

AIM:

Setup and configure a LAN using switch and Ethernet cables in your lab.

What is a LAN?

A Local Area Network is a network that connects devices within a small area, like a home, office or school. It allows devices to share resources such as files, printers and internet access. A network switch usually connects these devices & manages data flow for fast and secure communication.

How to Set up a LAN.

- Plan Network Topology: Decide how devices will be connected based on location and requirements.
- Gather equipment:
  - ⇒ 4 computers
  - ⇒ 1 switch
  - ⇒ 4 Ethernet cables
- Connect devices: plug each computer into the switch using Ethernet cables.
- Assign IP Address: on PC each, manually set IP address and Subnet [255.0.0.0]
- Configure the Switch:
  - ⇒ Connect a PC to the switch
  - ⇒ Access the switch's web interface by entering its IP
  - ⇒ log in and set basic settings.

- (14) 27
- Test connectivity: use the Ping command from PC to check communication with switch and other PCs.
  - Share Resources: choose a folder on one PC, enable sharing, and allow access to others on the LAN.
  - Access shared folders: other PCs on the LAN can now access shared folders.

#### STUDENT OBSERVATION

Draw a heat diagram of the LAN in the configuration observation book, that you have implemented in lab. write the IP configuration of each and every device. write the outcome and challenges faced while configuring the LAN.

#### IP configuration of devices.

| Device | IP Address | Subnet Mask |
|--------|------------|-------------|
| PC1    | 10.1.1.1   | 255.0.0.0   |
| PC2    | 10.1.1.2   | 255.0.0.0   |
| PC3    | 10.1.1.3   | 255.0.0.0   |
| PC4    | 10.1.1.4   | 255.0.0.0   |
| Switch | 10.1.1.5   | 255.0.0.0   |

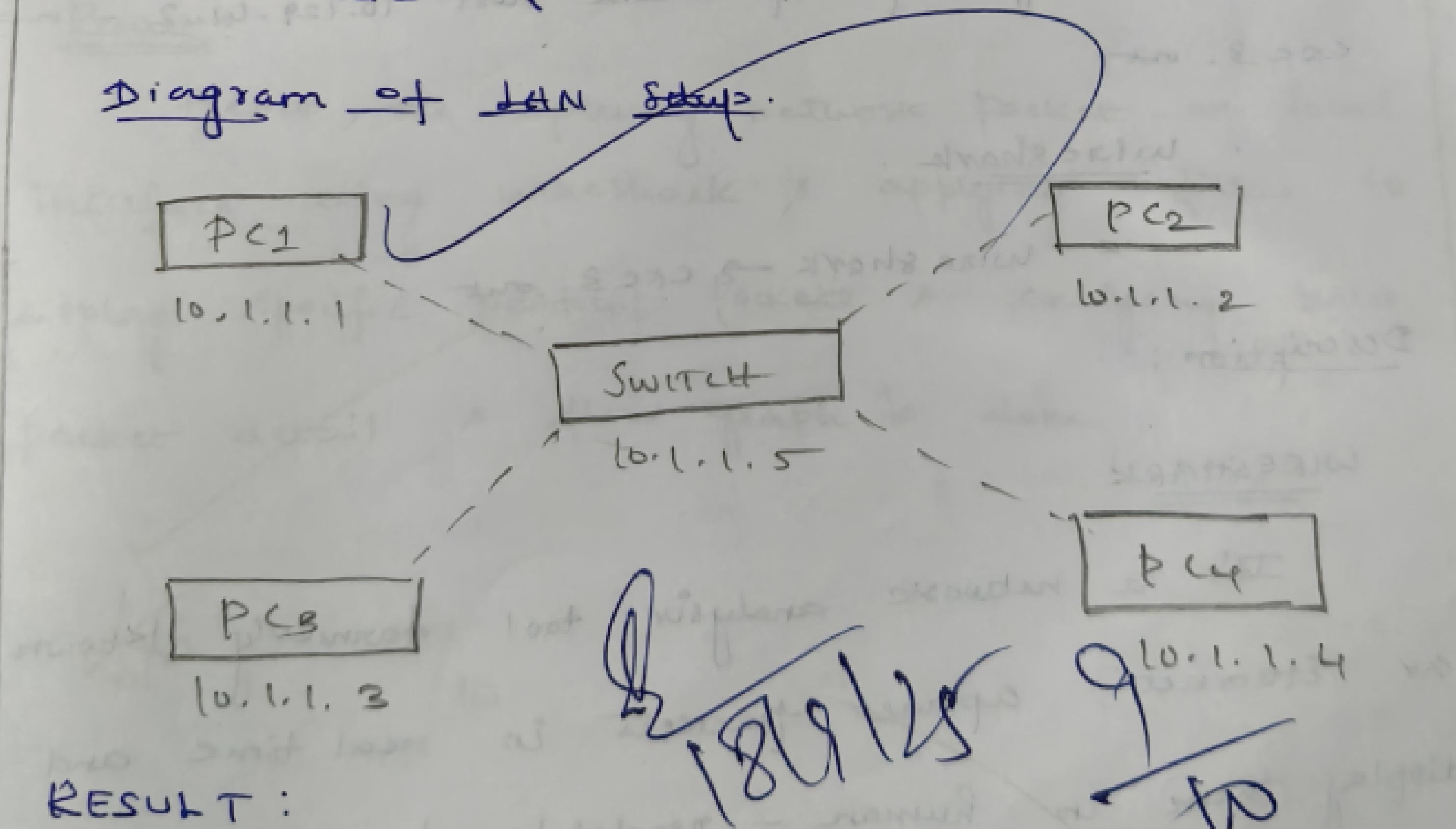
#### Outcome

- All PCs successfully communicated with each other and the switch.
- Ping tests showed low latency and no packet loss.
- File sharing between PCs was successful.
- Network resources like printers were accessible by all devices.

#### Challenges faced

- Initial IP conflicts due to duplicate IP addresses on one PC.
- Difficulty accessing switch's web interface due to incorrect IP or subnet settings.
- Firewall settings on PCs sometimes blocked file sharing.
- Ensuring all Ethernet cables were properly connected and functional.

#### Diagram of LAN Setup



RESULT :

Thus we setup and configured the local area network using switches and Ethernet cables and observed successfully in the lab.