

CPU (Central Processing Unit) Job Interview Questions And Answers



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CPU (Central Processing Unit) Interview Questions And Answers Guide.

Question - 1:

Explain what is cache memory?

Ans:

It is a temporary memory storage area which helps to speed up data transfer within a computer. A Microprocessor looks for the data in the Cache memory as the data transferred Cache is much faster. If the data is not found in the cache, the CPU looks for it in the memory.

The following are two types of Cache:

Internal or Level 1: In this, the Cache is built into the Microprocessor.

External or Level 2: In this, the Cache is built on a separate chip.

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Question - 2:

Explain Memory Components?

Ans:

Some of the memory components are:

* Semiconductor Memory:

It is used by most by most modern computers. It is reliable, inexpensive and compact. However, it requires continuous power supply and data is lost if current is interrupted.

* RAM and ROM:

They stand for Random Access Memory and Read Only Memory respectively.

* Flash Memory:

This memory is electrically erasable and re programmable.

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Question - 3:

Explain RISC technology?

Ans:

RISC stands for Reduced Instruction Set Computing.

* It uses a small subset of instructions to carry out processes.

* As the number of instructions are lesser, the speed of processing is much improved and faster.

* However, when complex operations are dealt with, they have to be broken down into a series of smaller instructions.

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Question - 4:

Explain what is Parallel Processing?

Ans:

It is a type of processing in which the CPU divides the problem into two parts. It works as:

* Each part is sent to separate processors.

* Each processor has its own memory. They individually solve the given problems and return the result.

* The CPU assembles the results and hence, the problem is solved.

Some computers operate in terms of teraflops or trillions of floating-point instructions per second.

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Question - 5:

Explain Bus Speed?

Ans:

The speed of the bus is measured in megahertz (MHz), refers to how much data can move across the bus simultaneously. Personal computers have a bus speeds of 400 MHz or 533 MHz.



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Question - 6:

Explain System Bus?

Ans:

System Bus are parallel electrical paths that transport data between the CPU and Memory. - Bus Width: The number of electrical paths that to carry the data. It is measured in Bits. With larger Bus Widths, a CPU can transfer more data at a time.

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Question - 7:

Explain Dynamic RAM?

Ans:

It cannot retain its contents if not continuously refreshed by the CPU. Its types are:

i. Synchronous DRAM:

It is the faster type of DRAM, used in modern and more advanced systems.

ii. Rambus DRAM:

It is faster than Synchronous DRAM and is expected to become more commonly used.

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Question - 8:

Explain Static RAM?

Ans:

It retains its contents with the help of CPU. It is faster and more expensive than Dynamic RAM. It is generally used for Level 2 cache.

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Question - 9:

Explain the term "Transistors"?

Ans:

Transistors are electronic switches that may or may not allow the flow of current in a current path.

* When it allows current to flow, the switch is ON. This represents 1 bit.

* When it does not allow current to flow, the switch is OFF. This represents 0 bit.

* Transistors are placed into chips also known as IC. They measure in mm`s and are known contain millions of transistors.

* Microprocessors these days are created using microns as their measuring size.

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Question - 10:

Tell me what all does a Microprocessor comprise of?

Ans:

They comprise of the following key components:

Central Processing Unit:

It carries out the instructions of a computer system

Registers:

They store bits of information in a way that all the bits can be written to or read out simultaneously.

System clock:

simple count of the number of ticks that have transpired since some arbitrary starting date, called the Epoch.

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Question - 11:

Explain What is System Unit?

Ans:

It is an enclosure that contains most of the components of a computer system such as the Motherboard and other Storage devices.

Motherboard:

It is a Flat circuit board that holds the computer circuitry.

Storage devices:

These devices are used for long term storage of memory. Some of them are- hard drive, diskette, DVD_ROM, etc.

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Question - 12:

Explain what is Microprocessor mean?

Ans:

A Microprocessor is a miniature CPU unit that is etched on a silicon chip. A CPU (Central Processing Unit) hardware which carries out the instructions of a computer system. The Microprocessor unit consists of millions of tiny transistors. It has multi purposes and is programmable. They operate on numbers and symbols represented in Binary Numeral Language.

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**Question - 13:**

List some of the characteristics of instruction time?

Ans:

- * The instruction time is also known as the I-time.
- * It is the time taken by the Control Unit to get an instruction from memory and to load it to the register.
- * The time also includes the taken by the CU for instruction decoding and to find out the location of the required data.

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Question - 14:

Explain what is Unicode?

Ans:

It is designed to accommodate alphabets (- 256). It uses 16 bits to represent one character and requires twice as much space to store data. It can have a maximum of 65,536 possible values.

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Question - 15:

Explain what is EBCDIC?

Ans:

It stands for Extended Binary Coded Decimal Interchange Code. Its is primarily used in IBM and IBM-compatible mainframes.

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Question - 16:

Explain what is ASCII?

Ans:

It stands for the American Standard Code for Information Interchange. It is used on almost all computers, hence considered as a standard coding scheme.

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Question - 17:

Do you understand by coding schemes?

Ans:

Coding schemes are a common way of representing a character of data. It is required in computers for exchanging data. The following are a few common coding schemes-

- * ASCII
- * EBCDIC
- * Unicode

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Question - 18:

Do you understand by system clock?

Ans:

Some of the characteristics of the system clock are as follows:

- * The system clock is used to produce a specific pulse at a fixed rate of time.
- * The machine cycle of a system can be completed in a single or multiple clock pulses.
- * A single program instruction could be multiple instructions for the cpu.
- * Any central processing unit has a predefined set of instructions also known as the instruction set. These are the instructions that it can process and understand.
- * The clock speeds are nowadays measures in Ghz. 1ghz = 1000 mhz.

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Question - 19:

List some characteristics of execution time?

Ans:

It is the time required by the control unit to move data from the memory to the registers in the ALU, the ALU is responsible for the execution of instructions on this data.

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Question - 20:

Described the steps involved in the execution of a program?

Ans:

The following steps are involved in the execution of a program:

Fetch:

The control unit is given an instruction.

Decode:

The control unit then decodes the newly received instruction.

Execute:

During the execution the Control unit first commands the correct part of hardware to take action. Once that is found out the control is handed over to the hardware.



Now the task is performed.

Store:

Once the task is saved successfully the end result is stored.

- After the cycle is complete the Control unit is again handled the control.

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Question - 21:

Explain what is Word?

Ans:

The number of bits that a CPU possess indicates the power of the computer. It also indicates how many number of bytes are present. In today's date most computers can handle 32 or 64 bit length.

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Question - 22:

Explain what is Byte?

Ans:

A byte is a collection or group of 8 bits. A byte can store a single character which can either be an alphabet, a number or a special character. The byte is generally used to measure the storage capacities.

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Question - 23:

Explain what is Bit?

Ans:

This is also the short name for binary digits. By being binary it means that BIT can only have two values zero and one. A characteristic of BIT is that it can never be empty. Zero implies a power off state whereas one means on state.

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Question - 24:

List the different ways in which data can be represented?

Ans:

There are three ways in which data can be represented namely Bit, Byte and Word:

- * Bit
- * Byte
- * Word

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Question - 25:

What do you understand by registers, briefly explain the various types of registers?

Ans:

- * Registers can be considered to be special purpose memory which reside within the CPU.
- * The registers are high speed temporary memory used to help the CPU get access to data and instructions quickly and effectively. There are various type of registers such as Instruction register, Status register and data register.
- * The instructions register is responsible for the storage of the of the instructions that are being currently executed.
- * The status register is used to keep a tab of the status operations of the arithmetic logical unit.
- * The data register is used to store information or data that is to be processed, it is also used to store information or results that have been derived from a process.

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Question - 26:

Explain the types of data storage and its relation with the CPU?

Ans:

There are overall two main types of storage:

- * Primary Storage (memory): This type of storage is primarily used to store information temporarily. The CPU does not directly access the secondary memory, instead it always relies on the primary memory.
- * Secondary storage: This type of storage is primarily used to store data or long periods. This type of memory is stored in external devices such as hard drives etc.
- * Any data that resides on a disk or input device cannot be accessed by the CPU directly, it should always reside in the main memory. The control unit accesses the data from the disk memory and places it in the main memory.
- * The data is present in the primary memory until the program requiring it is executed or is terminated.

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Question - 27:

List the characteristics of the ALU?

Ans:

- * The ALU is responsible for performing all logical and arithmetic operations.
- * Some of the arithmetic operations are as follows: addition, subtraction, multiplication and division.
- * Some of the logical operations are as follows: comparison between numbers, letter and or special characters.
- * The ALU is also responsible for the following conditions: Equal-to conditions, Less-than condition and greater than condition.



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Question - 28:

List the characteristics of the CU or control unit?

Ans:

- * This part of the of the CPU is the one that is in charge of all the operations being carried out.
- * It is responsible to direct the system to execute instructions.
- * It helps in communication between the memory and the arithmetic logical unit.
- * It also aids in the loading of data and instructions residing in the secondary memory to the main memory as required.

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Question - 29:

Explain the Maximum clock frequency in 8086?

Ans:

5 Mhz is the Maximum clock frequency in 8086.

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Question - 30:

Explain the processor lines of two major manufacturer?

Ans:

High-end: Intel - Pentium (II, III, 4), AMD - Athlon. Low-end: Intel - Celeron, AMD - Duron. 64-bit: Intel - Itanium 2, AMD - Opteron.

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Question - 31:

What is 1st / 2nd / 3rd / 4th generation processor?

Ans:

The processor made of PMOS / NMOS / HMOS / HCMOS technology is called 1st / 2nd / 3rd / 4th generation processor, and it is made up of 4 / 8 / 16 / 32 bits.

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Question - 32:

Explain What are the various registers in 8085?

Ans:

Accumulator register, Temporary register, Instruction register, Stack Pointer, Program Counter are the various registers in 8085

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Question - 33:

Explain What happens when HLT instruction is executed in processor?

Ans:

The Micro Processor enters into Halt-State and the buses are tri-stated.

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Question - 34:

Explain Program counter?

Ans:

Program counter holds the address of either the first byte of the next instruction to be fetched for execution or the address of the next byte of a multi byte instruction, which has not been completely fetched. In both the cases it gets incremented automatically one by one as the instruction bytes get fetched. Also Program register keeps the address of the next instruction

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Question - 35:

What is the Pentium processor?

Ans:

A-A 32-bit microprocessor introduced by Intel in 1993. It contains 3.3 million transistors, nearly triple the number contained in its predecessor, the 80486 chip. Though still in production, the Pentium processor has been superseded by the Pentium Pro and Pentium II microprocessors. Since 1993, Intel has developed the Pentium III and more recently the Pentium 4 microprocessors.

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Question - 36:

What is clock speed?

Ans:

It is also called clock rate, the speed at which a microprocessor executes instructions. Every computer contains an internal clock that regulates the rate at which instructions are executed and synchronizes all the various computer components. The CPU requires a fixed number of clock ticks (or clock cycles) to execute each



instruction. The faster the clock, the more instructions the CPU can execute per second.

Clock speeds are expressed in megahertz (MHz) or gigahertz (GHz).

The internal architecture of a CPU has as much to do with a CPU's performance as the clock speed, so two CPUs with the same clock speed will not necessarily perform equally. Whereas an Intel 80286 microprocessor requires 20 cycles to multiply two numbers, an Intel 80486 or later processor can perform the same calculation in a single clock tick. (Note that clock tick here refers to the system's clock, which runs at 66 MHz for all PCs.) These newer processors, therefore, would be 20 times faster than the older processors even if their clock speeds were the same. In addition, some microprocessors are superscalar, which means that they can execute more than one instruction per clock cycle.

Like CPUs, expansion buses also have clock speeds. Ideally, the CPU clock speed and the bus clock speed should be the same so that neither component slows down the other. In practice, the bus clock speed is often slower than the CPU clock speed, which creates a bottleneck. This is why new local buses, such as AGP, have been developed.

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Question - 37:

What is the Celeron processor?

Ans:

A brand name for a line of Intel microprocessors introduced in June, 1998. Celeron chips are based on the same P6 architecture as the Pentium III microprocessor, but are designed for economical or valued PCs. They run at lower clock speeds and are not as expandable as Pentium III microprocessors.

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Question - 38:

Explain What are the different functional units in 8086?

Ans:

Bus Interface Unit and Execution unit, are the two different functional units in 8086.

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Question - 39:

Explain Non-Maskable interrupts?

Ans:

An interrupt which can never be turned off (ie. disabled) is known as Non-Maskable interrupt

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Question - 40:

Explain Where does the Real mode on the CPU come from?

Ans:

The original 8086, which only had 1 MB of memory. This megabyte is split into low memory for IRQ tables, application memory and high memory.

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Question - 41:

Explain What is meant by Maskable interrupts?

Ans:

An interrupt that can be turned off by the programmer is known as Maskable interrupt.

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Question - 42:

What is CPU?

Ans:

Abbreviation of central processing unit, and pronounced as separate letters. The CPU is the brains of the computer. Sometimes referred to simply as the processor or central processor, the CPU is where most calculations take place. In terms of computing power, the CPU is the most important element of a computer system.

On large machines, CPUs require one or more printed circuit boards. On personal computers and small workstations, the CPU is housed in a single chip called a microprocessor.

Two typical components of a CPU are:

The arithmetic logic unit (ALU), which performs arithmetic and logical operations.

The control unit, which extracts instructions from memory and decodes and executes them, calling on the ALU when necessary.

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