HALDIA INSTITUTE OF TECHNOLOGY

Programme : B. Tech (CSE)

Course Name : Computer Networks

Course Code : PCC-CS 602

Assignment No. : 01

Exp. Name :

Objective :

Session : 2025-26

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Class Roll No. : 22/CSE/040

University Roll No. : 10300122040

Assigned On :

Date of Submission : 21/03/2025

Map for CO Attainment

CO1	CO2	CO3	CO4	CO5	CO6

Marks Obtained :

Date of Evaluation .....

(To be filled by the faculty member) **Signature**

ASSIGNMENT (Case Study)

Case study Report of small organization set up in CISCO Packet Tracer and Implementing star topology using CISCO Packet Tracer.

→ Introduction :

This reports provide a step-by-step guide to setting up a small organization's network consists of a Cisco Packet Tracer. The network consists of a router, four switches, six PCs, and a server. The organization is divided into four sections, each with a separate subnet.

⊘ Network Design and Requirements:

(i) Devices:

The device will be used in the network

a) Router : 1
b) Switches: 4
c) Pcs : 6
d) Server: 1

(ii) Network segments and IP Addressing:

The organization must have four different departments, each assigned a unique network. And each section will be connected to a separate switch and assigned IP address for better control.

⊘ Implementation steps:

Step-1: open cisco Packet Tracer

(i) Download it from browser and login with your account
(ii) Open it after verification and create a new

project in Cisco Packet Tracer.

Step2 : Add network devices.

(i) Drag and drop 1 router onto the workspace
(ii) Add 4 switches (one for each department)
(iii) Add 6 PCs (PC0 - PC5) and 1 server to represent workstation and services.

Step-3 : Connect to devices

(i) Use copper straight-through cables to connect each devices
(ii) Router to each switch
(iii) Switches to their respective PCs and the server.

step-4 : Assign IP addresses

(i) Configure static IP addresses for each PC and server.
(ii) Assign IP address to the Router interfaces corresponding to each network

Step-5 : Config the network's CLI and configure the interfaces for each network

Step-6 : set Default Gateway for PCs.

(i) Config each PCs default gateway to match its router interface IP.
(ii) For Administration: Default gateway → 192.168.1.1
(iii) For Accounts : Default gateway → 192.168.2.1
(iv) For IT : Default gateway → 192.168.3.1

(v) For Database : Default gateway → 192.168.4.1

Step-7 : Verify Connectivity

(i) Ping the router from each PC to check its devices can communicate

(ii) Use Packet Tracer simulation mode to observe Packet flow.

Star Topology (Network Topology) :

To design and implement a star topology for a Local Area Network (LAN) using cisco Packet Tracer.

Overview :

(i) Centralized control : all nodes are connected to a central switch

(ii) Data Flow : Communication between nodes occurs via the switch

(iii) Flexibility : Easy to add or remove devices.

Implementation Steps :

1. Network Design :

(i) Place a switch at the center of the network

(ii) Connect each department's devices to the switch using straight-through cables

2. IP configuration :

(i) Assign unique IP address to each node.

(ii) Configure the IP address according to department's subnet.

3. Testing:

(i) Use the Packet tracer simulation mode to check connectivity

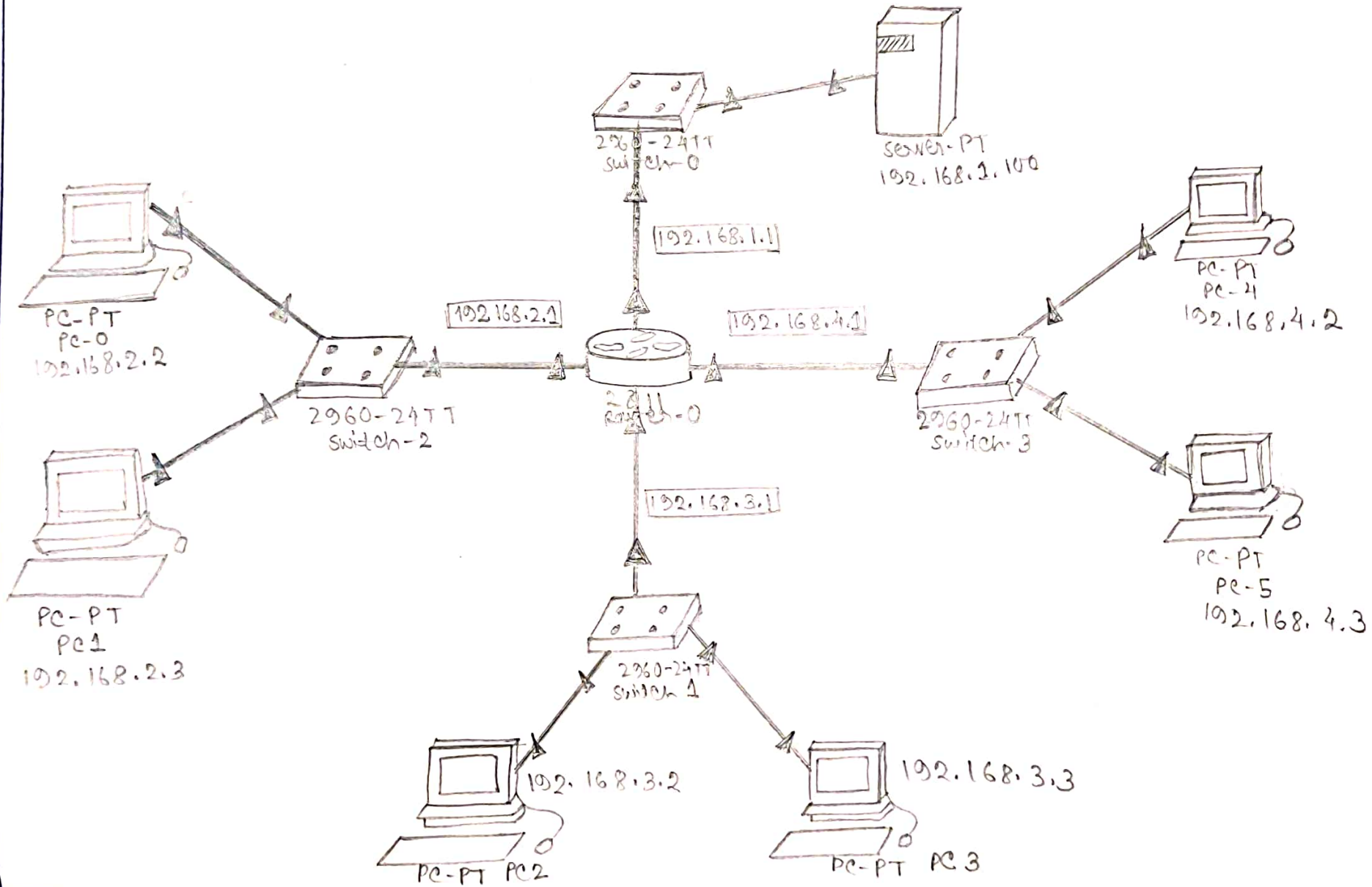
(ii) Ensure all devices can communicate through the switches.

Conclusion:

The report detailed the design and implementation of a small organization's network using Cisco Packet Tracer. The network was divided into four sections with distinct subnets, connected through a star topology for better management and scalability.

The setup was verified using ping tests and simulation mode to ensure proper connectivity. The network serves as a foundation for future enhancements like DHCP, VLAN's and security.

—: Small Organization Network setup :—



-:. Star Topology :-