Date: 9/3/2025

Lab Practical #8:

Study & Survey of Institute organization network infrastructure.

Practical Assignment #8:

1.Identify type of network in your institute. Draw a design of network in your institute (Any Lab/Floor/Building).

Type of Network in Institute:

The institute's internal network is a **Local Area Network (LAN)**, which connects different labs, classrooms, and administrative offices within the campus.

Topology Used: Star Topology

- In this topology, all devices (computers, printers, etc.) are connected to a central networking device such as a **switch**.
- The switch acts as the hub that manages and forwards data to the correct device.

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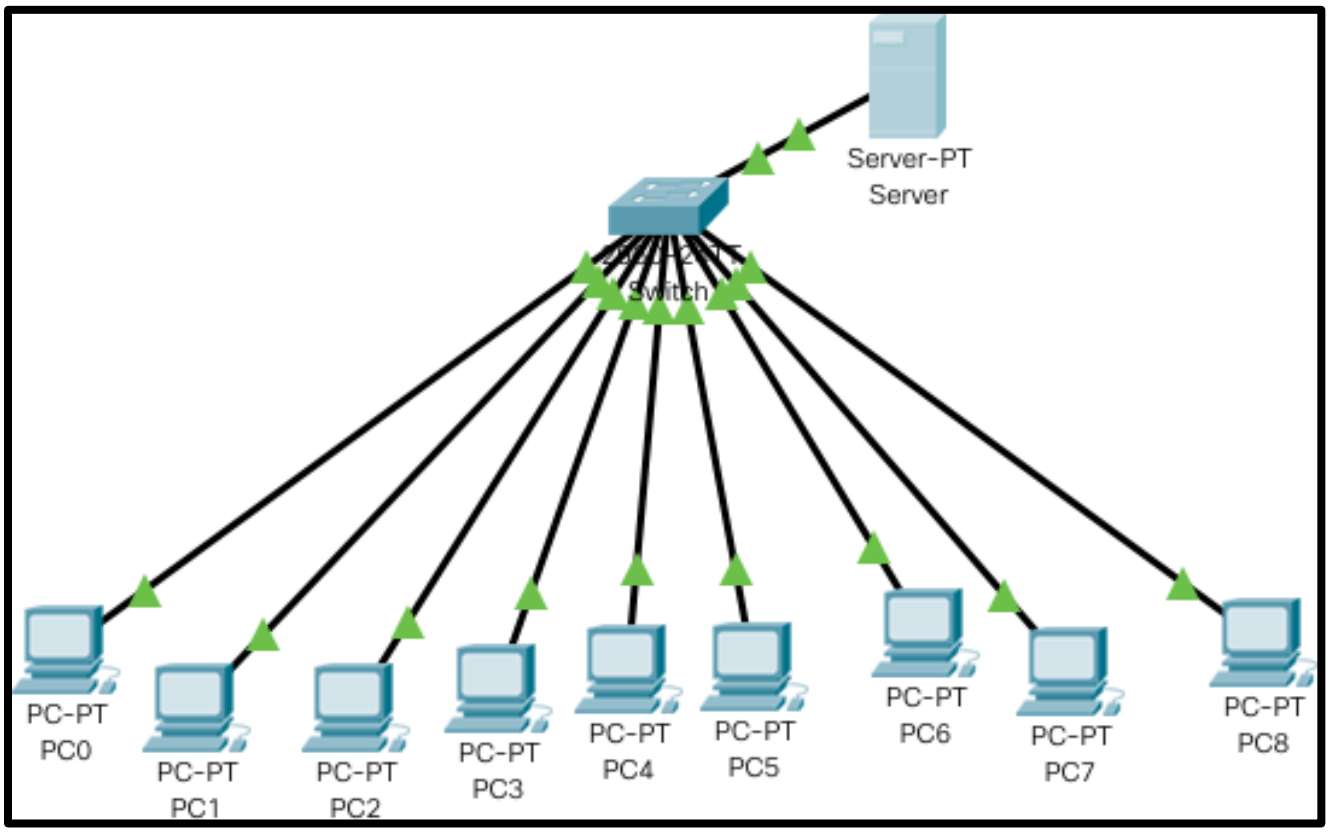
Topology: Star Topology



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2.List how many network devices and types of cable used and give its details.

Network Devices:

a. **Router**
- Connects the institute's LAN to the Internet Service Provider (ISP).
- Responsible for forwarding packets between different networks.

b. **Switch**
- A central device to which multiple computers in the lab are connected.
- Provides efficient communication within the local network.

c. **Firewall**
- Ensures secure communication by filtering unwanted traffic and preventing unauthorized access.

d. **Wireless Access Point (AP)**
- Extends network connectivity wirelessly so laptops and mobile devices can join the LAN.

e. **Network Interface Card (NIC)**
- Every computer system has a NIC installed (either integrated or separate) that allows it to connect to the network.

f. **Modem**
- Converts digital signals from the router into signals that can travel over the ISP's medium (fiber/DSL).

g. **Load Balancer**
- Distributes internet and network traffic efficiently across multiple servers, improving performance and reducing downtime.

Types of Cables:

a. **Ethernet Cable (Twisted Pair - Cat5e, Cat6, Cat6a)**
- Used for wired connections between PCs, switches, and routers.
- Supports high data transfer speeds (up to 1–10 Gbps depending on category).

b. **Fiber Optic Cable**
- Used for backbone connections across different buildings/floors.
- Provides very high-speed data transfer with minimal loss.

c. **Coaxial Cable**
- Less commonly used now, but may exist in older parts of the network.
- Provides a shielded medium for carrying electrical signals.

d. **Console Cable (RJ45 to Serial/USB)**
- Used by administrators for configuring routers and switches directly through a computer terminal.