Exp-9
Implementation of subnetting in cisco Packet Tracer.

Aim:
To implement classless IP subnetting in cisco Packet Tracer and configure routers, switches, and PCs for proper communication.

Procedure:
1) Create Topology
   * Open packet Tracer → New project
   * Add routers, switches and PCs from the device list.
   * Connect devices using appropriate cables

2) subnetting the network
   * Given network : 192.168.1.0/24.
   * Requirement: Atleast 5 usable IPs per subnet
   * Apply /27 Subnet mask → creates 8 subnets, each with 30 usable hosts.
   * Example Subnets:
      * 192.168.1.0/27 → Hosts : 192.168.1.1 - 192.168.1.30.
      * 192.168.1.32/27 → Hosts : 192.168.1.33 - 192.168.1.62.
      * 192.168.1.64/27 → Hosts: 192.168.1.65 - 192.168.1.94 & so on

3) IP Addressing Example.
   * Router R1:
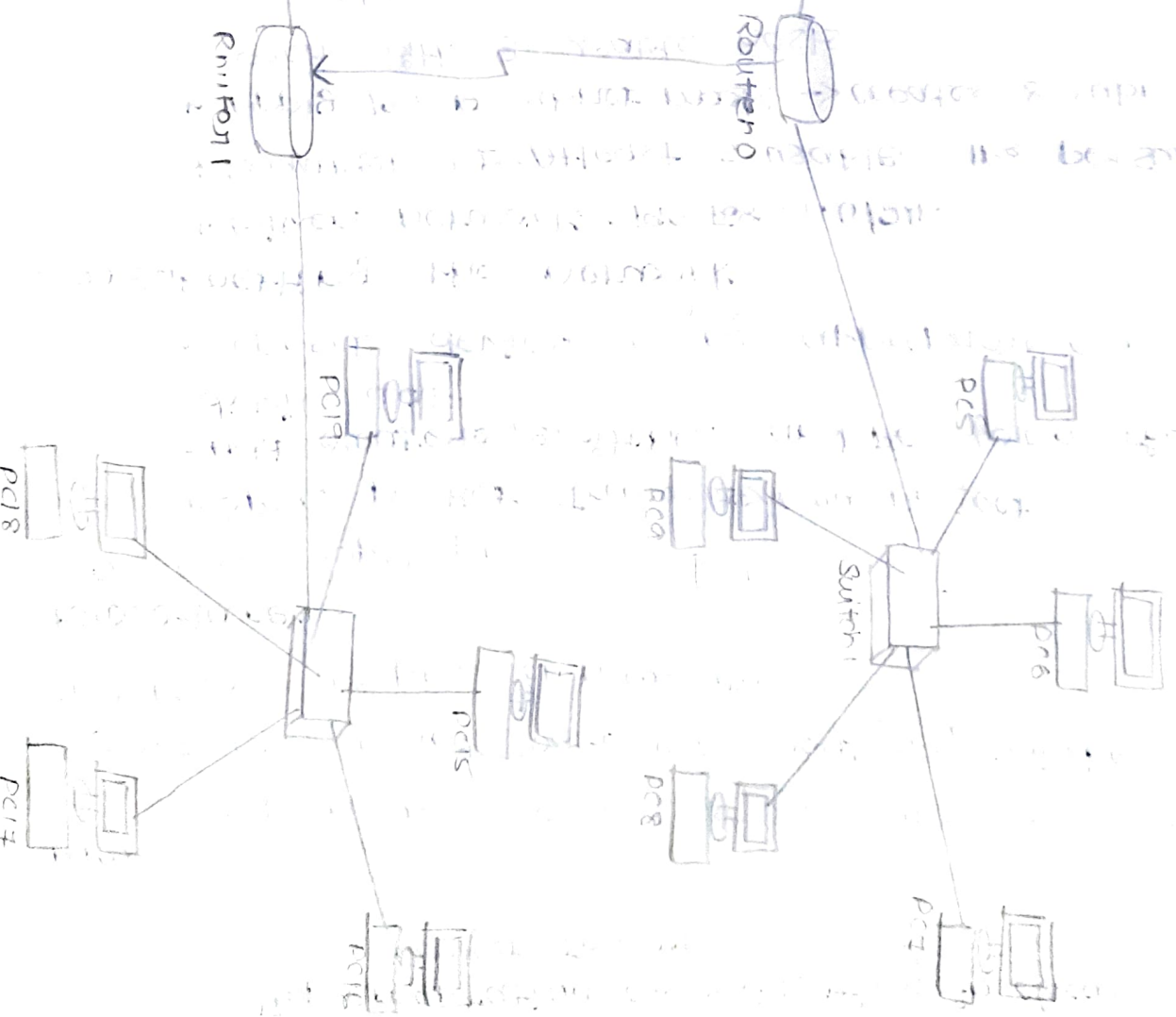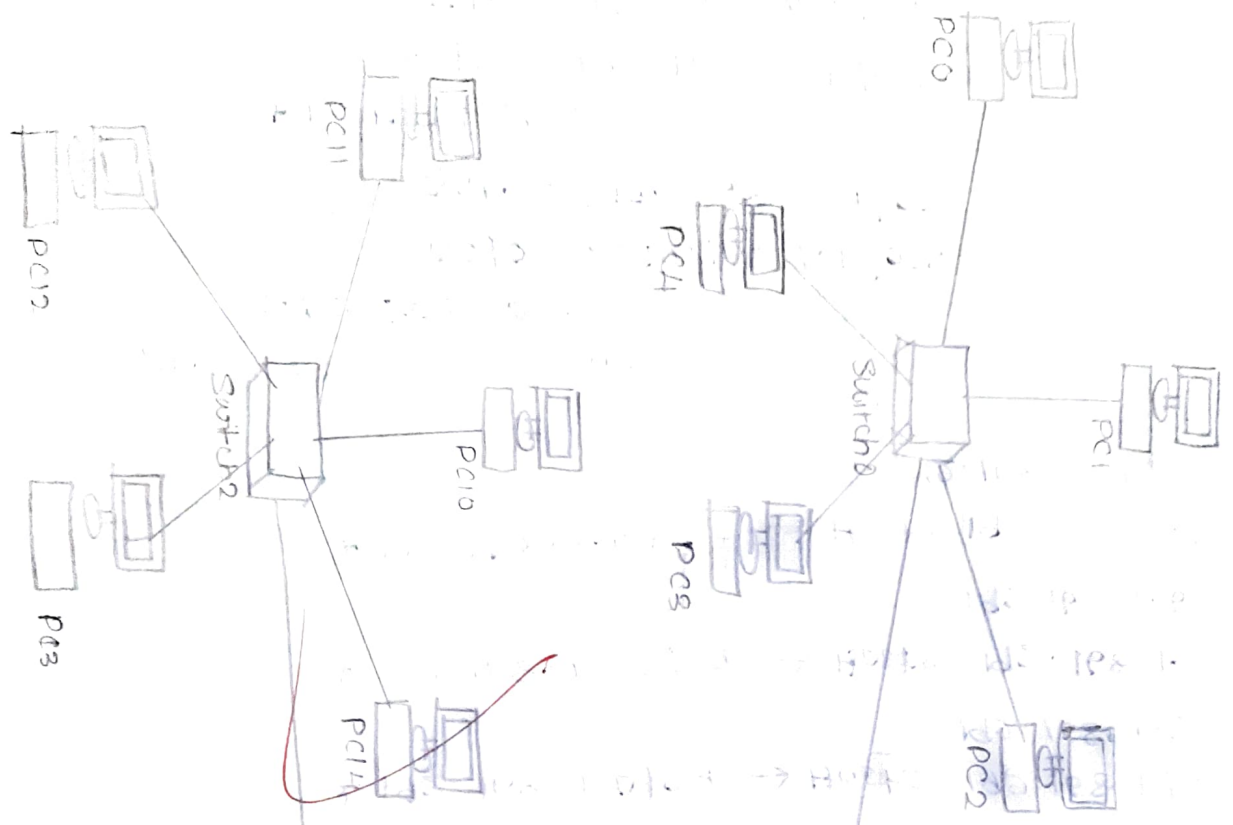   G0/0 → 192.168.1.1/27
      G0/1 → 192.168.2.1/27

   * Router R2:
      F0/0 → 192.168.3.1/27
      F0/1 → 192.168.4.1/27

PCs : Assigned sequential IPs like 192.168.1.11 - 192.168.1.15, 192.168.2.11 - 192.168.2.15 &c.

4) Device Configuration
       Routers (CLI):
         enable
         configure terminal
         interface g0/0
         ip address <IP> <Subnet Mask>
         no shutdown
         exit

       Switches: set ports to access mode
         (switchport mode access).

       PCs: Configure IP, Subnet mask & default
         gateway from respective subnet.

5) Testing
       Use the ping command from one PC to another
       If ping replies are received, the subnetting
       and routing are working correctly.

Student Observations.

a) Understanding of Subnetting:
       Subnetting is the process of dividing a
larger IP network into smaller logical sub networks.
This allows better utilization of IP addresses,
reduces wastage and helps organize networks
based on departments or functions.

b) Advantages of Subnetting:
     * Efficient use of ip addresses
     * Reduces network congestion & improves
Performance.
     * Enhances security by isolating department
     * Simplifies troubleshooting & management

c) Subnetting in college:
       Yes, Subnetting is generally implemented in
colleges. Different Departments & facilities are
usually assigned separate subnets

For example:

Administration Dept : 10.1.1.0/24

Computer labs : 10.1.2.0/24

Library Network : 10.1.3.0/24

Wifi Access : 10.1.4.0/24

This ensures smooth communication, controlled access & efficient IP management across the campus

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Result:

Therefore subnetting is implemented in cisco Packet tracer.