

1. Activities Based on Learner Type

A. Slow Learners

Activity 1: IP Address Identification

From the given list of IP addresses, classify each address as:

- Class A, B, or C
- Private or Public
- Valid or Invalid based on the format

Use the table below to fill in your answers.

Example IP Address Table:

IP Address	Class	Private/Public	Valid/Invalid
192.168.1.10			
10.300.5.25			
172.16.0.1			
256.1.1.1			

Solution:

IP Address	Class	Private/Public	Valid/Invalid
192.168.1.10	C	Private	Valid
10.300.5.25	A	Private	Invalid
172.16.0.1	B	Private	Valid
256.1.1.1	-	-	Invalid

Activity 2: Routing Type Comparison Table

- **Instructions:** Complete the table below comparing Static and Dynamic Routing.

Parameter	Static Routing	Dynamic Routing
Setup Effort	Manual setup	Automatically configured
Adaptability	Low	High (adapts to changes)
Use Cases	Small networks, stable paths	Large/complex, changing routes

B. Moderate Learners

Activity 1: Subnetting Exercises

Instructions: Solve the following subnetting problems.

Given: IP - 192.168.10.0/24

Requirement: Create 4 subnets

Answer:

Subnet Mask: 255.255.255.192 (/26)

Subnets:

192.168.10.0 – 192.168.10.63

192.168.10.64 – 192.168.10.127

192.168.10.128 – 192.168.10.191

192.168.10.192 – 192.168.10.255

Activity 2: Cisco Packet Tracer – Basic Connectivity

Instructions:

1. Create a simple network with 2 PCs, 1 switch, and 1 router.
2. Assign IP addresses (e.g., 192.168.1.1 for PC1, 192.168.1.2 for PC2, 192.168.1.254 for Router).
3. Configure interfaces: Router (Gig0/0): 192.168.1.254/24
PC1: 192.168.1.1/24, Gateway: 192.168.1.254
PC2: 192.168.1.2/24, Gateway: 192.168.1.254
4. Connect all devices using appropriate cables (straight-through between the switch and devices, and crossover between the switch and router).
5. Test connectivity with the ping command from each PC to the router and the other PC.

Expected Outcome (Solution):

- All devices can ping each other successfully.
- Indicates that IP addressing and gateway settings are correctly configured.

C. Fast Learners

Activity 1: Packet Routing Simulation using Graph/Tree Structures

- **Instructions:**
 1. Represent a small network as a graph.
 2. Simulate routing decisions (shortest path, updates).

Example:

- Nodes: Routers (R1, R2, R3)
- Edges: Links with weights (costs)
- Use Dijkstra's algorithm to find the shortest paths from R1

Activity 2: Technical Summary / Presentation Prepare a brief (2–3 page) written report or 5-slide presentation covering:

1. Role of ICMP in Network Diagnostics

Tools: ping, traceroute

Function: Echo requests/replies, time exceeded

2. Use of ARP in LAN Communication

Resolves IP to MAC

Works within the broadcast domain

3. Difference between RIP and OSPF

RIP: Distance vector, uses hop count, slower convergence

OSPF: Link-state, builds complete topology, faster convergence, more scalable