Experiment 7

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Semester: 5th
Subject Name: Computer Networks **Subject Code:** 22CSH-312

1. **Aim**: Connect the computers in Local Area Network by setting IP Address, Subnet mask & Default gateway

2. **Objectives:**
   To assign appropriate IP addresses, subnet masks, and default gateways to each computer in the Local Area Network (LAN) to ensure proper communication between devices. To verify successful connectivity among all connected devices within the LAN by using ping tests and network diagnostics.

3. **Apparatus used:** Cisco Packet tracer

4. **Theory:**

Introduction to Subnetting :

The need for applying the concept of subnetting is to provide an alternate way to prevent the wastage of IP addresses. Then dividing an IP address into multiple smaller units that can work as a separate network unit known as subnet, in the host network is known as the subnetting process. Subnetting allows the network to avoid frequent traffic problems that occur in the channel, resulting in smooth transmission of information in the network.
The smaller network units, also known as subnets, can be individually configured according to the user's requirements

Characteristics of Subnetting :-

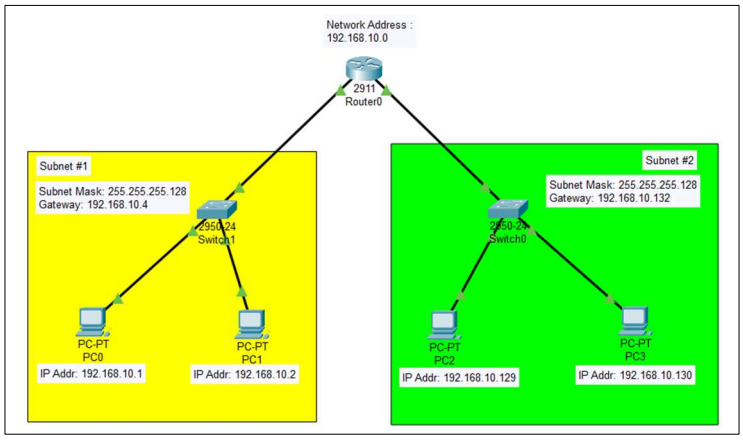
To design a subnetwork, some features are required to be understood properly which are:

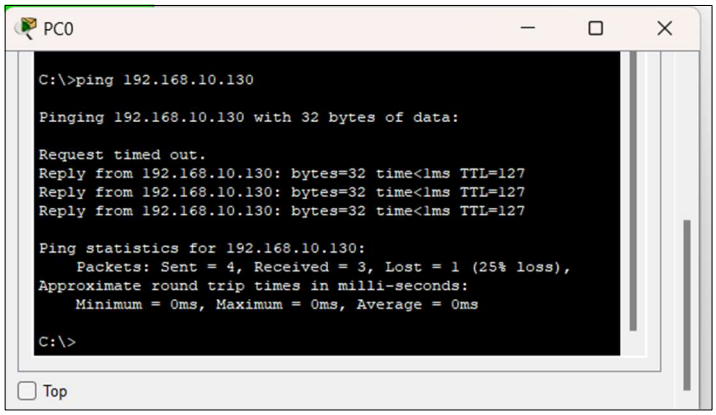
1. Network ID: It is the first IP address in each Sub-Network in the main network ID.
2. Broadcast ID: This feature represents the last IP address in each Sub-Network in the network ID.
3. First Host ID: The next IP address after the Network ID is represented by the First Host ID.
4. Last Host ID: The IP address right before the Broadcast ID is represented as Last Host ID.
5. Next Network: This feature assigns the Network ID for the next sub-network.
6. # IP Addresses: This feature represents the total number of IP addresses in the sub-network.

5. Implementation:

1. Launch cisco packet tracer on your system.
2. Create 2 subnets- network topology with router, switch and PCs using cables.
3. Configure PCs with IP Addresses, Subnet masks and Gateway.
4. Configure Routers Gateway according to different subnets.
5. Ping and verify the connectivity between Subnet 1 and subnet 2.

6. Output:





7. Learning Outcome:

- Configuring topologies within network to create subnets
- Configuring switches and routers for subnet communication
- Learnt using the ping command to verify connectivity between networks
- Configure individual PCs for the subnet.
- Configuring Multi-level LAN network