Experiment 2.3

Student Name: Jeetendra Patel **UID: 22BCS12228**
Branch: BE-CSE **Section/Group: 22BCS-702(B)**
Semester: 5 **Date of Performance: 16-09-24**
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. **Hardware Requirements:**
   - **Main Memory requirement –** Around 128 MB RAM
   - **Processor requirement -** Any suitable Processor e.g. Celeron
   - **Hard Disk requirement-** minimum 20 GB IDE Hard Disk
   - **Removable Drives requirement -** 1.44 MB Floppy Disk Drive .

3. **Software Requirements:** Cisco Packet Tracer or NS2

4. **Theory :**

Local Area Network- A Local Area Network (LAN) is a group of computers and network devices that are interconnected within a limited area, such as a home, school, or office building. LANs are characterized by high data transfer rates, low latency, and limited geographical range. They enable devices to communicate and share resources such as files, printers, and internet connections.

IP Addressing - An Internet Protocol (IP) address is a unique identifier assigned to each device on a network. It allows devices to locate and communicate with each other. IP addresses come in two versions: IPv4 (32-bit) and IPv6 (128-bit). For this experiment, IPv4 addressing will be used, which consists of four octets (e.g., 192.168.1.1).

Components of IP Addressing:

- Subnet Mask: A subnet mask defines the network portion and the host portion of an IP address. It helps in determining which part of the IP address identifies the network and which part identifies the host. For example, a common subnet mask for a small network is 255.255.255.0.

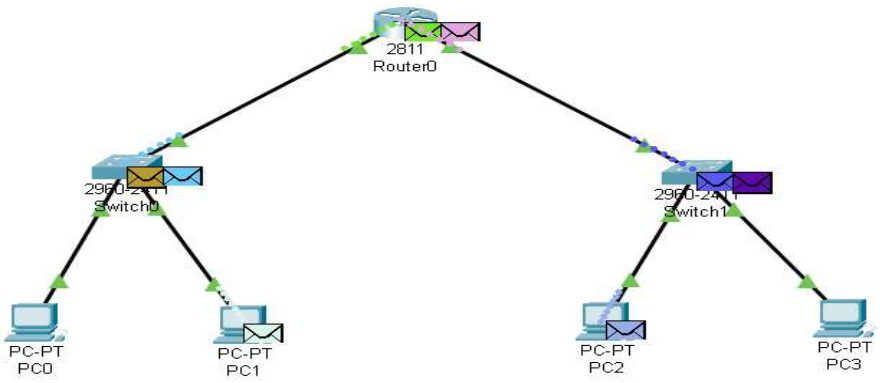
- Default Gateway: The default gateway is the device (usually a router) that serves as an access point to other networks, including the internet. It forwards traffic from the local network to external networks.

5. Procedure:

The steps mentioned below were implement in order to complete the task.

- **Step 1- Open Cisco Packet Tracer :** Open the app and create a new working environment.
- **Step 2 – Connect Devices :** Drag and drop PC/Laptop ,Switches, Routers from the bottom left corner on the working front in Cisco Packet Tracer.
- **Step 3 - Choose Connection Medium :** For connection PC/Laptop to switches use 'Automatically choose connection type' .
- **Step 4 – Design Network :** Connect 2 Pc's to one switch and connect the switch to the router.
- **Step 5 - Configuration :** Select a PC after a new window pop up go to 'Devices' and select IP Configuration and provide valid IPv4 addresses and subnet mask and also set default gateway.
- **Step 6 – Send Data Packets** : Send message packets from one PC to another in a different network.
- **Step 7 – Simulate the network :** Switch to "Simulation Mode" .

6. Screenshot of the Output:



7. Learning Outcomes:

1. Gain proficiency in using Cisco Packet Tracer for network design and simulation.
2. Understand how to configure IP addresses, subnet masks, and default gateways on network devices.
3. Learn techniques to avoid and detect collisions in local area networks.
4. Develop skills in connecting and managing various network devices, including PCs, switches, and routers.
5. Comprehend data packet transmission processes and their implications in different network topologies.