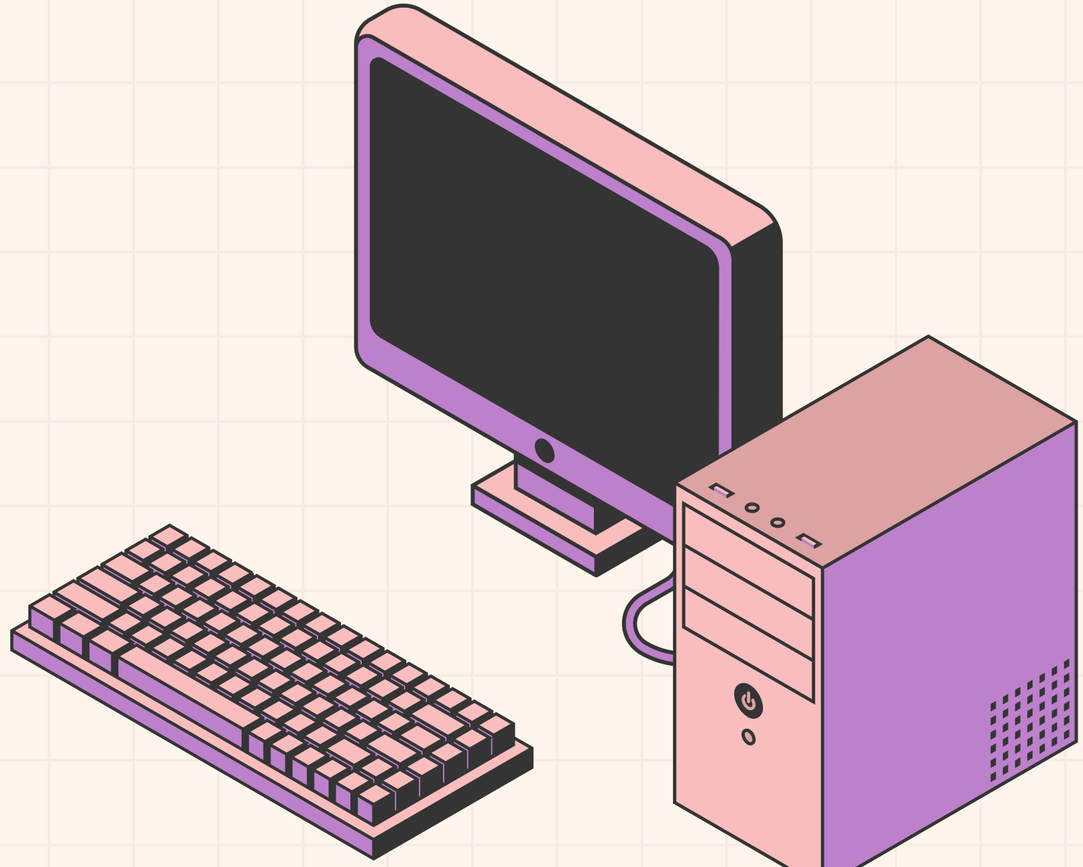
OFFICE NETWORK

- Title: Office Network Design Using Cisco Packet Tracer
- Subtitle: Efficient Network for Multi-Floor Connectivity



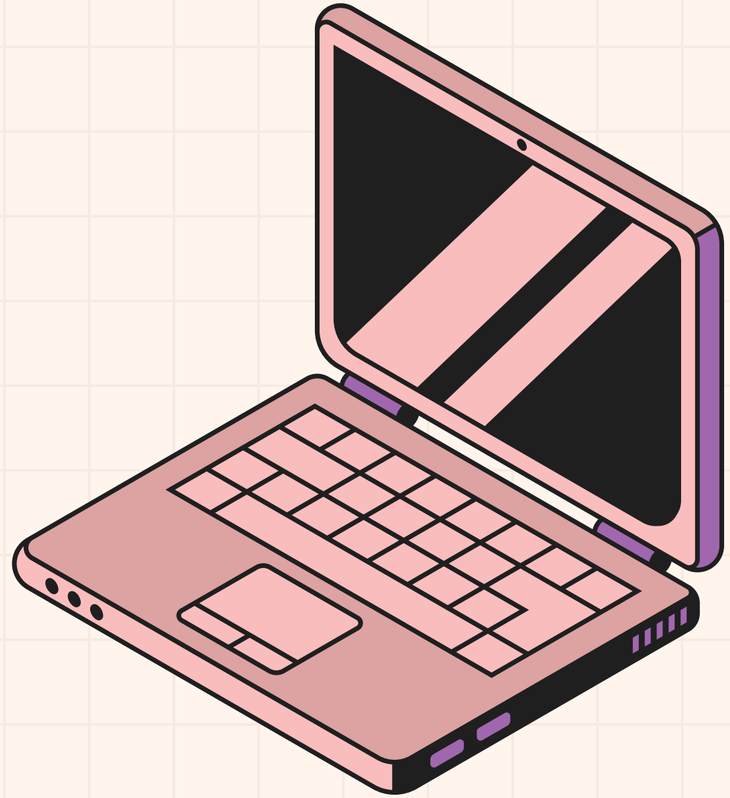
INTRODUCTION

What is this project about?

- A network design for a two-floor office setup using Cisco Packet Tracer.
- Focused on connecting HR, Administration, Accounts, and Customer Service departments.

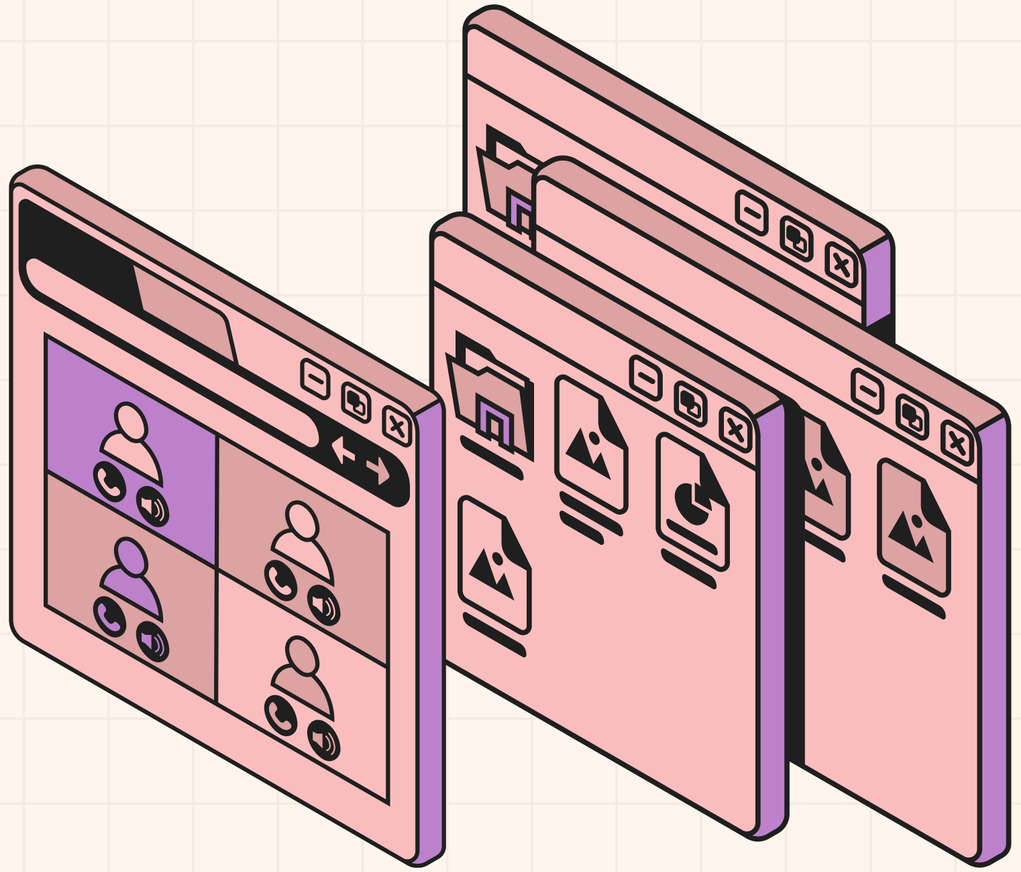
Why is this important?

- To ensure seamless communication between departments.
- To enable resource sharing and improve operational efficiency.



COMPONENTS USED

- Router: Cisco 2901 for inter-subnet communication.
- Switches: Cisco 2960 for connecting devices
  within each department.
- End Devices: PCs and printers for office tasks.
- Cabling: Ethernet cables for reliable LAN connectivity.



FLOOR 1 DESIGN

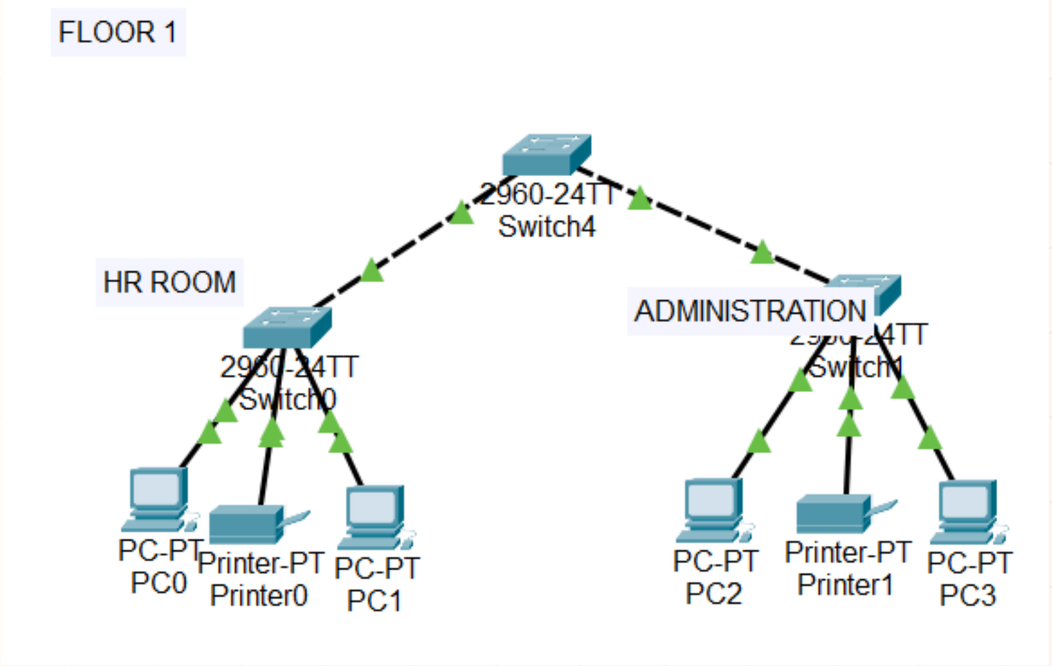
- HR Room:

  2 PCs and 1 Printer connected to a 2960 switch.

- Administration:

  2 PCs and 1 Printer connected to another 2960 switch.

Both departments use the 192.168.1.0/24 subnet.



FLOOR 2 DESIGN

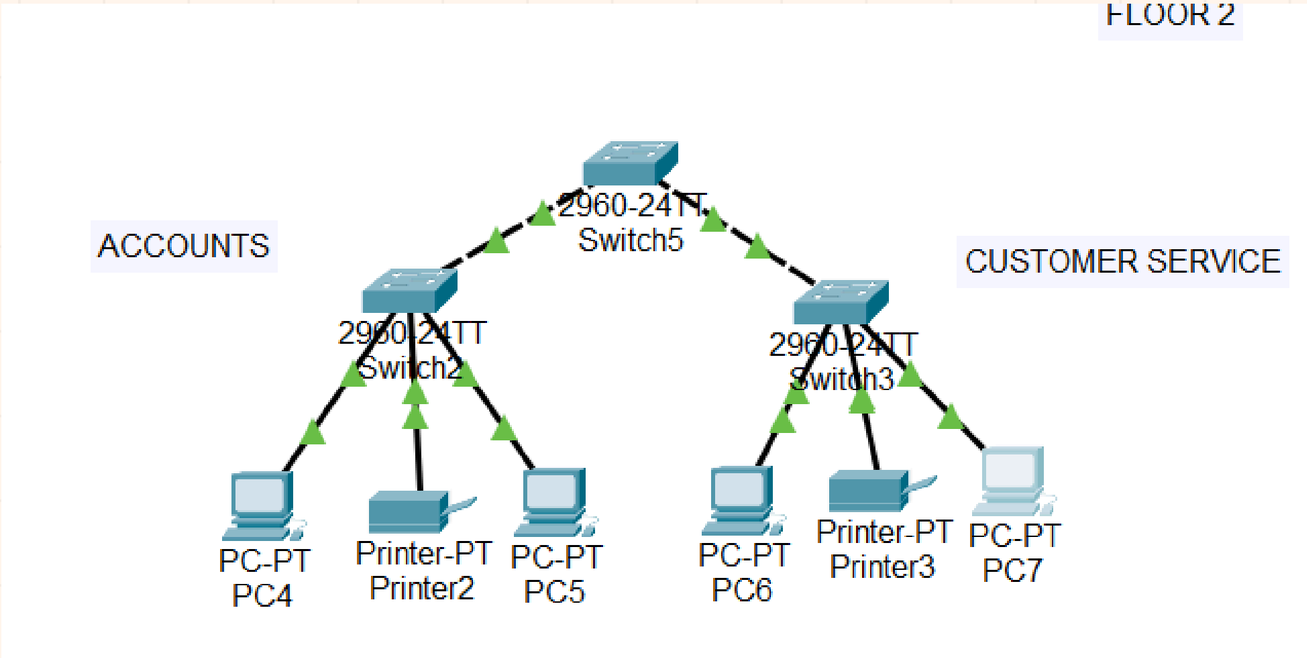
- Accounts:

  2 PCs and 1 Printer connected to a 2960 switch.

- Customer Service:

  2 PCs and 1 Printer connected to another 2960 switch.

Both departments use the 192.168.2.0/24 subnet.



ROUTER CONNECTION AND SUBNET COMMUNICATION

Router Placement:

- The Cisco 2901 Router is centrally located to connect both Floor 1 and Floor 2.
- Acts as the gateway for communication between the two subnets.

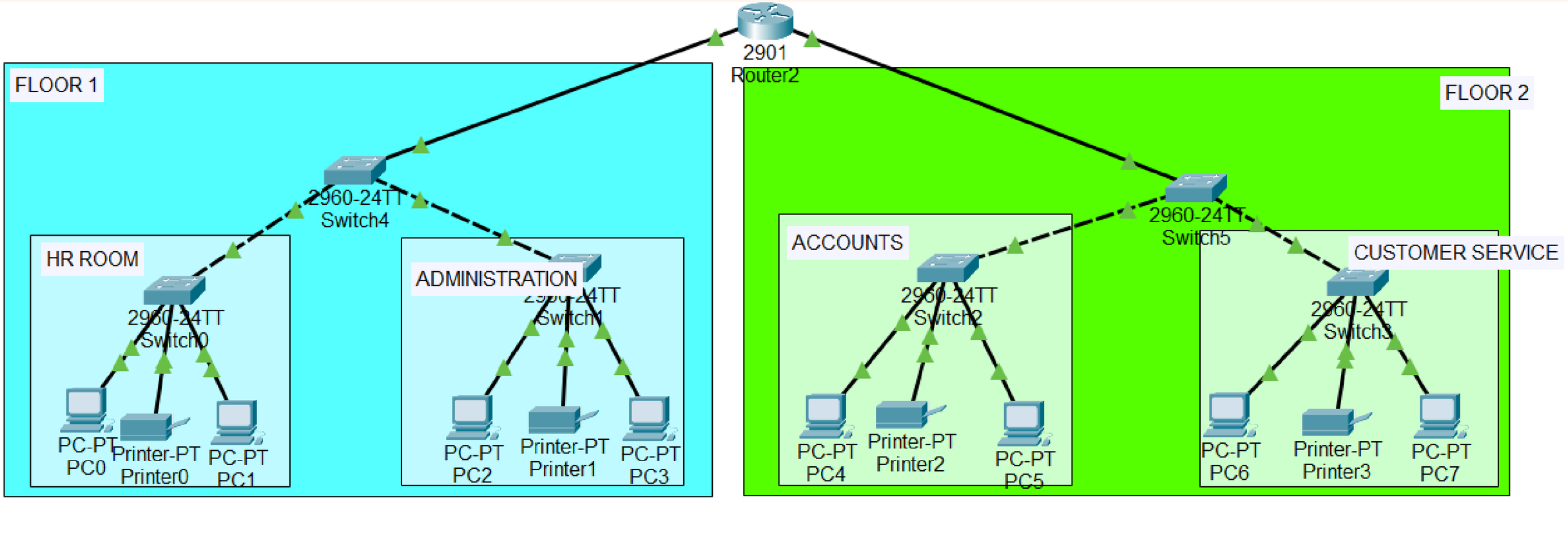
Router Interfaces:

- Interface 1: Connected to Floor 1 (Subnet 192.168.1.0/24).
- Interface 2: Connected to Floor 2 (Subnet 192.168.2.0/24).

Communication Process:

- Devices from one subnet send data to the router.
- The router forwards data to the target device in the other subnet.

overview:


2901
Router2
FLOOR 1
2960-24TT
Switch4
HR ROOM
2960-24TT
Switch0
PC-PT
PC0
Printer-PT
Printer0
PC-PT
PC1
ADMINISTRATION
Switch1
PC-PT
PC2
Printer-PT
Printer1
PC-PT
PC3
FLOOR 2
2960-24TT
Switch5
ACCOUNTS
2960-24TT
Switch2
PC-PT
PC4
Printer-PT
Printer2
PC-PT
PC5
CUSTOMER SERVICE
2960-24TT
Switch3
PC-PT
PC6
Printer-PT
Printer3
PC-PT
PC7

EXAMPLE OF SIMULATION:

Scenario:

- A PC in the HR Room (e.g., PC0 with IP 192.168.1.2) communicates with a PC in the Accounts department (e.g., PC4 with IP 192.168.2.2).

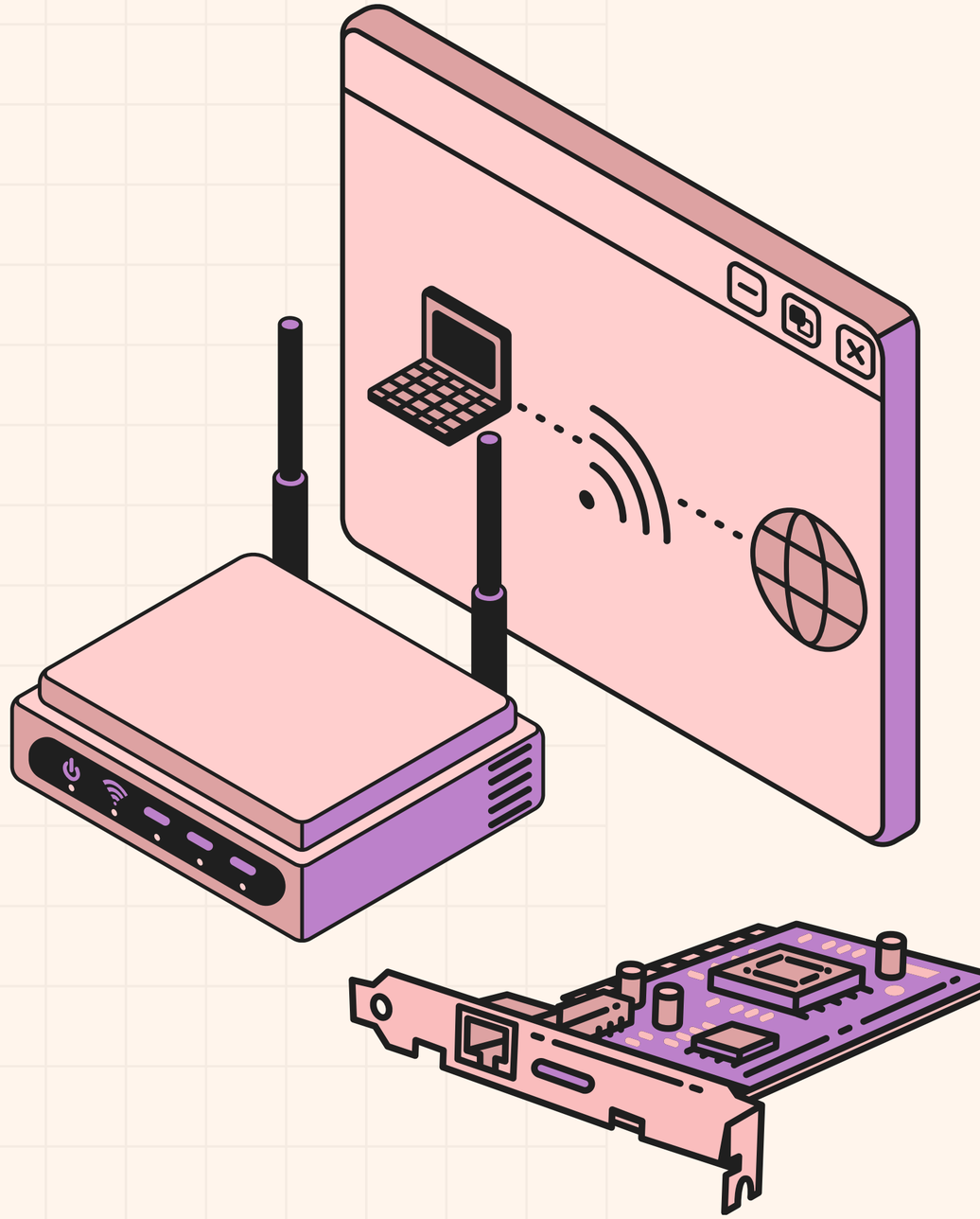
Steps Taken in Cisco Packet Tracer:

1. Ping Test:
   - Sent ICMP packets from PC0 to PC4.
   - Verified if packets successfully traveled from Subnet 192.168.1.0 to Subnet 192.168.2.0 via the router.
   - Result: Received a reply, confirming communication between the subnets.
2. Simulation Mode:
   - Observed the data packet moving from PC0 (source) to PC4 (destination).
   - Checked the path: HR Switch → Router → Accounts Switch → PC4.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC4	ICMP		0.000	N	0	(edit)	(delete)

LAYERS USED IN THIS PROCESS:

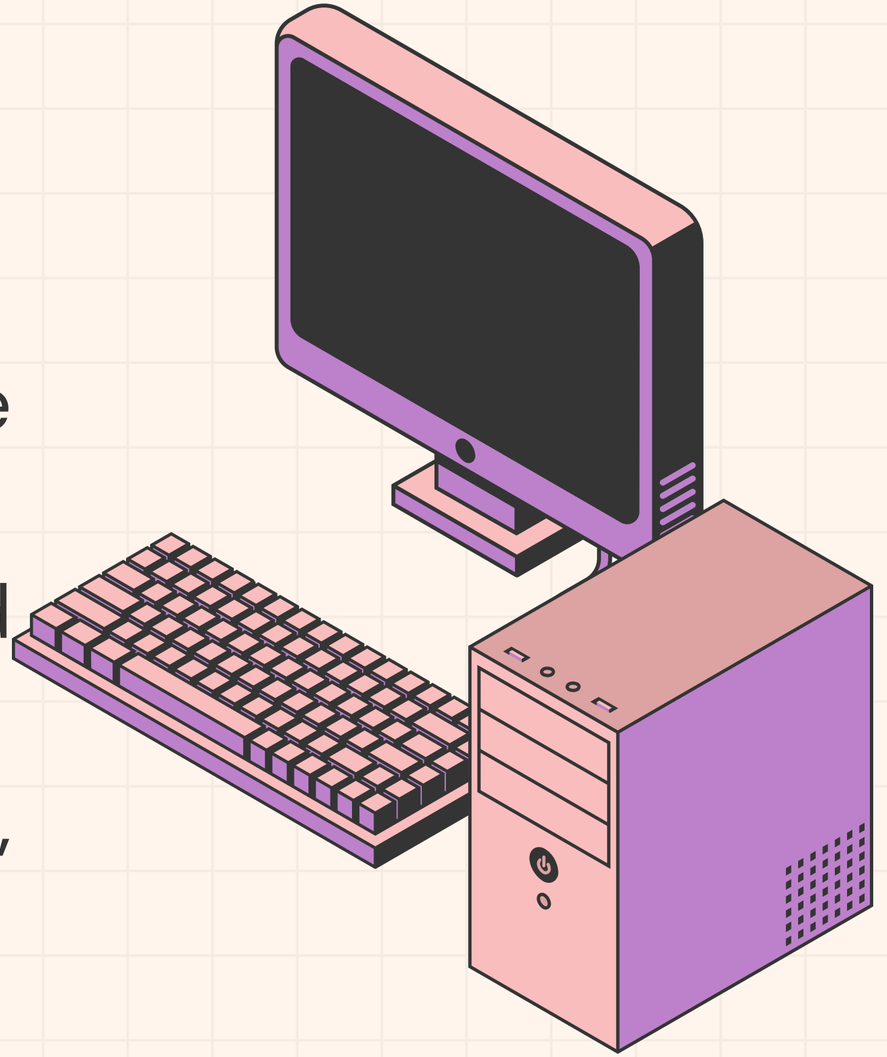
1. **Application Layer:**
   - The web browser on PC0 asks for the webpage using HTTP.
2. **Transport Layer:**
   - TCP makes sure the data reaches PC4 without errors.
3. **Network Layer:**
   - The router helps move packets between the HR Room (192.168.1.0) and Accounts (192.168.2.0).
4. **Data Link Layer:**
   - Switches forward packets within each floor using MAC addresses.
5. **Physical Layer:**
   - The cables physically carry the data signals.



CONCLUSION

This network design:

- Provides a robust and scalable infrastructure for office operations.
- Ensures efficient resource sharing and communication.
- Is validated through Cisco Packet Tracer, proving its reliability and effectiveness.



THANK YOU