

1. Demonstrate different types of topologies and transmission media (Packet Tracer)

ChatGPT said:

Here are the short and simple answers 🤖

1. What is network topology?

Network topology is the way computers and devices are connected and arranged in a network.

2. Name different types of network topologies.

Bus, Star, Ring, Mesh, Tree, and Hybrid topologies.

3. Difference between Bus, Star, and Ring topology:

- **Bus:** All devices share one main cable.
- **Star:** All devices connect to a central hub/switch.
- **Ring:** Devices are connected in a circular path.

4. What are transmission media?

It's the physical path through which data travels in a network.

5. Difference between guided and unguided media:

- **Guided:** Uses cables (like copper wire, fiber).
- **Unguided:** Uses air for wireless signals (like Wi-Fi, Bluetooth).

6. Which transmission medium is used in wired LAN?

Twisted pair cable or fiber optic cable.

7. What tool is used to simulate networks?

Cisco Packet Tracer.

8. What are the uses of Packet Tracer?

It helps design, build, and test computer networks virtually without real hardware.

9. How can you check connectivity between nodes?

By using the **ping** command or simulation mode in Packet Tracer.

10. What happens when you change the topology type?

The network structure and data flow pattern change, affecting performance and connectivity.

You said:

2. Setup a wired LAN using Layer 2 switch

ChatGPT said:

Here are the short and simple answers 🤖

1. What is a LAN?

LAN (Local Area Network) connects computers within a small area like a home, school, or office.

2. What is the function of a Layer 2 switch?

It connects devices in the same LAN and forwards data using MAC addresses.

3. What type of cable is used for LAN connection?

Ethernet cable (Twisted Pair cable – Cat5e or Cat6).

4. What tool is used for testing cable connectivity?

LAN tester or cable tester.

5. What is IP address configuration?

It's the process of assigning a unique IP address to each device in a network.

6. How do you assign an IP address to a PC?

Go to network settings → select the adapter → enter the IP address, subnet mask, and gateway manually.

7. What is the purpose of the PING command?

To check if one device can communicate with another on a network.

8. What does a successful PING indicate?

It means the connection between the two devices is working properly.

9. What is Wireshark used for?

Wireshark is used to capture and analyze network packets.

10. What is shown in Wireshark when you capture PING packets?

It shows ICMP request and reply messages between devices.

You said:

Setup a WAN which contains wired as well as wireless LAN (Packet Tracer)

ChatGPT said:

Here are the short and simple answers 🤗

1. What is a WAN?

WAN (Wide Area Network) connects multiple LANs over large distances, like cities or countries.

2. How is WAN different from LAN?

LAN covers a small area; WAN covers a large area and connects multiple LANs.

3. What devices are used to connect two LANs?

Routers are used to connect different LANs.

4. What is the purpose of a router in WAN?

A router forwards data between different networks and decides the best path for data.

5. What is SSID?

SSID (Service Set Identifier) is the name of a wireless network.

6. How do you configure a wireless LAN in Packet Tracer?

Add a wireless router → connect wireless PCs → set SSID and password → assign IPs.

7. What protocol is used for wireless communication?

Wi-Fi uses the **IEEE 802.11** protocol.

8. How can you check connectivity between two LANs?

By using the **ping** command between devices in different LANs.

9. What is a packet in networking?

A packet is a small unit of data sent over a network.

10. What does the Packet Tracer simulation show during transfer?

It shows how packets travel from the sender to the receiver through the network devices.

You said:

4. Write a Program to Demonstrate Sub-netting and Find Subnet

ChatGPT said:

Here are the short and simple answers 

1. What is subnetting?

Subnetting means dividing a large network into smaller parts called subnets.

2. Why do we need subnetting?

It helps use IP addresses efficiently and improves network security and performance.

3. What is a subnet mask?

A subnet mask separates the network part and host part of an IP address.

4. How is subnet mask calculated?

It's calculated based on how many bits are borrowed from the host part for subnetting.

5. How many hosts are available per subnet for a given mask?

Formula: $2^n - 2$, where n = number of host bits.

6. What is CIDR notation?

CIDR (Classless Inter-Domain Routing) shows the number of network bits, e.g., **192.168.1.0/24**.

7. Example of subnet mask for Class C network:

255.255.255.0 (/24).

8. What is the range of private IP addresses?

- Class A: 10.0.0.0 – 10.255.255.255
- Class B: 172.16.0.0 – 172.31.255.255
- Class C: 192.168.0.0 – 192.168.255.255

9. Difference between network ID and host ID:

- **Network ID:** Identifies the network.
- **Host ID:** Identifies a device within that network.

10. What command or program do you use to find the subnet mask?

Use **ipconfig** (Windows) or **ifconfig** (Linux) command.

You said:

5. Write a program using TCP socket for wired network

ChatGPT said:

Here are the short and simple answers 🤗

1. What is a socket?

A socket is an endpoint that allows two devices to communicate over a network.

2. What is TCP?

TCP (Transmission Control Protocol) is a connection-oriented protocol that ensures reliable data transfer.

3. Difference between TCP and UDP:

- **TCP:** Reliable, connection-based.
- **UDP:** Faster, but no guarantee of delivery.

4. Which layer uses TCP?

The **Transport Layer** in the OSI model.

5. Functions of socket(), bind(), listen(), and accept():

- **socket():** Creates a socket.
- **bind():** Assigns IP and port.
- **listen():** Waits for client connections.
- **accept():** Accepts the connection request.

6. What is a client and a server in a socket program?

- **Client:** Sends request.
- **Server:** Receives and responds to the request.

7. How does TCP ensure reliable data transfer?

By using acknowledgments, sequence numbers, and retransmissions.

8. What is a port number?

A unique number used to identify specific network services on a device.

9. What is the output of the 'Say Hello' program?

It displays "Hello" message from server to client.

10. How is file transfer verified?

By checking if the received file matches the original file (using size or content check).

You said:

7. Study and Analyze HTTP, HTTPS and FTP protocol using Packet Tracer

ChatGPT said:

Here are the short and simple answers 

1. **What is HTTP?**

HTTP (HyperText Transfer Protocol) is used to transfer web pages on the internet.

2. **What is HTTPS?**

HTTPS is the secure version of HTTP that encrypts data for safe communication.

3. **What is FTP used for?**

FTP (File Transfer Protocol) is used to upload and download files between computers.

4. **What port numbers do HTTP, HTTPS, and FTP use?**

• **HTTP: Port 80**

• **HTTPS: Port 443**

• **FTP: Port 20 and 21**

5. **Main difference between HTTP and HTTPS:**

HTTPS uses encryption for security, while HTTP sends data in plain text.

6. **What protocol provides security to HTTPS?**

SSL/TLS provides encryption and security to HTTPS.

7. **What is SSL/TLS?**

Secure Socket Layer (SSL) and Transport Layer Security (TLS) are protocols that protect data by encryption.

8. **How do you simulate these protocols in Packet Tracer?**

Add a web and FTP server, configure HTTP/HTTPS/FTP services, and connect clients to access them.

9. **How can you test file transfer using FTP?**

By connecting a PC to the FTP server and using the **FTP command** to upload or download files.

10. **What information can be seen in the packet details?**

It shows source and destination IPs, ports, protocol type, and data transfer details.

You said:

11. Installing and Configuring DHCP server

1. **What is DHCP?**

DHCP (Dynamic Host Configuration Protocol) automatically provides IP addresses to devices in a network.

2. **What is the function of a DHCP server?**

It assigns IP addresses, subnet masks, gateways, and DNS details to clients automatically.

3. What are the advantages of DHCP?

It saves time, reduces manual errors, and manages IPs efficiently.

4. Difference between static and dynamic IP assignment:

- **Static:** IP is set manually and stays fixed.
- **Dynamic:** IP is given automatically by DHCP and can change.

5. What is a DHCP lease?

It's the time period for which an IP address is assigned to a device.

6. Main steps of DHCP process (DORA):

Discover → Offer → Request → Acknowledge.

7. How do you configure a DHCP server in Packet Tracer?

Add a server → turn on DHCP → set IP range, subnet mask, and gateway → connect clients.

8. How do clients obtain IP addresses automatically?

Clients send a DHCP request and receive an IP from the DHCP server.

9. What command is used to check assigned IP?

Use ipconfig (Windows) or ifconfig (Linux).

10. What happens when DHCP server fails?

Clients won't get IP addresses, and network communication may stop.

You said:

12. Write a Program for DNS lookup

1. What is DNS?

DNS (Domain Name System) translates website names into IP addresses.

2. What is the purpose of DNS?

It helps users access websites using names (like google.com) instead of numbers (IP addresses).

3. What is the difference between URL and IP address?

- **URL:** Human-readable web address.
- **IP address:** Numerical address of a server or device.

4. What is forward lookup?

It converts a domain name into an IP address.

5. What is reverse lookup?

It converts an IP address back into a domain name.

6. Which function is used in programming for DNS resolution?

gethostbyname() or socket.gethostbyname() in Python.

7. What command is used to check DNS in Windows/Linux?

Use nslookup or dig command.

8. What is the structure of a DNS query?

It contains a header, question, answer, authority, and additional sections.

9. What are the DNS record types?

- **A:** Maps domain to IP
- **MX:** Mail server
- **CNAME:** Alias name
- **NS:** Name server

10. What happens if DNS server is not reachable?

Websites won't open because domain names can't be converted to IP addresses.

You said: