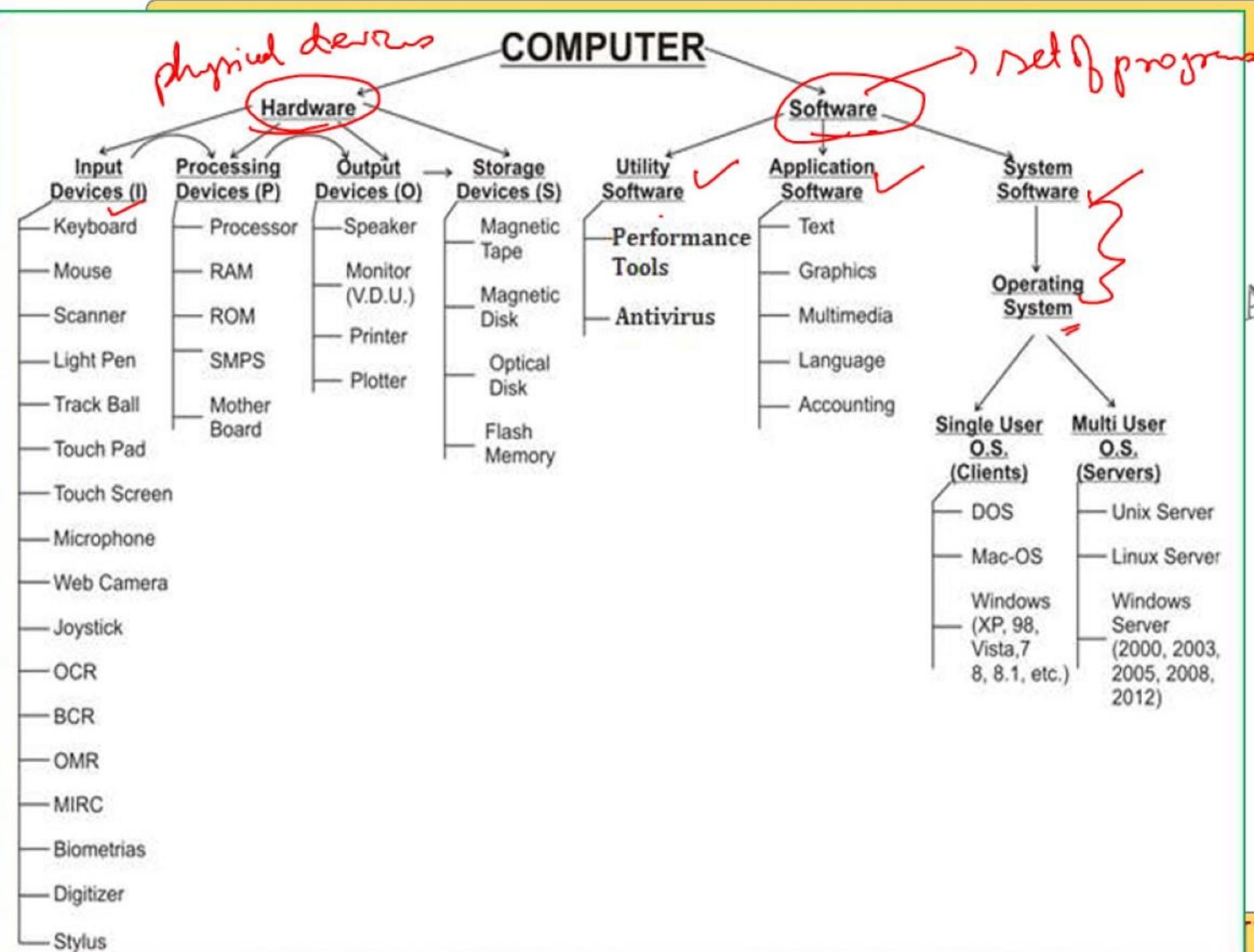
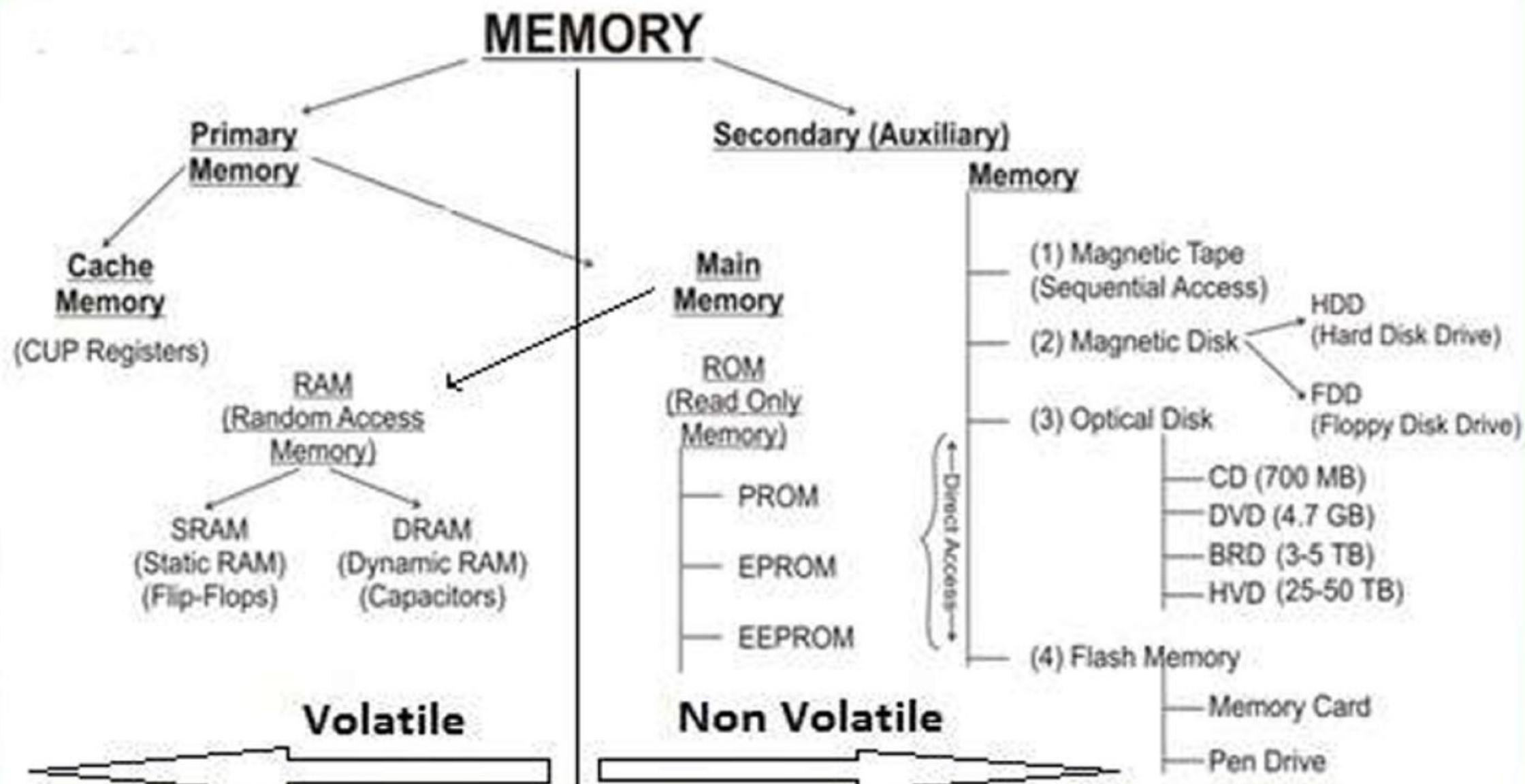




ATHI







~~bit~~
4 bit **1 nibble**

8 bit **1 byte**

1024 Byte **1 KB (Kilo Byte)**

1024 KB **1 MB (Mega Byte)**

1024 MB **1 GB (Giga Byte)**

1024 GB **1 TB (Tera Byte)**

1024 TB **1 PB (Peta Byte)**

1024 PB **1 XB (Exa Byte)**

1024 XB **1 ZB (Zeta Byte)**

1024 ZB **1 YB (Yota Byte)**

NAD

2

4 marks - 20%

KMG

TPE (+)

ZB

10^3

10^6

10^9

10^{12}

10^{15}

10^{18}

10^{21}

10^{24}

2^{10}

2^{20}

2^{30}

2^{40}

2^{50}

2^{60}

2^{70}

2^{80}

1024 YB
1024 BB

1 Byte
1 Gigabyte



Decimal, Binary, Octal and Hexadecimal Equivalents

Decimal	Binary	Octal	Hexadecimal
0	0000	000	0
1	0001	001	1
2	0010	002	2
3	0011	003	3
4	0100	004	4
5	0101	005	5
6	0110	006	6
7	0111	007	7
8	1000	010	8
9	1001	011	9
10	1010	012	A
11	1011	013	B
12	1100	014	C
13	1101	015	D
14	1110	016	E
15	1111	017	F

8
 1-0

Terms

- ❖ The **Internet** is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to link several billion devices worldwide.
- ❖ It is a **network of networks** that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless, and optical networking technologies.
- ❖ The **World Wide Web** (abbreviated as WWW or W3, commonly known as the Web) is a system of interlinked hypertext documents that are accessed via the Internet.
- ❖ A **Website**, is a set of related web pages served from a single web domain.
- ❖ **Downloading** means to receive data to a local system from a remote system, or to initiate such a data transfer
- ❖ **Uploading** refers to the sending of data from a local system to a remote system such as a server or another client with the intent that the remote system should store a copy of the data being transferred
- ❖ An **Internet Protocol address** (also known as an **IP address**) is a numerical label assigned to each device (e.g., computer, printer) participating in a computer network. It acts as an identifier for a computer. It is a unique address for every computer.
- ❖ An **email attachment** is a computer file sent along with an **email message**. One or more files can be attached to any email message, and be sent along with it to the recipient.



1. Subject Line: This summarizes the purpose or content of the email. It should be concise and informative to give the recipient an idea of what the email is about.

2. Greeting: The salutation at the beginning of the email. This can vary depending on the relationship with the recipient, ranging from formal (e.g., "Dear Mr. Smith") to informal (e.g., "Hi Jane").

3. Body: This is the main content of the email where you convey your message, provide information, ask questions, or make requests. It's important to be clear and concise, using paragraphs to organize your thoughts if necessary.

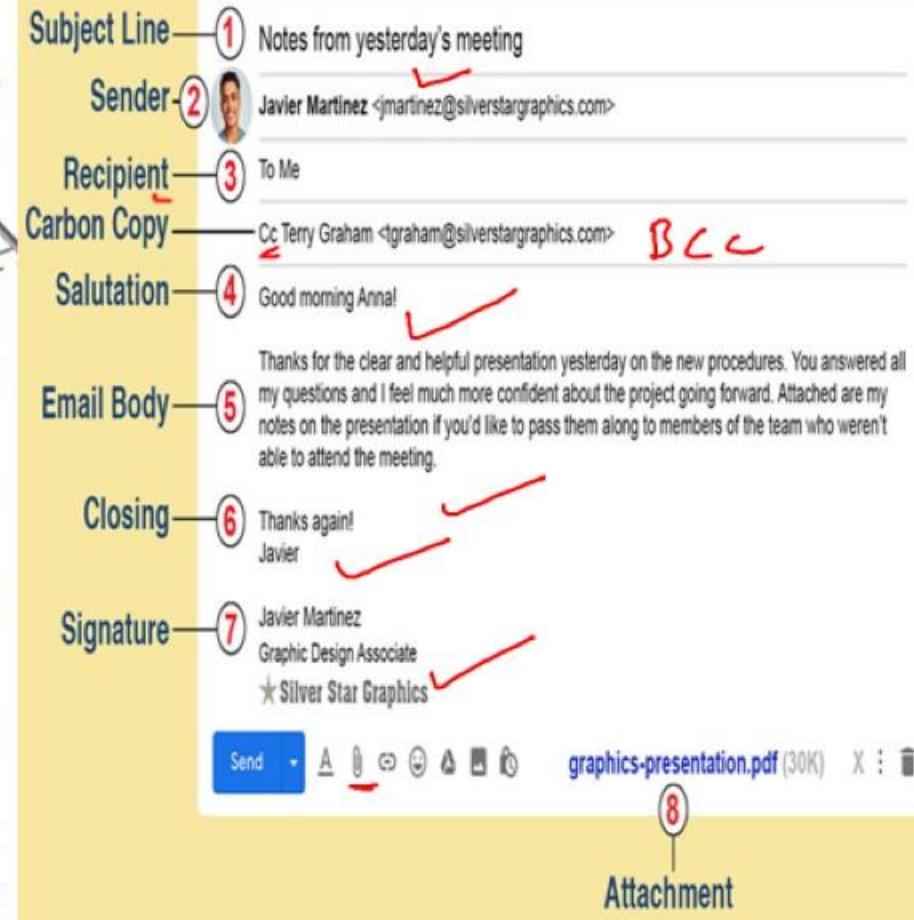
4. Closing: A polite way to end the email. This can include phrases like "Sincerely," "Best regards," "Thank you," etc., followed by your name.

5. Signature: Your name, job title, and contact information may be included here, depending on the context and your preference.

6. Attachments: If you're sending files or documents along with the email, they can be attached at the end.

7. CC/BCC: If you're copying others on the email (CC for visible recipients, BCC for hidden recipients), this should be indicated usually below the main body of the email.

PARTS OF AN EMAIL





CC (Carbon Copy): Sends a copy of the email to additional recipients, visible to all other recipients.

BCC (Blind Carbon Copy): Sends a copy of the email to additional recipients without other recipients knowing about it.

CC Vs BCC

CC and BCC involves the copy of an email sent to the person intended and the other person(s) involved in the email conversation.

CC

EVERYONE can see the people tagged.

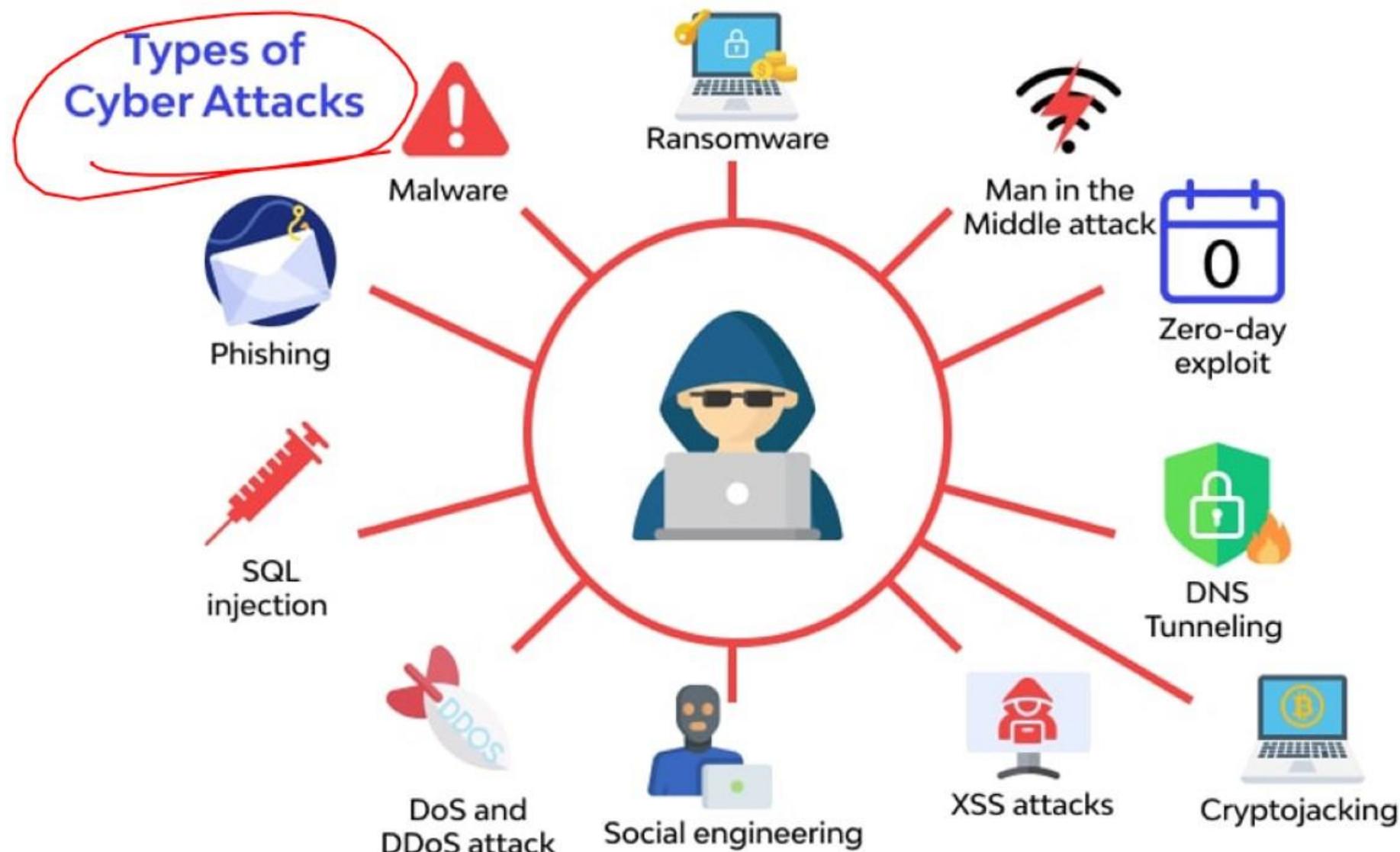
ALLOWS a recipient to know to whom a copy of an email has been sent

BCC

ONLY the person tagged see themselves

PREVENTS the recipient from getting to know to whom a copy of an email has been sent.





A cyber attack is a type of attack that targets computer systems, infrastructures, networks or personal computer devices using various methods at hands.

Malicious software harmful

Malware: Nefarious software designed for various malicious activities like network access, credential theft, or disruption. Example: Ransomware attacks.

Phishing

Phishing: Deceptive method where attackers trick targets into divulging sensitive information like passwords or credit card details. Example: Fake OTP requests.

Man-in-the-middle attack (MITM): Intercepting communication between parties to spy.

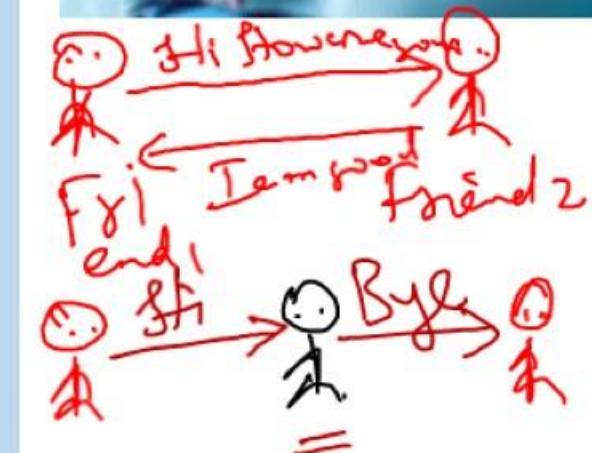
Reduced by end-to-end encryption. Example: Intercepting sensitive data during transmission.

Distributed Denial-of-Service (DDoS) attack: Overwhelming a target server with traffic to disrupt services. Example: Crashing a website by flooding it with requests.

Structured Query Language

SQL Injection: Manipulating SQL queries to access or modify databases. Example: Unauthorized alteration of database contents.

Zero-day exploit: Exploiting software vulnerabilities until a fix is available. Example: Exploiting a newly discovered software flaw before a patch is released.





Domain Name Servers

DNS Tunnelling: Using DNS protocol to establish covert communication channels. Example: Evading detection while exfiltrating data from a network.

Business Email Compromise (BEC): Targeting employees to initiate fraudulent transactions. Example: Convincing an employee to transfer funds to a hacker-controlled account.

Cryptojacking: Illicitly using someone's computer to mine cryptocurrencies. Example: Secretly using computer resources to mine Bitcoin.

Drive-by Attack: Infecting visitors' devices with malware by exploiting vulnerabilities in websites. Example: Infecting devices by simply visiting a compromised website.

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IMPORTANT CYBER ATTACKS TERMINOLOGIES

1. **Virus:** A malicious program that attaches itself to a legitimate file and spreads when the file is executed, often causing harm to the host system. *Rava, PSOOGI, Flour*.
2. **Worm:** A self-replicating malware that spreads across networks without needing user interaction. It can cause harm by consuming system resources or exploiting vulnerabilities.
3. **Trojan Horse:** Malware disguised as legitimate software. It tricks users into installing it, then performs harmful actions like stealing data, spying, or granting unauthorized access to the system.
4. **Logic Bomb:** A piece of code inserted into software that triggers a malicious action when certain conditions are met, such as a specific date or event.
5. **Pharming:** Redirecting website traffic to a fake site that mimics a legitimate one to gather sensitive information, such as login credentials or financial data.
6. **Spoofing:** Falsifying information to appear as someone or something else. This can include email spoofing, IP address spoofing, or caller ID spoofing.
7. **Spam:** Unsolicited and often irrelevant or inappropriate messages sent in bulk, typically via email, instant messaging, or social media, for advertising or phishing purposes.
8. **Smishing:** Phishing attacks conducted via SMS or text messages, where attackers trick users into revealing personal information or downloading malware onto their mobile devices.
9. **Vishing:** Phishing attacks conducted over voice calls, where attackers impersonate legitimate entities like banks or government agencies to deceive victims into revealing sensitive information.

**1. Phishing:**

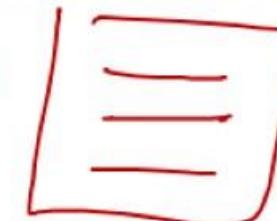
- Phishing is a form of cyber attack where attackers use deceptive emails, messages, or websites to trick individuals into providing sensitive information such as usernames, passwords, credit card numbers, or other personal data.
- Phishing attacks typically occur through email, where attackers impersonate legitimate entities like banks, social media platforms, or online services, and persuade recipients to click on malicious links or attachments or to enter their information on fake websites.
- Example: A fake email claiming to be from a bank, asking the recipient to log in to their account through a provided link, which leads to a phishing website designed to steal their login credentials.

2. Vishing:

→ Daaking dakash vishing

- Vishing, short for "voice phishing," is a type of social engineering attack where attackers use phone calls to deceive individuals into revealing sensitive information or performing certain actions.
- In vishing attacks, attackers typically impersonate trusted entities like banks, government agencies, or tech support, and use persuasive tactics to manipulate victims over the phone.
- Example: A phone call claiming to be from a bank, informing the recipient of suspicious activity on their account and asking them to provide their account details or to transfer funds to a "secure" account.

Sbi.co.in onlinesbi.sbi sbi.co.in





→ SMS

Smishing:

1. Smishing is a variation of phishing that takes place through SMS or text messages instead of email. Attackers send deceptive text messages to trick individuals into providing sensitive information or clicking on malicious links.
2. Smishing attacks often involve urgent or enticing messages, such as fake prize notifications, security alerts, or requests to verify account information.
3. Example: A text message claiming to be from a delivery service, asking the recipient to click on a link to track a package, which leads to a phishing website designed to steal their personal information.

Pharming: @UNIV

Redirected to another website

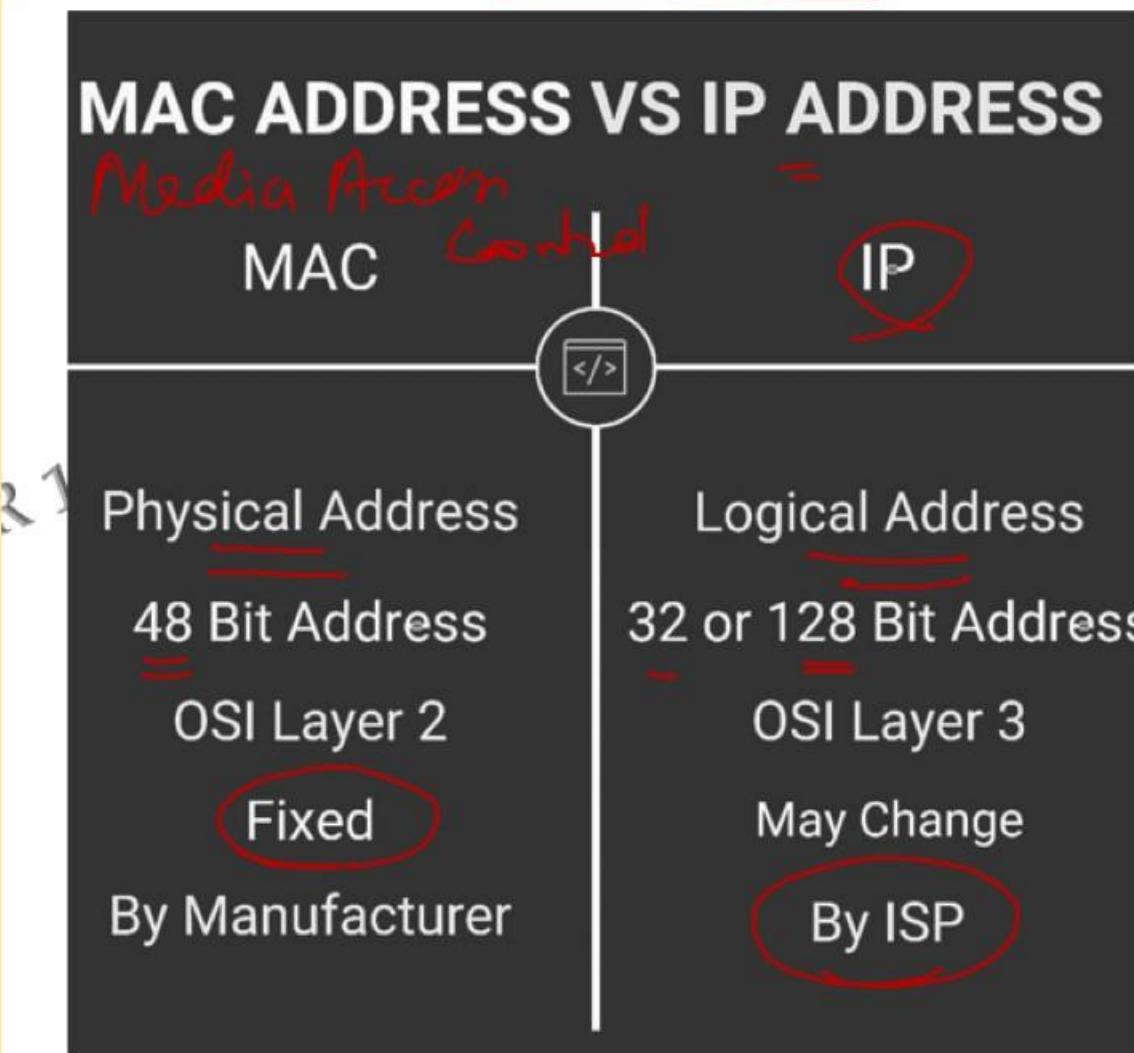
Protocol → Set of Rules & Regulations

ICT



Unify Study
United Information for You

- **IP (Internet Protocol)**: Routes data packets across networks.
- **TCP (Transmission Control Protocol)**: Ensures reliable data transmission.
- **HTTP (Hypertext Transfer Protocol)**: Transmits web pages.
- **HTTPS (Hypertext Transfer Protocol Secure)**: Secures web communication.
- **FTP (File Transfer Protocol)**: Transfers files between clients and servers.
- **SMTP (Simple Mail Transfer Protocol)**: Sends email messages.
- **POP3 (Post Office Protocol version 3)**: Retrieves email from servers.
- **IMAP (Internet Message Access Protocol)**: Retrieves and manages email on servers.
- **DNS (Domain Name System)**: Translates domain names to IP addresses.
- **SSH (Secure Shell)**: Enables secure remote login and command execution.

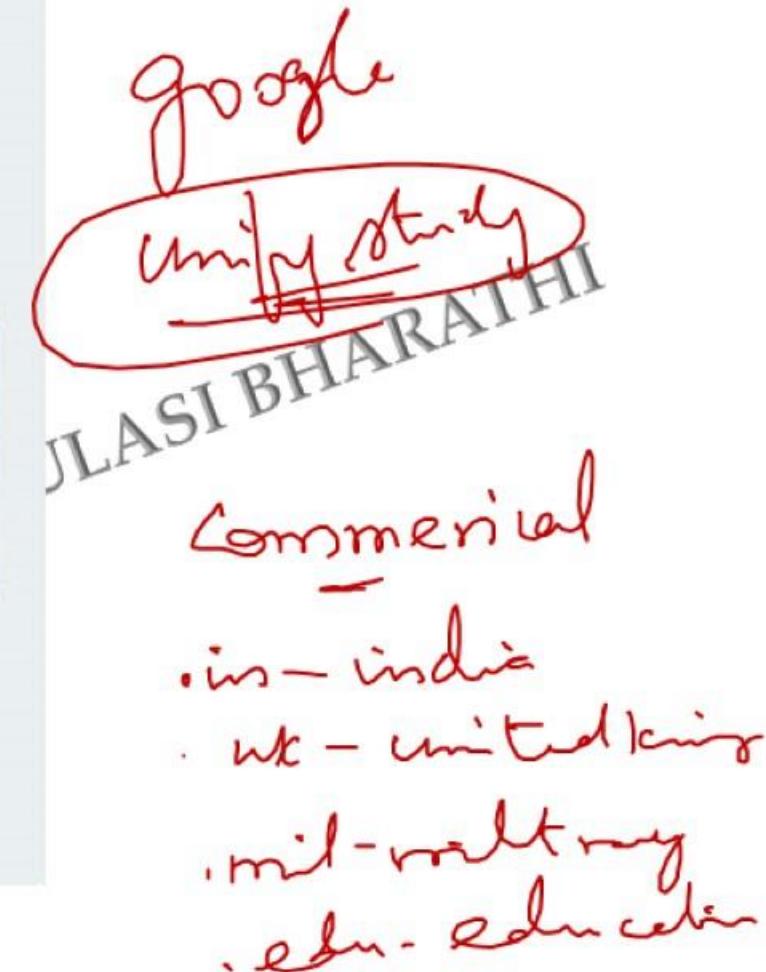
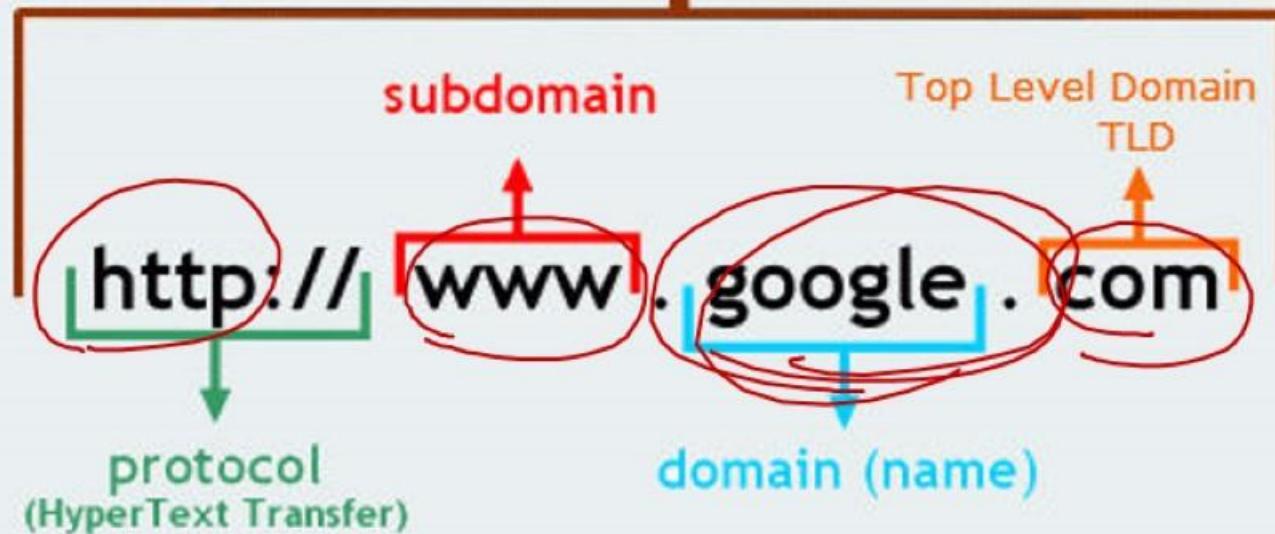


https:



URL

Uniform Resource Locator





A **search engine** is a specific type of **website** that enables users to find **data** on the **Internet**. Users enter the necessary keywords into the search field to get the information. After that, the search engine scans its index for relevant web pages and lists them on the screen. The Internet is a huge source of data and resources that may be used to access the **resources**, and there are various types of **software**, sometimes known as **search engines**. This search software includes **Google**, **Duck Duck Go**, **Bing**, **Baidu**, **Yahoo**, etc.

A **web browser** is an application software instance designed and developed to get and display data from HTML files or web **pages** stored on **online servers**. **Sir Tim Berners-Lee** developed the first web browser in **1990**, and **mosaic** developed the first graphical web browser in **1993**. After that, other web browsers were created. Netscape Communication's Navigator, Google Chrome, Microsoft Edge, Opera, Mozilla Firefox, and Apple Safari are some of them.





Match List I with List II

List I (Storage Device or Media)	List II (Description)
A. Blue-ray disc	I. Non-volatile memory that can only be read from and not written to
B. SSD	I. Optical storage media that allows very high storage capacity by using blue/violet laser technology.
C. ROM	I. Volatile memory that stores data, programs and the parts of the operating system that are currently in use.
D. RAM	I. Device that stores data by controlling the movement of electrons within a microchip; there are no moving parts.

Choose the correct answer from the options given below

- (a) A-I B-IV C-II D-III
- (b) A-III B-I C-IV D-II
- (c) A-IV B-II C-I D-III
- (d) A-II B-IV C-I D-III


Match List I with List II

List I (Storage Device or Media)	List II (Description)
A. Blue-ray disc	I. Non-volatile memory that can only be read from and not written to
B. SSD	II. Optical storage media that allows very high storage capacity by using blue/violet laser technology.
C. ROM	III. Volatile memory that stores data, programs and the parts of the operating system that are currently in use.
D. RAM	IV. Device that stores data by controlling the movement of electrons within a microchip; there are no moving parts.

Choose the correct answer from the options given below

- (a) A-I B-IV C-II D-III
- (b) A-III B-I C-IV D-II
- (c) A-IV B-II C-I D-III
- (d) A-II B-IV C-I D-III



Identify the correct order of the words A-D given below to complete the following sentences about College Registration Systems:

Biometric is a type of registration system that uses finger prints or retina scans to register students. A type of registration that uses a form that has been completed with a pencil and is then scanned by a machine after being completed is called OMR registration. A tag that uses microchips and radio signals worn by all students that registers them when they enter the classroom is called RFID registration. SC are made of plastic and contain a chip that can be swiped through a machine to register the student.

A. Smart Cards B. OMR C. Biometric

D. RFID

Choose the correct answer from the options given below

- (a) A, B, D, C
- (b) B, C, A, D
- (c) D, A, C, B
- (d) C, B, D, A

OCR



Given below are two statements: (1 KB = 1024 bytes)

$$\frac{1}{5} \stackrel{5}{\cancel{5}} \stackrel{1.0}{\cancel{1.0}}$$

Statement-I: 0.2 terabytes (TB) is equal to 204.8 gigabytes (GB)

Statement-II: 1 petabyte (PB) is equal to 2^{53} bits.

In the light of the above statements, choose the correct answer from the options given below

- (a) Both Statement I and Statement II are true
- (b) Both Statement I and Statement II are false
- (c) Statement I is true but Statement II is false
- (d) Statement I is false but Statement II is true

$$\begin{aligned}
 1KB &\rightarrow 1024 \text{ bytes} \rightarrow 2^{10} \\
 1MB &\rightarrow 1024KB \rightarrow 2^{20} \\
 1GB &\rightarrow 1024MB \rightarrow 2^{30} \\
 1TB &\rightarrow 1024GB \rightarrow 2^{40} \\
 1PB &\rightarrow 1024TB \rightarrow 2^{50}
 \end{aligned}$$

$$1TB = 1024GB$$

$$0.2TB = 1024 \times$$

$$\frac{0.2}{2^3}$$

$$\underline{204.8 \text{ GB}}$$



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Given below are two statements: (1 KB = 1024 bytes)

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In the light of the above statements, choose the correct answer from the options given below

- (a) Both Statement I and Statement II are true
- (b) Both Statement I and Statement II are false
- (c) Statement I is true but Statement II is false
- (d) Statement I is false but Statement II is true



Which of the following statements about email are TRUE?

- A. You can create folders to store and organise your emails.
- B. Using the Cc feature will hide all other recipients from each other.
- C. You can add attachments of any file size to an email.
- D. You can add signatures to your emails to give personal contact details.
- E. You can only send emails from a laptop computer.

Choose the correct answer from the options given below

- (a) A and B only
- (b) A and C only
- (c) A and D only
- (d) B, C and E only



Which of the following statements about email are TRUE?

- A. You can create folders to store and organise your emails.
- B. Using the ~~B~~Cc feature will hide all other recipients from each other.
- C. You can add attachments of any file size to an email.
- D. You can add signatures to your emails to give personal contact details.
- E. You can only send emails from a laptop computer.

Choose the correct answer from the options given below

- (a) A and B only
- (b) A and C only
- (c) A and D only**
- (d) B, C and E only



Which is the smallest of these data storage capacities?

(a) 2 KB

2048

KB

\rightarrow 2048 bytes

$1 \text{ KB} = 1024$

(b) 2049 Bytes

MB

$2 \text{ KB} = 2048$

(c) 0.5 MB

$\rightarrow 0.5 \text{ MB}$
 $= 512 \text{ KB}$

GB

1 MB 1024 KB

(d) 3 GB

TB

$0.5 \text{ MB} = 1024 \text{ KB}$

PB

512 KB

bits
bytes
8 bits = (bytes)

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EB

ZB

YB

XB



Which is the smallest of these data storage capacities?

- (a) 2 KB**
- (b) 2049 Bytes**
- (c) 0.5 MB**
- (d) 3 GB**

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A photograph occupies 10 MB of storage. A memory stick with 4GB capacity can store approximately ? such photographs.

(a) 300

(b) 400

(c) 500

(d) 450

Each photograph = 10 MB

Memory stick = 4 GB

$$= 4 \times 1024 \text{ MB}$$

Capacity of the memory stick

$$= 4096 \text{ MB} / 10 \text{ MB} = 400$$

A photograph occupies 10 MB of storage. A memory stick with 4GB capacity can store approximately _____ such photographs.

- (a) 300 (b) 400 (c) 500 (d) 450

Identify the correct order of the following list of stages A-E when an email is sent and received.

- A. Sender's ISP mail server decides how to route the message, and the message travels over the internet and arrives at recipient's ISP mail server.
- B. Message retrieved and sent to recipient's computer to be opened and read.
- C. The sender composes his message and activates the send command.
- D. Message held in recipient's electronic mail box and recipient logs on to read his messages.
- E. Message is sent to sender's ISP mail server and this server examines address associated with message.

Choose the correct answer from the options given below

- (a) C, E, A, B, D
- (b) A, C, B, D, E
- (c) D, B, C, E, A
- (d) C, E, A, D, B



Identify the correct order of the following list of stages A-E when an email is sent and received.

- (3) A. Sender's ISP mail server decides how to route the message, and the message travels over the internet and arrives at recipient's ISP mail server.
- B. Message retrieved and sent to recipient's computer to be opened and read.
- (1) C. The sender composes his message and activates the send command.
- (4) D. Message held in recipient's electronic mail box and recipient logs on to read his messages.
- (2) E. Message is sent to sender's ISP mail server and this server examines address associated with message.

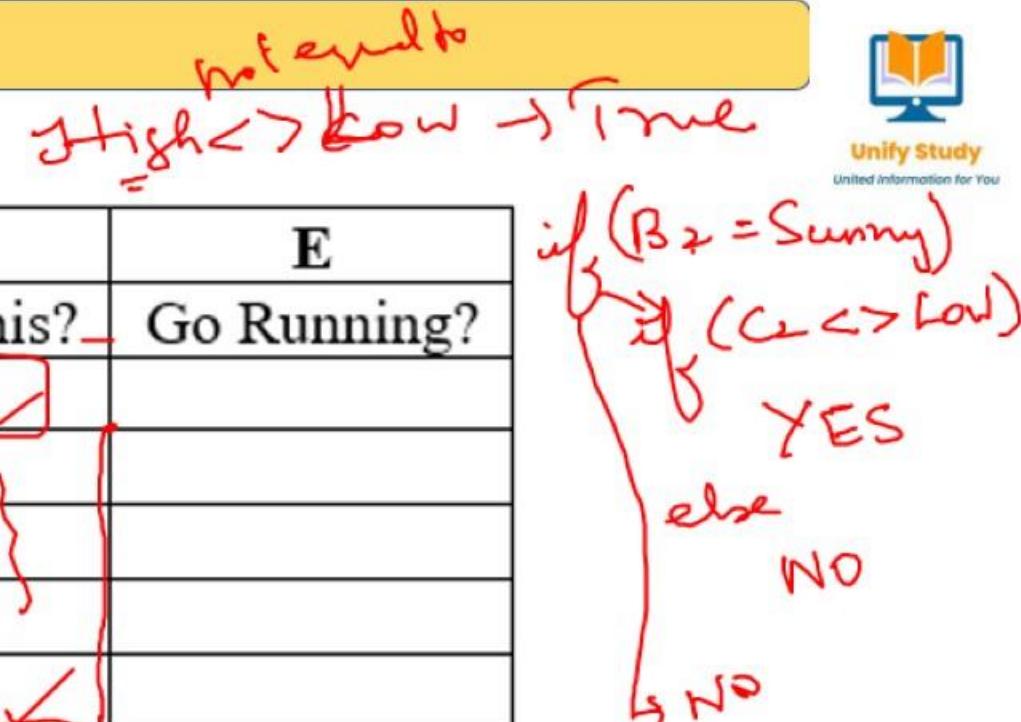
Choose the correct answer from the options given below

- ?
- (a) C, E, A, B, D (b) A, C, B, D, E (c) D, B, C, E, A (d) C, E, A, D, B



Consider the following in MS-EXCEL spreadsheet

	A	B	C	D	E
1.	Day -	Weather -	Temp. -	Play Tennis? -	Go Running?
2.	Monday	Sunny	High	Yes ✓	
3.	Tuesday	Windy	High	No }	
4.	Wednesday	Raining	Medium	No }	
5.	Thursday	Sunny	Low	No	
6.	Friday	Sunny	Medium	YES ✓	



Suppose the formula = (IF (B2 = "Sunny", IF ($C2 < \text{Low}$, "Yes", "No"), "No")) is entered into D2 and then the cell is copied and pasted to D3:D6. On what days does column D report "Yes"?

- (a) Monday and Friday only (b) Monday and Tuesday only
- (c) Thursday and Friday only (d) Monday, Thursday and Friday



Consider the following in MS-EXCEL spreadsheet

	A	B	C	D	E
1.	Day	Weather	Temp.	Play Tennis?	Go Running?
2.	Monday	Sunny	High	<u>L</u> <u>T</u>	<u>Y</u> <u>E</u> <u>S</u>
3.	Tuesday	Windy	High	<u>C</u> <u>D</u>	
4.	Wednesday	Raining	Medium		
5.	Thursday	Sunny	Low		
6.	Friday	Sunny	Medium		

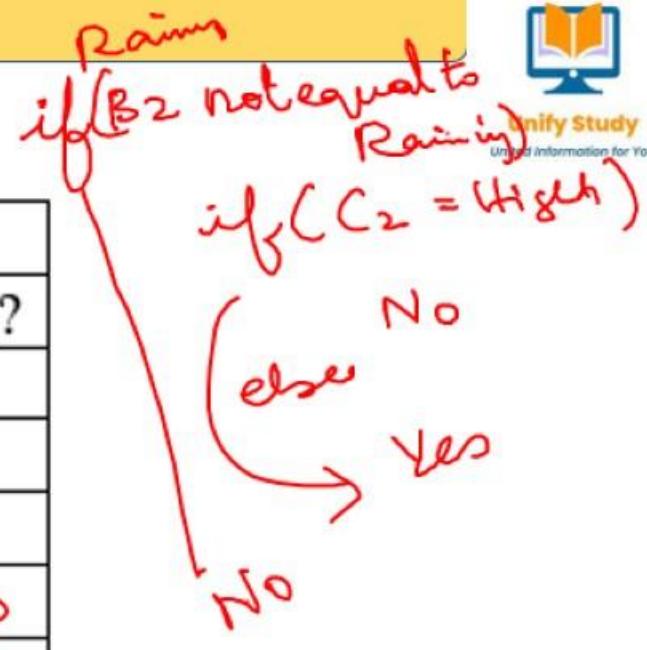
Suppose the formula = IF (B2 = "Sunny", IF (C2 <> "Low", "Yes", "No"), "No") is entered into D2 and then the cell is copied and pasted to D3:D6. On what days does column D report "Yes"?

- (a) Monday and Friday only
- (b) Monday and Tuesday only
- (c) Thursday and Friday only
- (d) Monday, Thursday and Friday



Consider the following MS-EXCEL spreadsheet:

	A	B	C	D	E
1.	Day	Weather	Temp	Play Tennis?	Go Running?
2.	Monday	Sunny	High		↑ No
3.	Tuesday	Windy	High		↑ No
4.	Wednesday	Raining	Medium		↑ No
5.	Thursday	Sunny	Low		↑ Yes
6.	Friday	Sunny	Medium		↑ Yes



Suppose the formula – IF (B2 <> “Raining”, IF (C2 = “High”, “No”, “Yes”), “No”) is entered into E2 and then the cell is copied and pasted to E3:E6, On what days does Column E report “Yes”?

Note: (The symbol <> represents “NOT EQUAL TO”).

- (a) Monday and Friday only
- (b) Monday and Tuesday
- (c) Thursday and Friday only
- (d) Monday, Thursday and Friday



Consider the following MS-EXCEL spreadsheet:

	A	B	C	D	E
1.	Day	Weather	Temp	Play Tennis?	Go Running?
2.	Monday	Sunny	High		
3.	Tuesday	Windy	High		
4.	Wednesday	Raining	Medium		
5.	Thursday	Sunny	Low		
6.	Friday	Sunny	Medium		

Suppose the formula – IF (B2 <> “Raining”, IF (C2 = “High”, “No”, “Yes”), “No”) is entered into E2 and then the cell is copied and pasted to E3:E6, On what days does Column E report “Yes”?

Note: (The symbol <> represents “NOT EQUAL TO”).

- | | |
|------------------------------|---------------------------------|
| (a) Monday and Friday only | (b) Monday and Tuesday |
| (c) Thursday and Friday only | (d) Monday, Thursday and Friday |



Identify the correct order of the following terms A-E to complete the paragraph given below that explains how data is sent securely over the Internet using the Transport Layer Security (TLS) protocol:

'The browser requests the web server to identify itself by providing its certificate. This is sent and a check is performed to see if it is authentic. If it is, the browser sends a signal back to the web server and data transmission begins.'

- A. authentic B. browser C. certificate D. signal E. web server

Choose the correct answer from the options given below

- (a) C, B, D, A, E (b) E, C, A, B, D (c) D, C, A, B, E (d) B, C, A, E,D



$$1 \text{ TB} = 2^{40} \text{ Bytes}$$

If one MegaByte is equal to 2^{20} Bytes of computer data storage,
then 2048 Terabytes is equal to _____ bits of data storage.

- (a) 2^{51} (b) 2^{44} (c) 2^{54} (d) 2^{57}

$$\begin{aligned} 1 \text{ KB} &= 2^{10} \\ 1 \text{ MB} &= 2^{20} \\ 1 \text{ GB} &= 2^{30} \\ 1 \text{ TB} &= 2^{40} \\ 2048 \text{ TB} &= 2 \times 1024 \text{ TB} \\ &= 2^{11} \text{ TB} \\ &= 2^{11} \times 1 \text{ TB} \\ &= 2^{11} \times 2^{40} \text{ Bytes} \\ &= 2^{51} \text{ Bytes} \\ &= 2^{51} \times 8 \text{ Bits} \\ &= 2^{54} \text{ Bits} \end{aligned}$$

$$2048 \text{ TB} \\ 2^{11}$$



If one MegaByte is equal to 2^{20} Bytes of computer data storage, then 2048 Terabytes is equal to _____ bits of data storage.

- (a) 2^{51}
- (b) 2^{44}
- (c) 2^{54}
- (d) 2^{57}



Identify the correct order of the following terms A-D to complete the sentences given below:

The action of sending emails to fraudulently obtain another person's bank details is called phishing.

The action of illegally installing malicious code which redirects a person to a fraudulent website with the purpose of obtaining that person's bank details is called pharming. Unsolicited bulk emails are called spam. The action of sending text messages to fraudulently obtain another person's bank details is called Smishing.

- A. Pharming B. Smishing C. Phishing D.
Spam

Choose the correct answer from the options given below:

- (a) C, A, D, B (b) A, C, B, D (c) B, A, D, C (d) D,
A, C, B

Given below are two statements:

Statement I: $(240)_{10} = (11110000)_2$

Statement II: ~~(101011111101010)₂~~ = ~~(57EA)₁₆~~

In light of the above statements, choose the correct answer from the options given below:

- (a) Both Statement I and Statement II are correct
(b) Both Statement I and Statement II are incorrect
(c) Statement I is correct but Statement II is incorrect
(d) Statement I is incorrect but Statement II is correct



Given below are two statements:

Statement I: $(43.25)_{10} = (101011.01)_2$

Statement II: $(1110.111)_2 = (14.625)_{10}$

In the light of the above statements, choose the correct answer from the options given below:

- Both Statement I and Statement II are true
- Both Statement I and Statement II are false
- Statement I is true but Statement II is false
- Statement I is false but Statement II is true





Given below are two statements:

Statement I: $(43.25)_{10} = (101011.01)_2$

Statement II: $(1110.111)_2 = (14.625)_{10}$

In the light of the above statements, choose the correct answer from the options given below:

- (a) Both Statement I and Statement II are true
- (b) Both Statement I and Statement II are false
- (c) **Statement I is true but Statement II is false**
- (d) Statement I is false but Statement II is true



Tina has bought a 4 gigabyte MP3 player. If each song lasts 3 minutes and is recorded at 128 kilo bits per second, then how many songs can be stored on Tina's MP3 player?

- (a) 1156 (b) 1256 (c) 1356

- (d) 1456

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Storage capacity of Tina's MP3 player:

- The storage capacity of Tina's MP3 player is 4 gigabytes.
- $1 \text{ gigabyte} = 8 * 1024 * 1024 \text{ Kilo bits}$ So, $4 \text{ gigabytes} = 4 * 8 * 1024 * 1024 = 33554432 \text{ kilobits}$

Size of each song:

- The bitrate of each song is 128 kilo bits per second.
- This means that each second of the song takes up 128 kilo bits of storage space.
- A minute is equal to 60 seconds, so a song that lasts 3 minutes takes up $128 * 180 = 23040$ bits of storage space.

Number of songs that can be stored on Tina's MP3 player:

- The number of songs that can be stored on Tina's MP3 player is the total storage capacity of the MP3 player divided by the size of each song.
- $33554432 / 23040 = 1456$ songs.



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