

1. Define hard-copy and soft-copy output. Differentiate between impact and non-impact printers with example.

S.No	Softcopy	Hardcopy
1.	Softcopy is in electronic form	Hardcopy is in printed form
2.	It is easier to modify	It is difficult to modify
3.	It is intangible	It is tangible
4.	It is stored on storage device	It is printed on papers.
5.	Its duplicate copies can be produced without any cost	Its duplicate copies can be produced with cost

SN.	Impact Printers	Non-Impact Printers
1	Impact printers run on a mechanism of striking the ribbon or hammer to the ribbon containing ink to print on a paper.	Non-Impact printers used a laser printing mechanism where no striking was used.
2	Characters, graphics are printed on a paper by striking.	Characters, graphics are printed on a paper without striking.
3	Impact printers produce high-level noise as they have more moving parts.	Non-Impact printers have a low-level of noise.
4	Impact printers are old printing technology.	Non-Impact printers are latest technology.
5	Impact printers are long lasting / durable.	Non-Impact printers requires maintenance after some time.
6	Lower quality of graphics.	Wider variety of fonts that handles graphics.
7	Slow printing speed.	Comparatively faster than Impact printers.
8	They are not suited for printing photograph or an high quality media.	They are best suited for printing photograph and high quality media.
9	Impact printers are cheaper than Non-Impact printers.	Non-Impact printers are expensive as compare to the Impact printers.
10	Example: Dot matrix, Daisy wheel, line printer and ball printer.	Example: Inkjet , Thermal and laser Printer.

2. Define IP address with example. What are the benefits of using domain name?

An IP address is a string of numbers separated by periods. IP addresses are expressed as a set of four numbers — an example address might be 192.158.1.38. Each number in the set can range from 0 to 255. So, the full IP addressing range goes from 0.0.0.0 to 255.255.255.255.

IPv4 Address Format (Dotted Decimal Notation)

123.89.46.72

First Octet

Second Octet

Third Octet

Fourth Octet

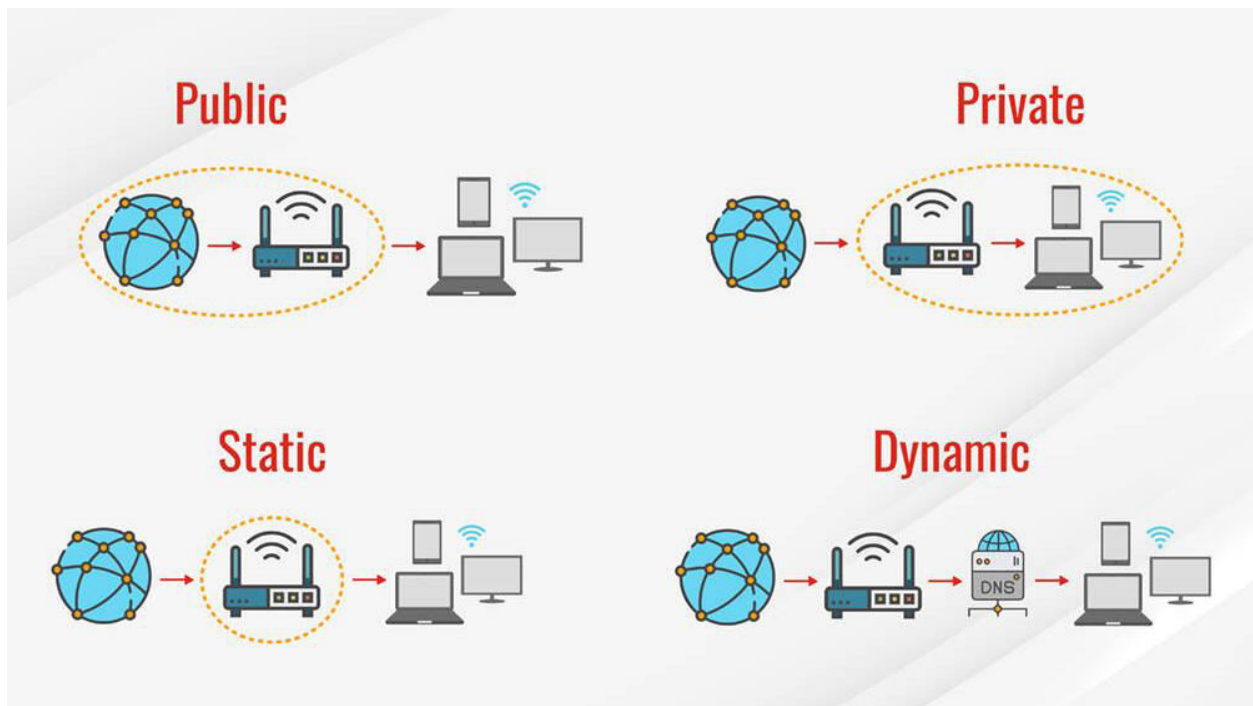
01111011.01011001.00101110.01001000

←-----→

1 Byte=8 Bits

←-----→

4 Bytes =32 Bits



WHAT IS DNS? QUICK RECAP

- DNS stands for Domain Name System
- Web browsers interact using IP addresses, while humans navigate the web using domain names
- DNS translates domain names (www.example.com) into IP addresses (123.456.7.7) so that humans don't have to remember IP addresses
- Every device that uses the internet has a unique IP address
- When you load a webpage, your browser uses these IP addresses to identify the location you're trying to access
- DNS takes the domain name you've entered and translates it into an IP address that your web browser can understand, in order to give you the correct webpage



Benefits of DNS:

- ▶ Generally DNS is the only system in the entire world that can help you browse the internet.
- ▶ No need for memorizing IP addresses -DNS servers provide a nifty solution of converting domain or sub domain names to IP addresses.
- ▶ Security enhancement -DNS servers are an important component for the security of your home or work connections.
- ▶ DNS servers have fast internet connections.

3. Why do we need IP address? Compare IPv4 address with IPv6 address.

Need of IP Address:

- An **IP address** is a logical network address that identifies a particular host on a network
- The IP address is assigned to the Network interface connection for a host.
- All hosts need a **unique IP address** to participate and communicate with other devices on the Internet.
 - This includes workstations, servers, network printers and IP phones
 - Some servers can have more than one NIC and each of these has its own IP address.
 - Router interfaces that provide connections to an IP network will also have an IP address.
- Every packet sent across the Internet has a source and destination IP address.
- This information is required by networking devices to insure the information gets to the destination and that any replies are

PARAMETER	IPv4	IPv6
Developed	Internet Protocol version 4	Internet Protocol version 6
Address Size	1981	1999
Number of addresses	b232-bit number	B2128-bit number
Address Format	$2^{32} = 4,294,967,296$	$2^{128} = 340,282,366,920,938,463,374,607,431,768,211,456$
Header Length	Variable (20-byte)	Fixed (40-byte)
Header Checksum	Checksum field required for measuring error in header.	Checksum field eliminated from header.
Dynamic addressing	DHCP	SLAAC/DHCPv6
IPSEC	Optional	Mandatory
Minimal packet size	576 bytes (fragmented)	1280 bytes
Header options	Yes	No (extensions)
Flow	No	Packet flow label
Broadcast	Yes. Broadcast address are used to send packets to all nodes in subnet.	No Broadcast address. Link local scope all-nodes multicast address is used.
Stateless auto configuration	No	Yes
IP Mobility	Impractical	Yes

4. What is switching? How can you differentiate packet switching from circuit switching?

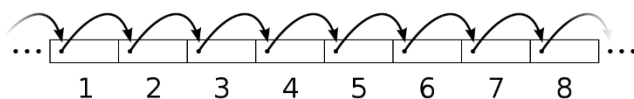
Circuit Switching	Packet Switching
Physical path between source and destination	No physical path
All packets use same path	Packets travel independently
Reserve the entire bandwidth in advance	Does not reserve
Bandwidth Wastage	No Bandwidth wastage
No store and forward transmission	Supports store and forward transmission

5. What are the advantages of using optical fibers?

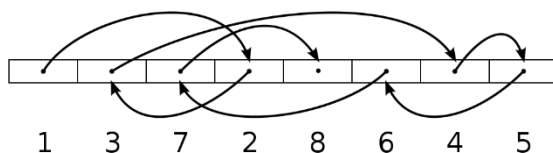
- Enormous potential bandwidth
- Small size and weight
- Electrical isolation
- Immunity to interference and crosstalk
- Signal security
- Low transmission loss
- Ruggedness and flexibility
- System reliability and ease of maintenance
- Potential low cost

6. What is the purpose of cache memory? How sequential access differs from direct access?

Sequential access



Random access



(a). Sequential Access method

- This is when the target file or information is accessed with a sequence of iterations.
- Let's say we want to access a file in an array and currently we are at array position 4.
- By the sequential method, we have to start from the array position 0 till 3.
- The total steps are 3.
- Beneficial when the location is not known.

(b). Direct Access method

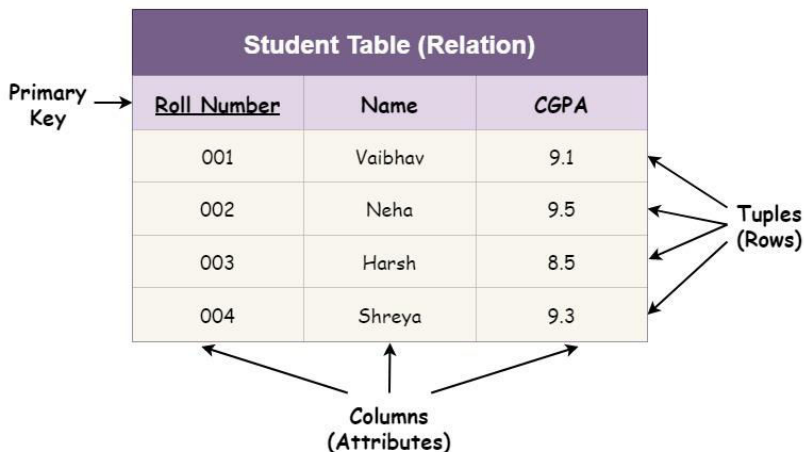
- In this method, we switch directly to the target file or location.
- From the previous example, we can write array [3] to get to the 3rd position.
- The total number of steps is 1.
- Beneficial when the exact location is known.

7. What is malicious software? How virus differs from worms?

Virus	Worm
<ul style="list-style-type: none">• The virus is the malicious code which will destroy the functioning of the computer system and transfer from one to another system.	<ul style="list-style-type: none">• The malicious program that will copy itself and spread from one system of the computer to another through a network is called a worm.
<ul style="list-style-type: none">• The virus is created by human action.	<ul style="list-style-type: none">• The creation of a worm doesn't need human action.
<ul style="list-style-type: none">• The speed of spreading the virus is slow.	<ul style="list-style-type: none">• The speed of spreading of worms is fast.
<ul style="list-style-type: none">• The host is needed for spreading the virus.	<ul style="list-style-type: none">• No host is needed for spreading the virus.

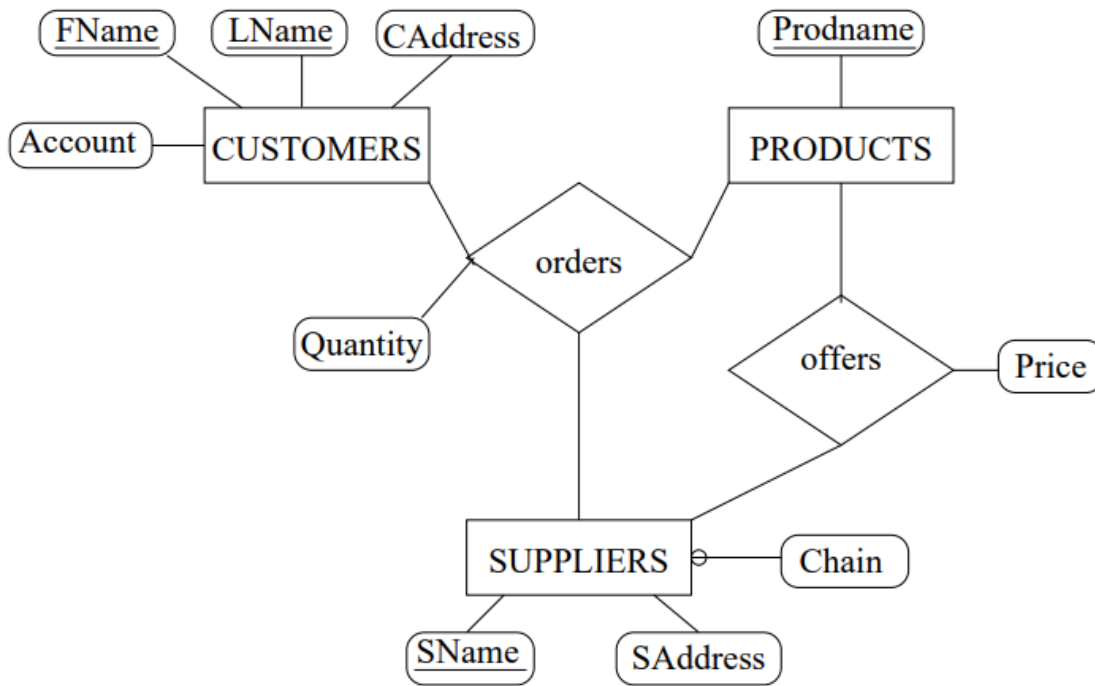
8. What is database system? How data can be stored using relational model.

Relational Model in DBMS



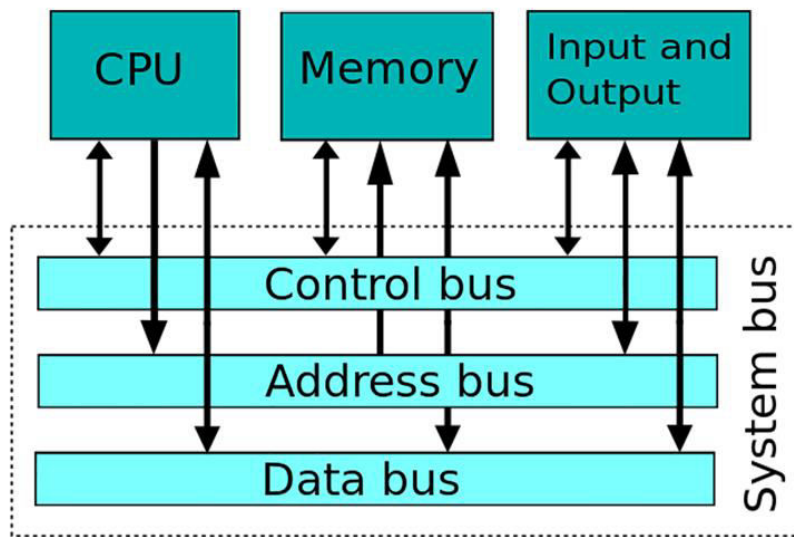
9. What is data model? How ER-Model can be used to create conceptual data model? Explain with example.

Example of an Entity-Relationship Diagram



Customers-Suppliers-Products Entity-Relationship Diagram

10. Why bus is used in computer? How control bus differs from data bus?



- Data Bus
 - Carries data
 - Width is a key determinant of performance
 - 8, 16, 32, 64 bit
- Address bus
 - Identify the source or destination of data
 - Bus width determines maximum memory capacity of system
 - e.g. 8080 has 16 bit address bus giving 64k address space
- Control Bus
 - Control and timing information
 - Memory read/write; I/O read/write; Transfer acknowledge; Bus request; Bus grant; Interrupt request; Interrupt acknowledge; Clock; Reset

11. Mention the use of plotter. How quality of printer is determined?

Basis	Plotter	Printer
Definition	Several needles are part of the device which draws the image as seen.	Takes the picture of the image and then copies directly as seen.
Type	Only deals with images	Deals with images and text.
Output	The output is in the format of pixels or bitmap format.	The output of a plotter always comes in vector graphic format.
File Reading	Plotters can read files in the DWG, CDR, AI, and other vector formats.	Printers can read BMP, PDF, and JPG TIFF formats.
Tools	A pen or different types of knives to give shape to the image.	Either uses a needle or a pen to print the document.
Cost	Printers are less costly.	Plotters are relatively expensive.

Printer Quality

- Determined by the dots per inch that can be printed by the print head.
- Also depends on how many tones or colors can be generated in each cell

12. How centralized database is different than the distributed database?

Distributed Database	Centralized Database
Multiple database files are stored at various locations.	It is made up of a single database file.
Multiple people can access and change data at the same time.	Bottlenecks occur when numerous users access the same file at the same time.
Files are sent swiftly from the user's closest location.	It's possible that delivering files to consumers will take longer.
Data can be recovered if one of the sites fails.	In the event of a system breakdown, a single site equals downtime.
The synchronization of several files from various databases is required.	In a single, central system, it is easier to update and manage data.

