ELEMENTARY COMPUTER KNOWLEDGE

Chapter: Computer Fundamentals

Study Notes for Government Job Examinations

Topics Covered

1 Introduction to Computer
2 Characteristics of Computer
3 Generations of Computer
4 Types of Computer
5 Basic Components of Computer
6 Input and Output Devices
7 CPU, ALU and CU
8 Memory: RAM, ROM, Cache
9 Storage Devices
10 Quick Revision Points
11 Practice Set: 50 MCQs with Answer Key

How to Use These Notes

- Read each topic once for understanding, then revise the tables and **Exam Point** boxes.
- Tables contain facts (years, names, full forms, capacities) that are frequently asked in competitive exams.
- Finish with the Quick Revision Points and attempt the 50 MCQs without looking at the answer key.

1. Introduction to Computer

A **computer** is an electronic device that accepts data as **input**, processes it according to a set of instructions called a **program**, stores the data and results, and produces meaningful **output** (information) at very high speed and with great accuracy. The word *computer* is derived from the Latin word *computare*, which means 'to calculate'. A computer works only on the instructions given to it and cannot think on its own.

Data and Information

Basis	Data	Information
Meaning	Raw, unorganised facts and figures	Processed, organised and meaningful data
Usefulness	Has no meaning by itself	Useful for decision making
Example	45, 78, 90 (marks of three students)	Average marks of the class is 71

Working Cycle of a Computer (IPO Cycle)

- **Input** - data and instructions are entered through input devices.

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- **Processing** - the CPU performs calculations and logical operations on the data.
- **Output** - the result is displayed or printed through output devices.
- **Storage** - data, programs and results are saved in memory for future use.

Brief History of Computing

Device / Person	Year	Important Facts
Abacus	Ancient times	Earliest known calculating device; beads on rods
Napier's Bones	1617	Invented by John Napier; used for multiplication
Pascaline	1642	Blaise Pascal; first mechanical calculator (addition and subtraction)
Stepped Reckoner	1673	Gottfried Leibniz; could also multiply and divide
Jacquard Loom	1801	Used punched cards to control weaving patterns
Difference Engine	1822	Charles Babbage; designed to calculate mathematical tables
Analytical Engine	1837 (design)	Charles Babbage, the **Father of the Computer**; had the concepts of input, store, mill (CPU) and output
First programmer	1843	Ada Lovelace wrote the first algorithm for the Analytical Engine
Tabulating Machine	1890	Herman Hollerith; used punched cards for the US census
Turing Machine	1936	Alan Turing; theoretical model of computation
Mark I	1944	Howard Aiken (Harvard); first electromechanical computer
ENIAC	1946	J. P. Eckert and J. Mauchly; first general-purpose electronic digital computer
Stored program concept	1945	John von Neumann; programs and data stored together in memory
EDSAC	1949	Maurice Wilkes; first practical stored-program computer
UNIVAC I	1951	First commercially produced computer

Computers in India

Event	Details
First computer in India	HEC-2M, installed at the Indian Statistical Institute (ISI), Kolkata, in 1956
First indigenous computer	ISIJU-1, developed by ISI Kolkata and Jadavpur University (1964)
C-DAC	Centre for Development of Advanced Computing, set up in 1988
PARAM 8000	India's first supercomputer (1991), developed under Dr. Vijay P. Bhatkar of C-DAC

Major Areas of Computer Use

- **Education** - e-learning, online exams, digital libraries.
- **Banking and finance** - ATMs, net banking, UPI, accounting.
- **Government** - e-governance, Aadhaar, online forms and certificates.
- **Transport** - railway and airline reservation, traffic control.
- **Health care** - patient records, CT scan and MRI, tele-medicine.
- **Defence and space** - missile guidance, satellite control, weather forecasting.

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Exam Point: Charles Babbage is the Father of the Computer; Alan Turing is the Father of Computer Science and AI; John von Neumann is associated with the stored program concept; ENIAC (1946) was the first electronic general-purpose computer.

2. Characteristics of Computer

Computers are used everywhere because of certain special qualities that human beings cannot match in repetitive and calculation-heavy work. At the same time, a computer has some limitations.

Characteristic	Explanation
Speed	Performs millions or billions of operations in one second. Time is measured in milliseconds, microseconds, nanoseconds and even picoseconds.
Accuracy	Results are error-free as long as the input and the program are correct. Errors usually occur because of wrong data or wrong instructions given by humans.
Diligence	A computer does not get tired, bored or lose concentration. It can do the same work for hours with the same speed and accuracy.
Versatility	Can perform many different kinds of tasks - calculation, typing, drawing, music, video, communication and more.
Storage capacity	Can store huge amounts of data and programs and retrieve them instantly when required.
Automation	Once a program is loaded, the computer carries out the tasks automatically without human intervention.
Reliability	Gives consistent results for the same input; can run continuously for long periods.
Resource sharing	Printers, files and the Internet can be shared among many users through networks.

Units of Time Used for Computer Speed

Unit	Value
1 millisecond (ms)	1/1,000 second = 10^{-3} s
1 microsecond	1/1,000,000 second = 10^{-6} s
1 nanosecond (ns)	1/1,000,000,000 second = 10^{-9} s
1 picosecond (ps)	10^{-12} s

Limitations of a Computer

- **No intelligence (IQ)** - a computer cannot think or decide by itself; it only follows instructions.
- **No feelings** - it has no emotions, experience or common sense.
- **Dependent on humans** - it needs a program and input from a user.
- **GIGO** - Garbage In, Garbage Out: wrong input always produces wrong output.

Exam Point: Speed of a computer is measured in MIPS (million instructions per second) or FLOPS (floating point operations per second); the processor clock is measured in Hertz (MHz/GHz).

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3. Generations of Computer

The development of computers is divided into five **generations**. Each generation is marked by a major change in the electronic technology used, which made computers smaller, faster, cheaper and more reliable.

Generation	Period	Technology Used	Examples
First	1940 - 1956	Vacuum tubes	ENIAC, EDVAC, UNIVAC I, IBM 650
Second	1956 - 1963	Transistors	IBM 1401, IBM 7090, CDC 1604
Third	1964 - 1971	Integrated Circuits (IC)	IBM 360 series, PDP-8, ICL 1900
Fourth	1971 - present	Microprocessor (LSI / VLSI)	IBM PC, Apple II, Intel-based PCs
Fifth	Present and beyond	ULSI, Artificial Intelligence	Robots, expert systems, AI assistants

Features of Each Generation

Generation	Main Features	Drawbacks
First	Machine language; magnetic drum memory; punched cards for input; used for scientific calculations	Very large size; high heat and power use; frequent failure; costly; slow
Second	Assembly language and early high-level languages (FORTRAN, COBOL); magnetic core memory; magnetic tape and disk; batch processing	Still costly; air-conditioning required; limited speed
Third	Operating systems; multiprogramming; keyboard and monitor; high-level languages (BASIC, Pascal); smaller and cheaper	Complex ICs; still not affordable for general public
Fourth	Microprocessor on a single chip; personal computers; GUI and mouse; networks, LAN and Internet; languages like C, C++, Java, SQL	Needs advanced manufacturing technology
Fifth	Artificial intelligence, parallel processing, natural language understanding, robotics, quantum computing; languages like LISP and PROLOG	Still developing; high research cost

Key Inventions

Invention	Year	Inventor / Organisation
Transistor	1947	John Bardeen, Walter Brattain and William Shockley (Bell Labs)
Integrated Circuit (IC)	1958	Jack Kilby (Texas Instruments)
First microprocessor, Intel 4004	1971	Intel Corporation (4-bit processor)
IBM Personal Computer	1981	IBM

Exam Point: 1st = Vacuum tube, 2nd = Transistor, 3rd = IC, 4th = Microprocessor (VLSI), 5th = Artificial Intelligence. Remember the order with the technology.

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4. Types of Computer

Computers can be classified in three ways: **(a) by size and capacity**, **(b) by the type of data they handle** and **(c) by purpose**.

(a) Classification by Size and Capacity

Type	Description	Examples / Uses
Supercomputer	Fastest, most powerful and most expensive; thousands of processors working in parallel; speed measured in FLOPS	PARAM Siddhi-AI, Pratyush (IITM Pune), Mihir (NCMRWF), Cray, Fugaku; weather forecasting, space research, nuclear simulation
Mainframe	Large, multi-user computer that handles huge volumes of data and thousands of users at the same time	IBM zSeries; banks, airlines, insurance, government departments
Minicomputer	Medium-sized, multi-user system; smaller than mainframe but more powerful than a PC	PDP-11, VAX, IBM AS/400; small and medium organisations
Microcomputer	Small, single-user computer built around a microprocessor; also called Personal Computer (PC)	Desktop, laptop, notebook, tablet, smartphone

Other Common Forms of Computers

- **Desktop** - fits on a desk; separate monitor, keyboard, mouse and CPU cabinet.
- **Laptop / Notebook** - portable, battery operated, has built-in screen and keyboard.
- **Tablet and Smartphone** - touch-screen handheld computers; PDA (Personal Digital Assistant) was an early form.
- **Workstation** - powerful single-user computer for engineering, CAD and graphics work.
- **Server** - a computer that provides services and resources (web, files, mail) to other computers called clients.
- **Embedded computer** - a small computer built inside machines such as washing machines, cars and ATMs.

(b) Classification by Type of Data Handled

Type	Working	Examples
Analog	Works on continuous physical quantities such as temperature, pressure, speed and voltage	Thermometer, speedometer, voltmeter
Digital	Works on discrete data in binary form (0 and 1); most common type	Desktop, laptop, calculator, smartphone
Hybrid	Combines the features of both analog and digital computers	ICU / hospital monitoring systems, petrol pump meters

(c) Classification by Purpose

Type	Meaning	Example
General purpose	Designed to perform a wide variety of tasks	Personal computers
Special purpose	Designed for one specific task only	Traffic control, ATM, washing machine, weather forecasting computers

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Exam Point: Supercomputer = fastest; Mainframe = highest number of users and bulk data; Microcomputer = most common. PARAM is the Indian supercomputer series by C-DAC.

5. Basic Components of Computer

A complete computer system is made up of five main components: **hardware, software, firmware, humanware (liveware)** and **data**. Modern computers follow the **von Neumann architecture**, in which both the program and the data are stored in the same memory.

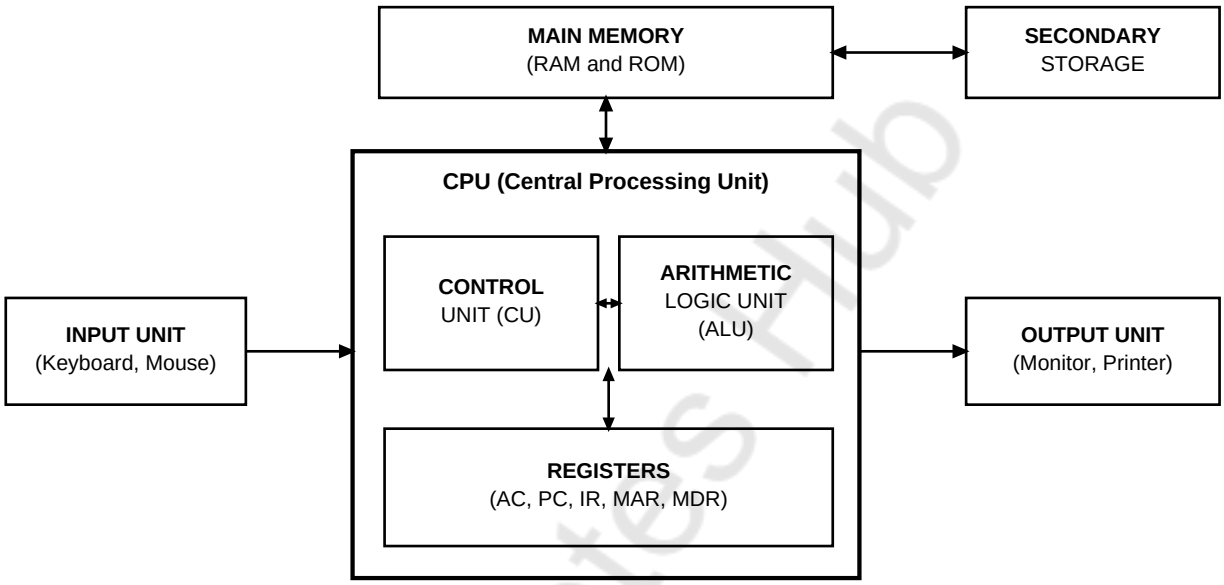


Fig. 1: Block diagram of a computer system

Component	Meaning	Examples
Hardware	Physical parts of a computer that can be seen and touched	Monitor, keyboard, mouse, CPU, RAM, hard disk
Software	A set of programs and instructions that tells the hardware what to do; cannot be touched	Windows, MS Word, Chrome
Firmware	Permanent software stored in ROM chips; sits between hardware and software	BIOS, router firmware
Humanware (Liveware)	People who use or operate the computer	Programmer, system analyst, end user
Data	Raw facts given to the computer for processing	Text, numbers, images, audio, video

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Classification of Software

Category	Types	Examples
System software	Operating system; utility programs; device drivers; language translators	Windows, Linux, UNIX, macOS, Android; antivirus, disk defragmenter, backup tools
Language translators	Compiler - translates the whole program at once; Interpreter - translates and runs line by line; Assembler - converts assembly language to machine code	GCC (compiler), Python (interpreter), NASM (assembler)
Application software	General purpose (used for many tasks) and specific purpose (designed for one task)	MS Word, Excel, PowerPoint, web browser; railway reservation, payroll, Tally

Types of Software by Licence

Type	Meaning
Freeware	Free to use but source code is not available
Shareware	Free to try for a limited time, payment needed for full use
Open source	Source code is available; can be modified and distributed (Linux, LibreOffice)
Proprietary	Owned by a company; must be purchased and cannot be modified freely

Units of Computer Memory

Unit	Equivalent
1 Bit (Binary digit)	Smallest unit of data: 0 or 1
1 Nibble	4 bits
1 Byte (B)	8 bits; stores one character
1 Kilobyte (KB)	1024 bytes
1 Megabyte (MB)	1024 KB
1 Gigabyte (GB)	1024 MB
1 Terabyte (TB)	1024 GB
1 Petabyte (PB)	1024 TB

Booting

Booting is the process of starting a computer and loading the operating system from the disk into RAM. When the power is switched on, the **BIOS** runs the **POST (Power-On Self Test)** to check the hardware and then loads the operating system. Starting the computer from the switched-off state is called **cold boot**; restarting it without switching off the power (for example, using the Restart option or Ctrl + Alt + Delete) is called **warm boot**.

Exam Point: A computer is a combination of hardware and software. Firmware is stored permanently in ROM. A compiler translates the entire program, an interpreter translates line by line.

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6. Input and Output Devices

Input devices are used to enter data and instructions into the computer. **Output devices** receive the processed result from the computer and present it to the user in a human-readable form.

A. Input Devices

Device	Description and Use
Keyboard	Main text input device. QWERTY layout (designed by Christopher Latham Sholes). A standard keyboard has 101/104 keys: alphanumeric keys, function keys (F1 - F12), numeric keypad, cursor keys and special keys (Ctrl, Alt, Shift, Esc, Tab, Caps Lock).
Mouse	Pointing device invented by Douglas Engelbart (1963-64). Has left and right buttons and a scroll wheel. Types: mechanical, optical, wireless.
Trackball / Touchpad	Pointing devices; trackball has a ball rotated by finger; touchpad is built into laptops.
Joystick	Lever-type device used in games and flight simulators.
Light pen	Pen-shaped device used to draw or select on a screen.
Touch screen	Screen that accepts input by touch; used in smartphones, ATMs and kiosks.
Scanner	Converts printed text and images into digital form.
OCR (Optical Character Recognition)	Reads printed or typed characters and converts them to editable text.
OMR (Optical Mark Recognition)	Detects marked bubbles; used to check MCQ answer sheets in exams.
MICR (Magnetic Ink Character Recognition)	Reads characters printed in magnetic ink; used on bank cheques.
Barcode / QR reader	Reads the pattern of lines or squares; used in shops and for digital payments.
Microphone, Webcam, Digital camera	Capture audio, video and images.
Biometric devices	Identify a person by fingerprint, iris or face; used in attendance and Aadhaar.

B. Output Devices

Output can be of two types: **soft copy** (temporary, seen on screen or heard through speakers) and **hard copy** (permanent, printed on paper).

Monitor (Visual Display Unit)

- Types: **CRT** (Cathode Ray Tube), **LCD** (Liquid Crystal Display), **LED** and **OLED**. LCD/LED monitors are thinner and consume less power than CRT.
- A **pixel** (picture element) is the smallest dot on the screen. **Resolution** is the number of pixels (for example, 1920 x 1080); higher resolution gives a sharper picture.
- Screen size is measured diagonally in inches. Refresh rate is measured in Hertz (Hz).

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Printers

Type	Printer	Features
Impact (hammer strikes the ribbon and paper)	Dot matrix, Daisy wheel, Line printer (drum / chain)	Noisy; can print carbon copies; speed in CPS (dot matrix) or LPM (line printer)
Non-impact (no physical strike)	Inkjet	Sprays tiny drops of ink; good colour printing; measured in DPI
	Laser	Uses laser beam and toner powder; fast and high quality; speed in PPM
	Thermal	Uses heat on special paper; used for bills, receipts and ticket printing

Other Output Devices

- **Plotter** - prints large drawings, maps and designs (CAD); types are drum and flatbed plotters.
- **Speakers and headphones** - give audio output.
- **Projector** - displays the computer screen on a large surface for presentations.
- **Both input and output:** touch screen, headset (microphone + earphone), multifunction printer (print + scan).

Exam Point: CPS = characters per second, LPM = lines per minute, PPM = pages per minute, DPI = dots per inch. Scanner, mouse and keyboard are input devices; monitor, printer and plotter are output devices.

7. CPU, ALU and CU

The **Central Processing Unit (CPU)** is the 'brain' of the computer. It interprets instructions, performs calculations and controls all other parts of the system. In a personal computer the CPU is built on a single chip called a **microprocessor** (made by companies such as Intel and AMD). The CPU has three main parts: the **Arithmetic Logic Unit (ALU)**, the **Control Unit (CU)** and **Registers**.

Part	Function
ALU (Arithmetic Logic Unit)	Performs **arithmetic** operations (addition, subtraction, multiplication, division) and **logical** operations (AND, OR, NOT, and comparisons such as greater than, less than, equal to).
CU (Control Unit)	Fetches instructions from memory, decodes them, and directs the ALU, memory and input/output devices to carry them out. It controls the timing and flow of data but does not process data itself.
Registers	Very small, extremely fast storage locations inside the CPU that hold data and instructions temporarily during processing.

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Important Registers

Register	Purpose
Accumulator (AC)	Stores intermediate results of arithmetic and logic operations
Program Counter (PC)	Holds the address of the next instruction to be executed
Instruction Register (IR)	Holds the instruction currently being executed
Memory Address Register (MAR)	Holds the address of the memory location to be read or written
Memory Data / Buffer Register (MDR / MBR)	Holds the data being transferred to or from memory
Status / Flag Register	Shows the result status such as zero, carry, overflow

Instruction Cycle

Every program is executed one instruction at a time through the **machine cycle**, also called the **fetch-decode-execute cycle**.

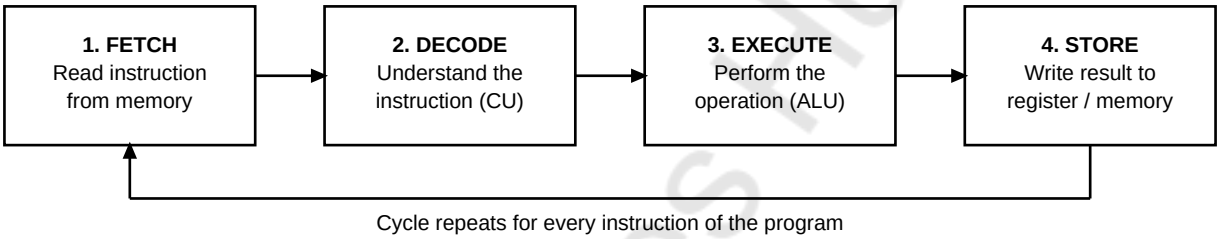


Fig. 2: Instruction (machine) cycle

System Buses

Bus	Function	Direction
Data bus	Carries data between CPU, memory and I/O devices	Bidirectional
Address bus	Carries the memory address of the data to be accessed	Unidirectional (from CPU)
Control bus	Carries control and timing signals such as read and write	Bidirectional

Factors Affecting CPU Performance

- **Clock speed** - number of cycles per second, measured in Hertz; 1 GHz = one billion cycles per second.
- **Word length** - number of bits processed at a time (32-bit, 64-bit).
- **Number of cores** - dual-core, quad-core, octa-core processors can run tasks in parallel.
- **Cache size** and **bus width**.
- **Instruction set** - CISC (Complex Instruction Set Computer) and RISC (Reduced Instruction Set Computer).

Exam Point: Intel 4004 (1971) was the first microprocessor (4-bit). Control Unit = manager, ALU = calculator, Registers = fastest temporary storage. Order of the cycle: Fetch, Decode, Execute, Store.

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8. Memory: RAM, ROM, Cache

Computer memory stores data and instructions. **Primary memory** (main memory) is directly accessed by the CPU; it is semiconductor based, fast and has smaller capacity. **Secondary memory** is used for permanent storage and is covered in the next topic.

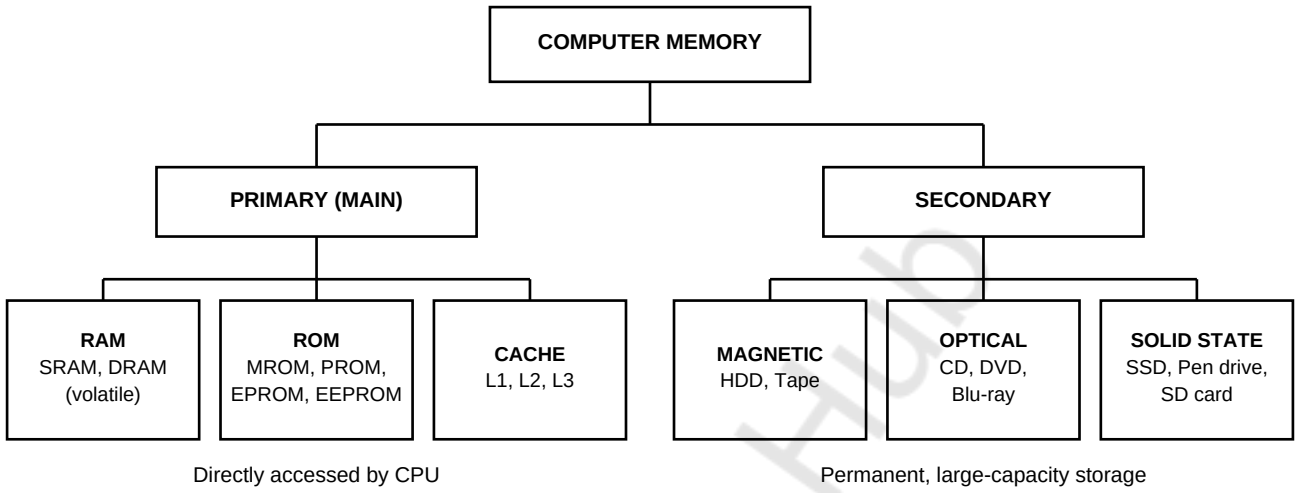


Fig. 3: Classification of computer memory

RAM (Random Access Memory)

RAM is the main working memory of the computer. It is **volatile**, which means its contents are lost when the power is switched off. It is a **read/write** memory and any location can be accessed directly in the same time (random access). Programs and data currently in use are kept in RAM.

Feature	SRAM (Static RAM)	DRAM (Dynamic RAM)
Basic cell	Flip-flop (transistors)	Capacitor and transistor
Refreshing	Not required	Required periodically
Speed	Faster	Slower
Cost	More expensive	Cheaper
Density / capacity	Low	High
Used in	Cache memory	Main memory (SDRAM, DDR RAM)

ROM (Read Only Memory)

ROM is **non-volatile**; its contents are not lost when power is off. It stores permanent start-up instructions such as the **BIOS** and the bootstrap loader.

Type	Meaning
MROM (Masked ROM)	Programmed by the manufacturer during production; cannot be changed
PROM (Programmable ROM)	Can be programmed once by the user
EPROM (Erasable PROM)	Erased by exposing it to **ultraviolet light** and then reprogrammed
EEPROM (Electrically EPROM)	Erased and reprogrammed electrically, byte by byte

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Type	Meaning
Flash memory	Advanced EEPROM erased in blocks; used in pen drives, memory cards, SSD and BIOS chips

Cache Memory

Cache is a very fast, small memory (made of SRAM) placed between the **CPU and RAM**. It stores frequently used data and instructions so that the CPU does not have to wait for the slower RAM. When the required data is found in the cache it is called a **cache hit**; otherwise it is a **cache miss**.

- **L1 cache** - smallest and fastest, built inside each CPU core.
- **L2 cache** - larger and slightly slower; inside or very close to the CPU.
- **L3 cache** - largest of the three; shared by all cores.

Other Related Terms

- **Virtual memory** - a part of the hard disk used as an extension of RAM when RAM becomes full.
- **CMOS** - a small battery-backed memory that keeps BIOS settings and the system date and time.
- **Registers** - the fastest memory, located inside the CPU.

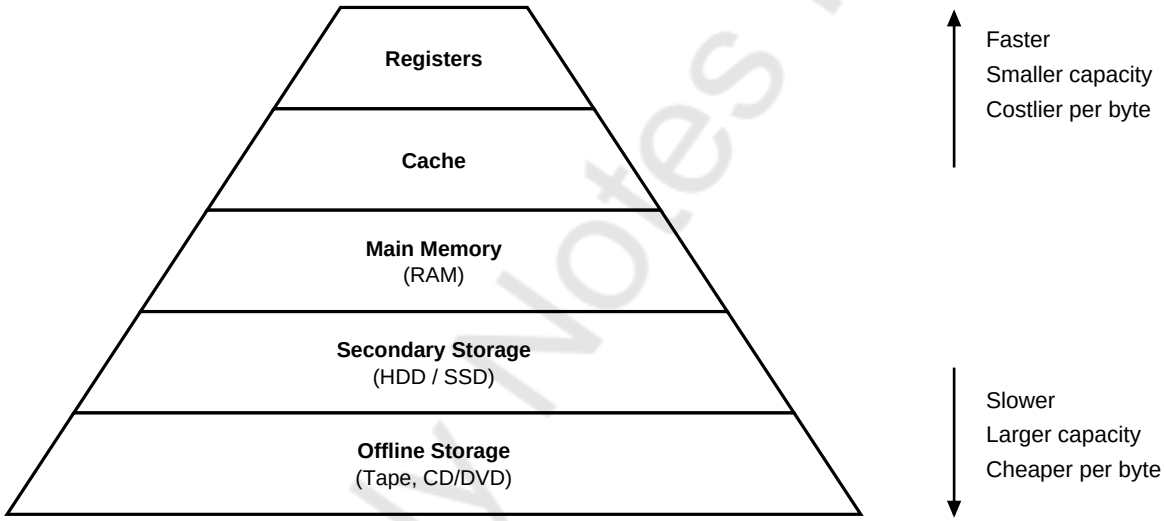


Fig. 4: Memory hierarchy (speed, cost and capacity)

Comparison: RAM, ROM and Cache

Basis	RAM	ROM	Cache
Volatility	Volatile	Non-volatile	Volatile
Operation	Read and write	Mostly read only	Read and write
Speed	Fast	Slower than RAM	Fastest (after registers)
Capacity	Large (GBs)	Small (MBs)	Very small (KBs - MBs)
Purpose	Holds running programs	Holds BIOS / boot program	Speeds up CPU access

Exam Point: Speed order (fastest to slowest): Registers > Cache > RAM > Hard disk > Optical disk / Tape. RAM is volatile, ROM is non-volatile. DRAM needs refreshing, SRAM does not.

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9. Storage Devices

Storage devices (secondary memory) store data and programs **permanently**. They are non-volatile, have very large capacity and are cheaper than primary memory, but they are slower. They are of four main types: **magnetic, optical, solid-state (flash)** and **cloud** storage.

A. Magnetic Storage

- **Hard Disk Drive (HDD)** - made of rotating metal *platters* coated with magnetic material. Data is read and written by *read/write heads*. Each platter surface is divided into circular **tracks**, and tracks are divided into **sectors**. A stack of the same track on all platters is a **cylinder**. Speed is given in RPM (5400 or 7200). The first hard disk was introduced by IBM in 1956 (IBM 305 RAMAC).
- **Floppy disk** - removable magnetic disk; the common 3.5-inch floppy stored 1.44 MB. Now obsolete.
- **Magnetic tape** - stores data **sequentially**; cheap and used for backup and archival of huge data.

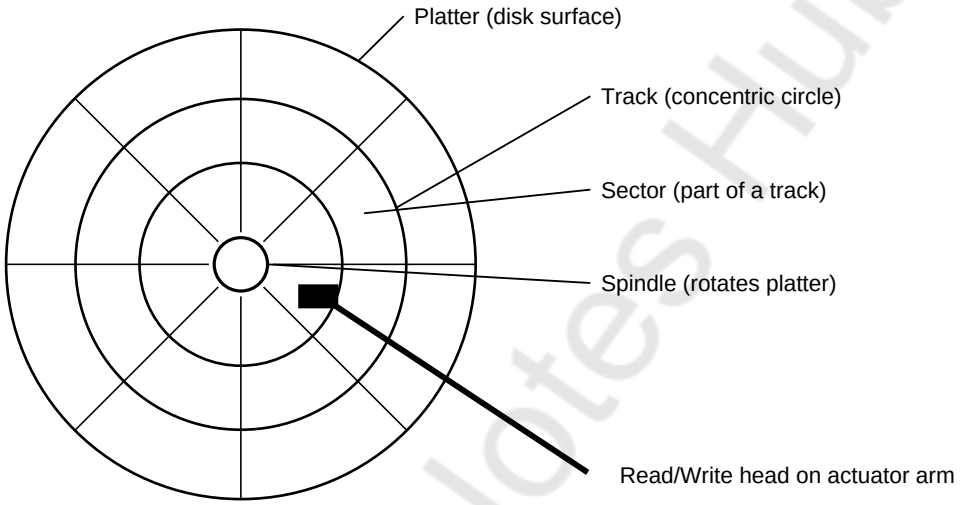


Fig. 5: Structure of a hard disk platter

B. Optical Storage

Optical discs store data as tiny pits and lands that are read with a **laser beam**.

Disc	Typical Capacity	Notes
CD (CD-ROM, CD-R, CD-RW)	About 700 MB (80 minutes of audio)	CD-ROM read only; CD-R write once; CD-RW can be rewritten; uses infrared laser
DVD	4.7 GB (single layer), 8.5 GB (dual layer)	Used for movies and software; uses red laser
Blu-ray	25 GB (single layer), 50 GB (dual layer)	Uses blue-violet laser (405 nm), hence the name; for HD video

C. Solid State (Flash) Storage

- **SSD (Solid State Drive)** - uses flash memory chips and has **no moving parts**; faster, silent, more shock resistant and uses less power than HDD, but costlier per GB.
- **USB flash drive (pen drive)** - portable flash storage connected through a USB port.
- **Memory cards** - SD, microSD cards used in mobiles and cameras.

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D. Cloud Storage

Data is stored on remote servers on the Internet and can be accessed from anywhere. Examples: Google Drive, Microsoft OneDrive, Dropbox and iCloud.

HDD vs SSD

Basis	HDD	SSD
Technology	Magnetic platters	Flash memory chips
Moving parts	Yes (platters, heads)	No
Speed	Slower	Much faster
Cost per GB	Lower	Higher
Noise and power	More	Less

Access Methods

- **Sequential access** - data is read in order from the beginning (magnetic tape).
- **Direct / random access** - any location can be reached directly (hard disk, SSD, optical disc, RAM).

Exam Point: Hard disk = magnetic, CD/DVD/Blu-ray = optical, pen drive/SSD = flash (solid state). CD 700 MB, DVD 4.7 GB, Blu-ray 25 GB. Magnetic tape = sequential access.

Quick Revision Points

- Father of the Computer: **Charles Babbage**; first programmer: **Ada Lovelace**.
- First electronic general-purpose computer: **ENIAC (1946)**; stored program concept: **John von Neumann**.
- Generations: 1st Vacuum tube, 2nd Transistor, 3rd IC, 4th Microprocessor, 5th AI.
- Transistor invented in **1947**; IC by **Jack Kilby (1958)**; Intel 4004 microprocessor in **1971**.
- Fastest computer: **Supercomputer**; India's PARAM series by **C-DAC**.
- Analog = continuous data, Digital = discrete (binary) data, Hybrid = both.
- CPU = **ALU + CU + Registers**; ALU does arithmetic and logic, CU controls and coordinates.
- Instruction cycle: **Fetch - Decode - Execute - Store**.
- RAM is volatile; ROM is non-volatile; BIOS is stored in ROM/flash.
- SRAM is used for cache; DRAM is used for main memory and needs refreshing.
- EPROM is erased by **UV light**; EEPROM and flash are erased electrically.
- 1 Byte = 8 bits; 1 KB = 1024 bytes; 1 MB = 1024 KB; 1 GB = 1024 MB; 1 TB = 1024 GB.
- Mouse was invented by **Douglas Engelbart**; OMR checks answer sheets; MICR is used on bank cheques.
- Impact printers: dot matrix, daisy wheel, line printer. Non-impact: inkjet, laser, thermal.
- Storage capacity: CD 700 MB, DVD 4.7 GB, Blu-ray 25 GB; SSD has no moving parts.
- **GIGO** - Garbage In, Garbage Out.

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Practice Set: 50 Multiple Choice Questions

Choose the correct option. The answer key is given at the end.

Q1. Who is known as the 'Father of the Computer'?

(A) Blaise Pascal (B) John von Neumann
(C) Alan Turing (D) Charles Babbage

Q2. The word 'computer' is derived from the Latin word:

(A) Computare (B) Comprehend
(C) Compilare (D) Calculus

Q3. Which technology was used in first-generation computers?

(A) Vacuum tubes (B) Transistors
(C) Integrated circuits (D) Microprocessors

Q4. Who invented the Integrated Circuit (IC) in 1958?

(A) Herman Hollerith (B) William Shockley
(C) Jack Kilby (D) John Bardeen

Q5. Transistors were first used in which generation of computers?

(A) Third generation (B) Fourth generation
(C) First generation (D) Second generation

Q6. Microprocessors are associated with which generation?

(A) Third generation (B) Second generation
(C) Fourth generation (D) First generation

Q7. Fifth-generation computers are mainly based on:

(A) Punched cards (B) Vacuum tubes
(C) Artificial Intelligence (D) Transistors

Q8. Intel 4004, the first microprocessor, was released in:

(A) 1971 (B) 1946
(C) 1965 (D) 1981

Q9. ENIAC stands for:

(A) Electronic Numeric Integrated and Calculator (B) Electronic Numerical Integrator and Computer
(C) Electrical Numerical Integrator and Computer (D) Electronic Network Integrator and Calculator

Q10. Which type of computer is the fastest and most powerful?

(A) Microcomputer (B) Mainframe computer
(C) Supercomputer (D) Minicomputer

Q11. The PARAM series of supercomputers was developed by:

(A) BARC (B) C-DAC
(C) ISRO (D) DRDO

Q12. Analog computers work on:

(A) Punched cards (B) Binary digits only
(C) Continuous physical quantities (D) Text characters

Q13. A computer having features of both analog and digital computers is called:

(A) Hybrid computer (B) Special-purpose computer
(C) Mainframe computer (D) Micro computer

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Q14. The 'brain' of the computer is:

(A) Hard disk (B) RAM

(C) Monitor (D) CPU

Q15. Which unit of the CPU performs arithmetic and logical operations?

(A) MAR (B) Cache

(C) CU (D) ALU

Q16. Which part of the CPU directs and coordinates all operations of the computer?

(A) Control Unit (B) ALU

(C) Register (D) Hard disk

Q17. The register that holds the address of the next instruction to be executed is:

(A) Program Counter (B) Accumulator

(C) Instruction Register (D) Memory Data Register

Q18. Which of the following is a volatile memory?

(A) ROM (B) DVD

(C) Hard disk (D) RAM

Q19. The BIOS (start-up instructions) of a computer is stored in:

(A) Register (B) Cache

(C) ROM (D) RAM

Q20. Cache memory is placed between:

(A) ROM and hard disk (B) CPU and RAM

(C) RAM and hard disk (D) Keyboard and CPU

Q21. Which memory needs to be refreshed periodically?

(A) SRAM (B) ROM

(C) DRAM (D) EPROM

Q22. EPROM is erased using:

(A) Ultraviolet light (B) Electrical signal

(C) Magnetic field (D) High pressure

Q23. The fastest memory in a computer is:

(A) Registers (B) Cache memory

(C) Hard disk (D) RAM

Q24. 1 byte is equal to:

(A) 8 bits (B) 4 bits

(C) 10 bits (D) 16 bits

Q25. 1 KB is equal to:

(A) 512 bytes (B) 1024 bytes

(C) 1000 bits (D) 1024 bits

Q26. 1 GB is equal to:

(A) 1024 bytes (B) 1024 MB

(C) 1024 KB (D) 1000 TB

Q27. Which of the following is NOT an input device?

(A) Mouse (B) Scanner

(C) Keyboard (D) Plotter

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Q28. The mouse was invented by:

(A) Bill Gates (B) Douglas Engelbart
(C) Steve Jobs (D) Tim Berners-Lee

Q29. OMR is mainly used for:

(A) Evaluating marked bubbles on answer sheets (B) Reading cheques in banks
(C) Reading barcodes on products (D) Scanning photographs

Q30. MICR is mainly used in:

(A) Banking for processing cheques (B) Evaluating answer sheets
(C) Supermarket billing (D) Printing photographs

Q31. Which of the following is an impact printer?

(A) Laser printer (B) Dot matrix printer
(C) Inkjet printer (D) Thermal printer

Q32. The speed of a dot matrix printer is measured in:

(A) CPS (characters per second) (B) Pixels
(C) PPM (pages per minute) (D) DPI

Q33. The resolution of a monitor is measured in:

(A) Watts (B) Hertz
(C) Bytes (D) Pixels

Q34. Which of the following is both an input and an output device?

(A) Speaker (B) Scanner
(C) Touch screen (D) Plotter

Q35. A hard disk drive is an example of _____ storage.

(A) solid-state (B) optical
(C) magnetic (D) cache

Q36. The storage capacity of a single-layer Blu-ray disc is:

(A) 4.7 GB (B) 25 GB
(C) 700 MB (D) 1.44 MB

Q37. The standard capacity of a CD-ROM is about:

(A) 700 MB (B) 1.44 MB
(C) 25 GB (D) 4.7 GB

Q38. Magnetic tape is an example of _____ access storage.

(A) direct (B) sequential
(C) instant (D) random

Q39. Which storage device has no moving parts?

(A) Floppy disk (B) Hard disk drive
(C) Magnetic tape (D) SSD

Q40. A pen drive uses which type of memory?

(A) Magnetic storage (B) Cache memory
(C) Optical storage (D) Flash memory

Q41. An operating system is a:

(A) Input device (B) Utility hardware
(C) System software (D) Application software

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Q42. A compiler translates:

(A) The whole high-level program into machine code at once
(B) One line at a time into machine code
(C) Assembly language into a high-level language
(D) Machine code into assembly language

Q43. An assembler converts:

(A) Machine language into high-level language
(B) Data into information
(C) Assembly language into machine language
(D) High-level language into assembly language

Q44. Firmware is:

(A) Temporary program stored in RAM
(B) Permanent software stored in ROM
(C) A type of virus
(D) A printed manual

Q45. The correct order of the instruction cycle is:

(A) Execute, Fetch, Decode
(B) Fetch, Decode, Execute
(C) Fetch, Execute, Decode
(D) Decode, Fetch, Execute

Q46. CPU clock speed is measured in:

(A) DPI
(B) Bytes
(C) Hertz (GHz)
(D) Pixels

Q47. The 'stored program concept' is associated with:

(A) Blaise Pascal
(B) Herman Hollerith
(C) John von Neumann
(D) Charles Babbage

Q48. The bus that carries memory addresses from the CPU is the:

(A) Control bus
(B) Address bus
(C) Data bus
(D) Power bus

Q49. The ability of a computer to work for long hours without tiredness is called:

(A) Speed
(B) Diligence
(C) Storage
(D) Versatility

Q50. GIGO stands for:

(A) General Input, General Output
(B) Garbage In, Good Output
(C) Good Input, Good Output
(D) Garbage In, Garbage Out

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Answer Key

Q.	Ans	Q.	Ans	Q.	Ans	Q.	Ans	Q.	Ans
1	**D**	11	**B**	21	**C**	31	**B**	41	**C**
2	**A**	12	**C**	22	**A**	32	**A**	42	**A**
3	**A**	13	**A**	23	**A**	33	**D**	43	**C**
4	**C**	14	**D**	24	**A**	34	**C**	44	**B**
5	**D**	15	**D**	25	**B**	35	**C**	45	**B**
6	**C**	16	**A**	26	**B**	36	**B**	46	**C**
7	**C**	17	**A**	27	**D**	37	**A**	47	**C**
8	**A**	18	**D**	28	**B**	38	**B**	48	**B**
9	**B**	19	**C**	29	**A**	39	**D**	49	**B**
10	**C**	20	**B**	30	**A**	40	**D**	50	**D**

Score yourself: 1 mark for each correct answer. Revise the topics of the questions you got wrong.

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