Assignment-1

Name : Varad Anil Kengale

Prn No: 202301040089

Roll No: 81

Setup a wired LAN using Layer 2 Switch and then IP switch of minimum four computers. It includes preparation of cable, testing of cable using line tester, configuration machine using IP addresses, testing using PING utility and demonstrate the PING packets captured traces using Wireshark Packet Analyzer Tool.

Wired LAN Setup Using Layer 2 Switch & IP Switch (Minimum 4 Computers)

Requirements

- 4 PCs/Laptops
- 1 Layer-2 Switch
- Cat5e/Cat6 UTP Cable
- RJ-45 Connectors
- LAN Tester
- Wireshark Packet Analyzer
- Crimping Tool

Cable Preparation (Straight-Through Cable – T568B Standard)

Pin order (T568B):

1. Orange-White
2. Orange
3. Green-White

4. Blue
5. Blue-White
6. Green
7. Brown-White
8. Brown

Steps

1. Cut the UTP cable to required length.
2. Strip outer jacket (1 inch).
3. Arrange wires in **T568B** sequence.
4. Insert wires into RJ-45 connector.
5. Crimp using crimping tool.
6. Prepare both ends in the same sequence (straight cable).

Test Cable Using LAN Tester

1. Connect both ends of the cable to the tester.
2. Power ON the tester.
3. LEDs 1–8 should blink **in the same order** on both sides.
4. If mismatch occurs → re-crimp.

Physical LAN Setup

- Connect **each PC to the Layer-2 switch** using the prepared LAN cables.
- Ensure link lights (LEDs) on switch ports are glowing.

IP Address Configuration on Each Machine

Use the same network but different IPs.

Example:

Device	IP Address	Subnet Mask	Gateway
PC1	192.168.1.10	255.255.255.0	192.168.1.1
PC2	192.168.1.11	255.255.255.0	192.168.1.1
PC3	192.168.1.12	255.255.255.0	192.168.1.1
PC4	192.168.1.13	255.255.255.0	192.168.1.1

Steps (Windows):

1. Open **Control Panel → Network & Sharing Center**
2. Click **Ethernet → Properties**
3. Select **IPv4 → Properties**
4. Enter IP, Subnet Mask, Gateway
5. Click **OK**

Test Connectivity Using PING

Open CMD:

Ping PC2 from PC1:

ping 192.168.1.11

Expected output:

Reply from 192.168.1.11: bytes=32 time<1ms TTL=128

If replies are successful → LAN is working.

Capture PING Packets Using Wireshark

Steps:

1. Open **Wireshark**
2. Select **Ethernet Interface**
3. Click **Start Capture**
4. Now ping from PC1 → PC2
5. Wireshark shows packets like:
    - **ICMP Echo Request**
    - **ICMP Echo Reply**
6. Stop capture
7. Save capture file (.pcap)

You will see:

- **Protocol:** ICMP
- **Info:** Echo (ping) request / reply
- **Source:** Sender IP
- **Destination:** Receiver IP

Conclusion

A wired LAN with 4 computers is successfully created using a Layer-2 switch.
Cable is prepared and tested, IP addresses assigned, connectivity confirmed using PING, and ICMP packets captured using Wireshark.