Connect two PCs with a crossover cable and verify connectivity using the ping command.
Steps:

1. Open Packet Tracer.
2. Drag and drop **two PCs** onto the workspace.
3. Connect them with a **crossover cable**.
4. Assign IP addresses:
5. PC1: 192.168.1.1 / 255.255.255.0
6. PC2: 192.168.1.2 / 255.255.255.0
7. Use the **Command Prompt** on PC1 and run:
8. ping 192.168.1.2
9. You should get successful replies.

Connect multiple PCs to a switch and ensure they can communicate.

Steps:

1. Place **1 switch** and **3 PCs** on the workspace.
2. Connect each PC to the switch using **copper straight-through cables**.
3. Assign IPs:
   - PC1: 192.168.10.1
   - PC2: 192.168.10.2
   - PC3: 192.168.10.3
4. Ping each PC from the others.

Use a router to connect two different networks and allow communication between them.

Steps:

1. Place **1 router** and **2 PCs**.
2. Connect:
   - PC1 to Router's FastEthernet0/0
   - PC2 to Router's FastEthernet0/1
3. Assign IPs:
   - Router fa0/0: 192.168.1.1
   - Router fa0/1: 192.168.2.1
   - PC1: 192.168.1.2 (Gateway: 192.168.1.1)
   - PC2: 192.168.2.2 (Gateway: 192.168.2.1)
4. Use the CLI to enable router interfaces:

```
enable
configure terminal
interface fa0/0
ip address 192.168.1.1 255.255.255.0
no shutdown
exit
```

interface fa0/1
ip address 192.168.2.1 255.255.255.0
no shutdown

5. Test connectivity using ping.

Use a DHCP server to automatically assign IP addresses to clients.

Steps:

1. Place **1 DHCP server**, **1 switch**, and **2 PCs**.
2. Connect all devices to the switch.
3. Configure the DHCP server with:
    - IP: `192.168.100.1`
    - Subnet: `255.255.255.0`
    - Pool Range: `192.168.100.10 - 192.168.100.50`
    - Default Gateway: `192.168.100.1`
4. Set the PCs to get IP via **DHCP (automatic)**.
5. Verify the PCs receive IPs and can `ping` each other.

Access a web page hosted on a local web server.

Steps:

1. Place **1 web server**, **1 switch**, and **1 PC**.
2. Connect them via the switch.
3. Assign:
    - Web Server: `192.168.0.10`
    - PC: `192.168.0.2` (Gateway not needed in this LAN)
4. On the web server, configure the HTTP service (default is ON).
5. On the PC, open the **Web Browser** and enter:
6. `http://192.168.0.10`
7. You should see a test page.

Connect two LANs (representing two branch offices) using a **WAN link (serial connection)** between routers, and enable full communication between PCs in each LAN.

Devices Required:

- 2 Routers
- 2 Switches
- 4 PCs (2 at each site)
- Serial cable
- Ethernet cables

Device	Interface	IP Address	Subnet Mask
PC1	NIC	192.168.1.2	255.255.255.0
PC2	NIC	192.168.1.3	255.255.255.0
Router1	G0/0	192.168.1.1	255.255.255.0
Router1	Serial0/0/0	10.0.0.1	255.0.0.0
Router2	Serial0/0/0	10.0.0.2	255.0.0.0
Router2	G0/0	192.168.2.1	255.255.255.0
PC3	NIC	192.168.2.2	255.255.255.0
PC4	NIC	192.168.2.3	255.255.255.0

1. Setup the Devices

- Place **2 routers**, **2 switches**, and **4 PCs** in Packet Tracer.
- Connect:
    - PC1 and PC2 to Switch1
    - PC3 and PC4 to Switch2
    - Switch1 to Router1's GigabitEthernet0/0
    - Switch2 to Router2's GigabitEthernet0/0
    - Connect **Router1 Serial0/0/0 to Router2 Serial0/0/0** with a **Serial DCE cable**

2. Assign IP Addresses

- Configure IPs on PCs via the desktop > IP Configuration.
- Configure router interfaces using the CLI:

Router1 CLI:

```
enable
configure terminal
interface gig0/0
ip address 192.168.1.1 255.255.255.0
no shutdown
exit
interface serial0/0/0
ip address 10.0.0.1 255.0.0.0
clock rate 64000
no shutdown
exit
```

Router2 CLI:

```
enable
configure terminal
```

interface gig0/0
ip address 192.168.2.1 255.255.255.0
no shutdown
exit
interface serial0/0/0
ip address 10.0.0.2 255.0.0.0
no shutdown
exit

3. Configure Static Routing (So the routers know about each other's LANs)

On Router1:

```
ip route 192.168.2.0 255.255.255.0 10.0.0.2
```

On Router2:

```
ip route 192.168.1.0 255.255.255.0 10.0.0.1
```

4. Set Default Gateway on PCs

PC1 and PC2:

- Default Gateway: `192.168.1.1`

PC3 and PC4:

- Default Gateway: `192.168.2.1`

5. Test Connectivity

- Open PC1 or PC2 and run:
- ```
  ping 192.168.2.2
  ping 192.168.2.3
  ```
  ```