

# Hard Drive (HD) Interview Questions And Answers Guide.



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# Hard Drive (HD) Job Interview Preparation Guide.

### Question # 1

What you understand by a hard disk and how are they classified?

#### Answer:-

Hard drives are usually devices that can be used for storing data and to retrieve it. They are composed of one or more than one rigid disc that rapidly rotates.

- \* The discs are magnetically coated and use magnetic heads to read and write data on them.
- \* They are also known as the secondary storage devices used to store large amounts of data.
- \* They can be classified into the following types : Non-Volatile, Digital, Magnetic or data storage devices.
- \* Hard drives have been dominant since the use of personal computers as they allow large amounts of data to be stored at low costs and high reliability.

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### Question # 2

Explain structure of a hard drive?

#### Answer:-

Hard disks in them contain various components such as Platter, Spindle, Actuator, power connector, Jumper block, IDE connector etc.

- \* In the inside of a hard disk there is the spindle which is used to hold circular magnetic disks also known as platters. They are usually made up of a non magnetic material, ( aluminum alloy).
- \* These platters are spun at speeds in excess of 4000 RPM, nowadays 7200 RPM based hard disks are common enough.
- \* The read and write heads work on these spinning platters to read and write data. They are controlled by an actuator arm that prevents any error.

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### Question # 3

How data is read and written on a hard disk?

#### Answer:-

- \* In a hard disk information / data is written on the rotating platters by the read and write heads.
- \* The heads are not in actual contact with the disk they are actually slightly above the magnetic surface of the platter.
- \* The heads detects the magnetization of the platter right below them. The actuator arm aids the heads in covering the platter area.
- \* The surface is divided into micro sized areas known as magnetic domains. Every magnetic domain has a magnetic dipole which has their own field.
- \* The write heads read/write by magnetizing the area. It generates a strong magnetic field for this purpose.

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### Question # 4

Which errors can be handled by hard disks?

#### Answer:-

There are various ways in which modern hard disks handle errors.

- \* Most hard disks use ECC's error correcting codes mostly the Reed-Solomon error correction techniques.
- \* The error checking codes usually employ the use of complex algorithms mathematically derived to store extra bits. These bits are used to correct various errors.
- \* Nowadays most of the drives support LDPC or the low density parity check codes.
- \* The LDPC allows performance to reach the Shannon limit and also result in the highest storage capacity drives.

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### Question # 5

What you understand by Formatting in reference to hard disks?

#### Answer:-

Generally the controller determines how the hard disk is presented to the host system.

- \* In general the modern SATA and SAS present themselves as contiguous set of logical blocks, They are usually 512 bytes long.
- \* Formatting can be classified into two types high level and low level formatting.
- \* The process through which the logical blocks are initialized on the physical platters is known as low level formatting. This is generally performed during production itself.
- \* Once the low level formatting is performed then high level formatting is performed to write the file system structure into the particular logical blocks.



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### Question # 6

Explain the various form factors in which the hard disks are available?

**Answer:-**

- \* 8 inch: This was one of the first hard disks to be developed, It's size was same as that of the 8 inch floppy drives.
- \* 5.25 inch: Comparatively smaller than 8" this type of drive was first time provided by Segate.
- \* 3.5 inch: This is the most common size of the drive that is used these days in personal computers.
- \* 2.5 Inch: This type of hard drives is primarily used inside portable devices such as laptops, music players etc.
- \* 1.8 Inch: This was a rare size and was primarily intended to be used by audio players and sub notebooks.
- \* 1 Inch: This type of drives were developed to house the entire disk inside a CF II Slot.

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### Question # 7

What you understand by access time. Explain different types of timings in a hard disk drive?

**Answer:-**

The access time is the time taken by the disk to read data on it and it is directly related to the nature of the platter speeds and the moving heads.

- \* Seek time: This time specified the time taken by the head to reach the track where the required / target data is available.
- \* Rotational Latency: This latency occurs when the required data by the computer is still not under the head so the assembly will have to move their.
- \* The access time of the hdd can be improved by giving more speed in the rotation of the platter.

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### Question # 8

Explain the purpose of interleave?

**Answer:-**

- \* Interleave is the process through which gaps are placed between two sectors on the platter of a disk.
- \* This was done in earlier days when the computers were not quick enough to read continuous streams of data.
- \* Without interleaving there would be no gaps between the sectors and data would arrive immediately before the reading unit is ready. Due to this to read the same data a complete rotation of the disk would be required again.
- \* The interleaving ratio was not fixed and can be set by the end user depending on their system specs. Nowadays the ratio of interleaving is 1:1 i.e. no interleaving is used.

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### Question # 9

Explain the different types of disk interfaces used in computers?

**Answer:-**

There are various interfaces through which hard disks connect to the computer.

- \* Legacy Bit Serial Interfaces: They are the oldest form of interfaces which used two cables to connect the disk to a controller. One cable was used for data whereas the other is used for control. In addition to the above cables a power cable was also required to provide power to the disk.
- \* Modern Bit Serial Interfaces: In these types of interfaces the disk is connected to a host bus interface adapter using a single cable. In addition to this cable a power cable is also used to power the drive. Some of the modern bit serial interfaces are as follows: Fibre Channel, Serial ATA and SCSI.
- \* World Serial interfaces: They are similar to modern bit interfaces, these interfaces make use of a cable for data and control. Some of the common world interfaces are as follows: IDE, EIDE, SCSI etc.

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### Question # 10

Explain power consumption statistics of the hard disks?

**Answer:-**

- \* These days power consumption of electrical devices has become a prime importance as portability and performance greatly depends on a devices consumption.
- \* Power consumption of a hard disk directly affects: Drive age, disk failure rates, temperatures etc.
- \* Smaller drives consume less energy as compared to large drives. The disks consume maximum energy during starting up, also known as spin up.
- \* Spin up and spin down is directly controlled by the SCSI controller on such drives.

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### Question # 11

What is Circuit failure?

**Answer:-**

The hard disk become inoperable if any of its circuitry malfunctions.

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### Question # 12

What is Bearing and motor failure?

**Answer:-**

After prolonged usage the hard disks motors or bearing tend to worn out hence not allowing normal disk performance.

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### Question # 13

What is Stiction?

#### Answer:-

Sometimes the head of the disk is not able to take off, it tends to stick to its position. This phenomenon is known as stiction.

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### Question # 14

What is Bad Sectors?

#### Answer:-

The platter in a hard drive is split into minute areas known as sectors. Sometime certain sectors might become faulty, this does not affect the entire drive.

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### Question # 15

What is Head Crash?

#### Answer:-

This is caused when the read / write head comes in contact with the platter. This can cause the area where it has come in contact to lose data.

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### Question # 16

Explain the different ways of hard drive failure?

#### Answer:-

A hard drive may fail due to multiple reasons. Some of the common causes are:

- \* Head Crash
- \* Bad Sector
- \* Stiction
- \* Circuit failure
- \* Bearing and motor failure

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### Question # 17

Explain Landing zones and their technologies?

#### Answer:-

- \* When a hard disk is functioning normally the read write head simply fly`s over the platter without making any contact.
- \* These days to prevent the head from touching the platter the head are physically moved ( parked) to special areas also known as landing zones to prevent data loss.
- \* The landing zones are usually areas where no data is stored.
- \* Another approach is to leave the heads suspended in air so that they never come in contact with the platter surface.
- \* In legacy devices the heads could not be automatically landed and in order to prevent them from touching the platter the user had to run programs manually to park the heads.

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### Question # 18

Explain and Give example for Non-Maskable interrupts?

#### Answer:-

Trap is known as Non-Maskable interrupts, which is used in emergency condition. This has the highest priority

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### Question # 19

Explain If you are getting in disc boot error. At initial stage what you need 2 check. Please detail in steps?

#### Answer:-

1. Enter into the BIOS and check whether your hard disk drive is set as first boot device, if not then set it as first boot device in the boot device priority.
2. If the problems exists, then you have to boot the system with a new operating system cd and install a new one.
3. Side by side check the RAM also for the connection

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### Question # 20

Explain How many logical drives is it possible to fit onto a physical disk?

#### Answer:-

Maximum of 24 logical drives. The extended partition can only have 23 logical drives.  
Max of 24 partition from "c" to "z"  
primary 4

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### Question # 21



Explain Which is the tool used to connect the user and the computer?

**Answer:-**

Interpreter is the tool used to connect the user and the tool.  
And the operating system is used to connect the user and computer.

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**Question # 22**

What is MBR located on the disk?

**Answer:-**

Main Boot Record is located in sector 0, track 0, head 0, cylinder 0 of the primary active partition.  
sector 0, head 0, cylinder 0.

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**Question # 23**

Which Logic calculations are done in which type of registers?

**Answer:-**

Accumulator is the register in which Arithmetic and Logic calculations are done.

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**Question # 24**

What is Hard Drive (HD)?

**Answer:-**

A hard disk drive (HDD) is a non-volatile, random access device for digital data. It features rotating rigid platters on a motor-driven spindle within a protective enclosure. Data is magnetically read from and written to the platter by read/write heads that float on a film of air above the platters.

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**Question # 25**

Explain SIM and RIM instructions?

**Answer:-**

SIM is Set Interrupt Mask. Used to mask the hardware interrupts. RIM is Read Interrupt Mask. Used to check whether the interrupt is Masked or not.

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**Question # 26**

Explain Which Segment is used to store interrupt and subroutine return address registers?

**Answer:-**

Stack Segment in segment register is used to store interrupt and subroutine return address registers.

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**Question # 27**

Explain what is meant by cross-compiler?

**Answer:-**

A program runs on one machine and executes on another is called as cross-compiler

Cross compiler programs are written for embedded systems(usually) but run on normal PCs to gauge their performance. Later on, they are ported to embedded systems.

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