

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14. Which type of computer processes data continuously?

- a) Digital
- b) Analog
- c) Hybrid
- d) None

Ans: b

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15. Which computer combines the features of analog and digital computers?

- a) Hybrid
- b) Mini
- c) Mainframe

- d) Super

Ans: a

16. Computers are used in which of the following sectors?

- a) Education
- b) Banking
- c) Healthcare
- d) All of the above

Ans: d

17. Which software is used for designing and engineering drawings?

- a) MS Word
- b) Photoshop
- c) AutoCAD
- d) Excel

Ans: c

18. Which of the following uses computers for simulations?

- a) Schools
- b) Hospitals
- c) Defense
- d) Retail stores

Ans: c

19. In banks, computers are mainly used for:

- a) Printing books
- b) Counting cash
- c) Processing transactions
- d) Opening lockers

Ans: c

20. Which industry uses computers for inventory control?

- a) Agriculture
- b) Manufacturing
- c) Real Estate

- d) Education

Ans: b

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21. Which of the following is not a component of the block diagram of a computer?

- a) Input Unit
- b) Output Unit
- c) Compiler
- d) Memory Unit

Ans: c

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22. The ALU is part of:

- a) Memory
- b) CPU
- c) Output
- d) Input

Ans: b

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23. Which unit controls the flow of data in a computer system?

- a) ALU
- b) Control Unit
- c) Memory
- d) Input

Ans: b

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24. Which unit stores data and instructions temporarily?

- a) ALU
- b) CU
- c) RAM
- d) ROM

Ans: c

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25. What is the full form of CPU?

- a) Central Processing Unit
- b) Control Program Unit
- c) Computer Processing Unit

- d) Central Program Unit

Ans: a

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26. Which of these is primary memory?

- a) RAM
- b) Cache
- c) CD
- d) Hard Disk

Ans: a

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27. Which memory is permanent and non-volatile?

- a) RAM
- b) ROM
- c) Cache
- d) Registers

Ans: b

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28. Which type of memory is the fastest?

- a) Hard Disk
- b) RAM
- c) Cache
- d) CD

Ans: c

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29. What does RAM stand for?

- a) Random Access Memory
- b) Read Access Memory
- c) Read Available Memory
- d) Real Access Memory

Ans: a

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30. Which memory is used to store BIOS?

- a) RAM
- b) ROM
- c) Hard Drive

- d) Cache

Ans: b

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31. Which of the following is an input device?

- a) Monitor
- b) Printer
- c) Keyboard
- d) Speaker

Ans: c

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32. Which of the following is an output device?

- a) Mouse
- b) Scanner
- c) Keyboard
- d) Projector

Ans: d

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33. Which input device is used for playing games?

- a) Keyboard
- b) Mouse
- c) Joystick
- d) Printer

Ans: c

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34. OCR is used to:

- a) Print text
- b) Read barcodes
- c) Convert images to text
- d) Capture voice

Ans: c

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35. Which device is used for outputting hard copies?

- a) Monitor
- b) Printer
- c) Speaker

- d) Scanner

Ans: b

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36. MICR is mostly used in:

- a) Hospitals
- b) Banks
- c) Schools
- d) Offices

Ans: b

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37. Light pen is used for:

- a) Typing
- b) Drawing on screen
- c) Printing
- d) Scanning

Ans: b

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38. Which of these is both input and output device?

- a) Modem
- b) Printer
- c) Keyboard
- d) Mouse

Ans: a

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39. What does 'Scanner' do?

- a) Displays images
- b) Prints documents
- c) Converts documents into digital form
- d) Stores data

Ans: c

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40. Which device allows users to record sound?

- a) Microphone
- b) Speaker
- c) Printer

- d) Joystick

Ans: a

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41. Which computer is the fastest?

- a) Mainframe
- b) Supercomputer
- c) Microcomputer
- d) Notebook

Ans: b

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42. Which memory is volatile?

- a) ROM
- b) RAM
- c) Flash
- d) HDD

Ans: b

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43. Which generation first used operating systems?

- a) First
- b) Second
- c) Third
- d) Fourth

Ans: c

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44. EPROM stands for:

- a) Erasable Programmable Read-Only Memory
- b) Electronic Program Read Memory
- c) Enhanced Program Memory
- d) None

Ans: a

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45. Which of these is a secondary memory?

- a) RAM
- b) ROM
- c) Hard Disk

- d) Registers

Ans: c

46. Which generation is known for use of AI?

- a) Third
- b) Fourth
- c) Fifth
- d) Sixth

Ans: c

47. Which of the following is used for logical operations?

- a) CU
- b) ALU
- c) RAM
- d) ROM

Ans: b

48. Which of these is a pointing device?

- a) Printer
- b) Mouse
- c) Monitor
- d) Scanner

Ans: b

49. Which of the following is volatile in nature?

- a) RAM
- b) ROM
- c) CD
- d) DVD

Ans: a

50. Which generation used vacuum tubes?

- a) First
- b) Second
- c) Third

- d) Fourth

Ans: a