Computer consists of a set of hardwares and softwares.

Desktop Computer

A computer system can be viewed as a combination of input, processing and output subsystems.
Input –> Process –> Output
Hardware examples:

- Keyboard
- Monitor
- Mouse, etc.

Software examples:

- Operating system
- Computer games
- Antivirus, etc.

Case

The computer case comtains most of the computer components.

Power supply

A power supply unit converts alternating current (AC) electric power to low-voltage DC power for the internal components of the computer.

Motherboard

The motherboard is a large rectangular board with integrated circuitry that connects the other parts of the computer including the CPU, RAM, disk drive as well as any peripherals connected via the ports or the expansion slots.

CPU (Central Processing Unit)

CPU performs most of the calculations which enable a computer to function, and is sometimes referred to as the “brain” of the computer.

Fan

CPU is cooled by a heat sink and fan.

Chipset

The Chipset, which includes the north bridge, mediates communication between the CPU and the other components of the system, including main memory.

RAM (Random Access Memory)

RAM stores the code and data that are being actively accessed by the CPU.

ROM (Read Only Memory)

ROM stores the BIOS that runs when the computer is powered on or otherwise begins execution, a process known as Bootstrapping, or “booting” or “booting up”.

BIOS (Basic Input Output System)

BIOS includes boot firmware and power management firmware.

Buses

Buses connect the CPU to various internal components and to expand cards for graphics and sound.

CMOS battery

CMOS battery is also attached to the motherboard. This battery powers the memory for date and time in the BIOS chip.

Expansion cards

Expansions cards can be used to obtain or expand on features not offered by the motherboard.

Storage devices

Storage devices, refers to computer components and recording media that save digital data.

- Fixed storage device : Reside permanently on computers, like hard disk.
- Removable storage device : USed to transfer data between computers, like USB flash drive.

Input device

Device which provide inputs to the computer. Input device includes keyboard, mouse, scanner, etc.

Output device

The device which display outputs of the computer. Output device includes printers, speakers, monitors, etc.

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34. Differentiate between Serial and parallel data transfer ?

35. Explain signed magnitude, signed l’s complement and signed 2’s complement representation of numbers. Find the range of numbers in all three representations for 8 bit register.
36. If cache access time is lOOns, main memory access time is 1000 ns and the hit ratio is 0.9. Find the average access time and also define hit ratio.
37. Explain hardwired microprogrammed control unit ? What is address sequencer circuit ?
38. Explain how a stack organized computer executes instructions? What is Stack?
39. Draw and explain the memory hierarchy in a digital computer. What are advantages of cache memory over main memory?
40. What is Associative memory? Explain the concept of address space and memory space in Virtual memory.
41. What is Paging? Explain how paging can be implemented in CPU to access virtual memory.
42. Explain SIMD array processor along with its architectural diagram ?
43. Write short notes on
44. Draw the functional and structural views of a computer system and explain in detail ?
45. Explain general register organization.
46. Compare and contrast DMA and I/O processors ?
47. Define the following: a) Flynn’s taxonomy b) Replacement algorithm
48. Explain the various pipeline vector processing methods ?
49. Describe the language features for parallelism ?
50. What are different addressing modes? Explain them.
51. Explain any page replacement algorithm with the help of example ?
52. What is mapping? Name all the types of cache mapping and explain anyone in detail.
53. Explain arithmetic pipeline ?
54. Write short notes on, a) SIMD, b) Matrix multiplication c) Instruction format
55. Differentiate: a) Maskable and non-maskable interrupt b) RISC and CISC

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