Student Name	**Swanand Mangesh Garge**
SRN No	202201589
Roll No	39
Program	Computer Engg
Year	Third Year
Division	D
Subject	Computer Network Laboratory (BTECCE21506)
Assignment No	One

Assignment Number - 01

Title : Ad-Hoc and Infrastructure Network

Problem Statement : Set up a small network of 2 to 4 computers using Switch. It includes installation of LAN Cards, Preparation of Cables, Assigning IP addresses and sharing C drive.

Theory :

Write information IN word document related to following computer network terms with diagram.

1. **NIC Card**

1.NIC Card

A NIC Card, the quintessential component of computer networking, serves as the interface between a computer and the network. It transforms data into an electrical signal that the network medium can convey. NICs can be wired or wireless, with the former connecting via Ethernet cables.

Benefit: Ensures reliable and efficient data communication between devices, enhancing overall network performance.

2. **Hub**

2.HUB

A Hub, a basic networking device, serves as a central connection point for devices within a network. It operates on the physical layer (Layer 1) of the OSI model and transmits data packets to all devices on a network, regardless of the intended recipient. This can lead to inefficiencies due to data collisions.

Benefit: Simple and cost-effective solution for connecting multiple devices in a small network.

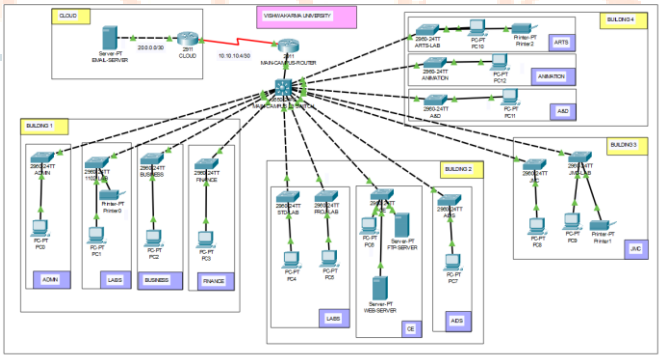
3. Switch

3.Switch

A Switch, an advanced version of a hub, functions at the data link layer (Layer 2) of the OSI model. Unlike a hub, it can identify the destination of data packets and direct them specifically to the intended device, enhancing network efficiency and reducing collisions.

Benefit: Improves network speed and efficiency by reducing data traffic and minimizing collisions.

4. Network Topology



Network Topology refers to the physical or logical arrangement of devices in a network. Common topologies include star, bus, ring, and mesh. Each topology has unique advantages and disadvantages in terms of performance, scalability, and fault tolerance.

Benefit: Provides a clear framework for designing and managing network structures, allowing for optimized performance and ease of maintenance.

5. Crimping tool

5.Crimping tool

A Crimping Tool is used to attach connectors to the ends of cables, ensuring secure and reliable connections. In networking, crimping tools are commonly used for creating Ethernet cables by attaching RJ45 connectors to twisted pair cables.

Benefit: Ensures durable and stable connections, reducing the likelihood of connection issues and network downtime.

6. LAN tester

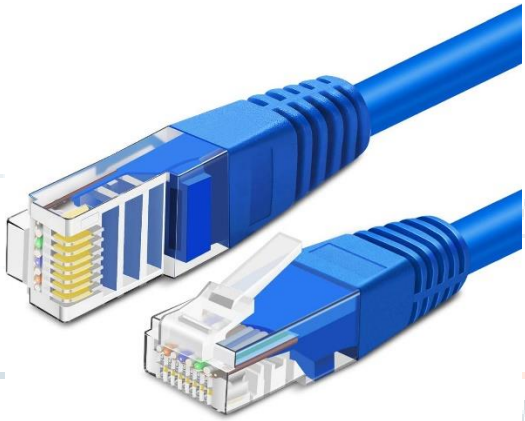
6.LAN Tester

A LAN Tester is a device used to verify the integrity and performance of network cables. It checks for issues such as open circuits, short circuits, and incorrect wiring configurations, ensuring the network's reliability.

Benefit: Identifies and resolves cable faults quickly, enhancing network reliability and minimizing troubleshooting time.

7. Connector -RJ11, RJ45

7.1 RJ11



7.2 RJ45

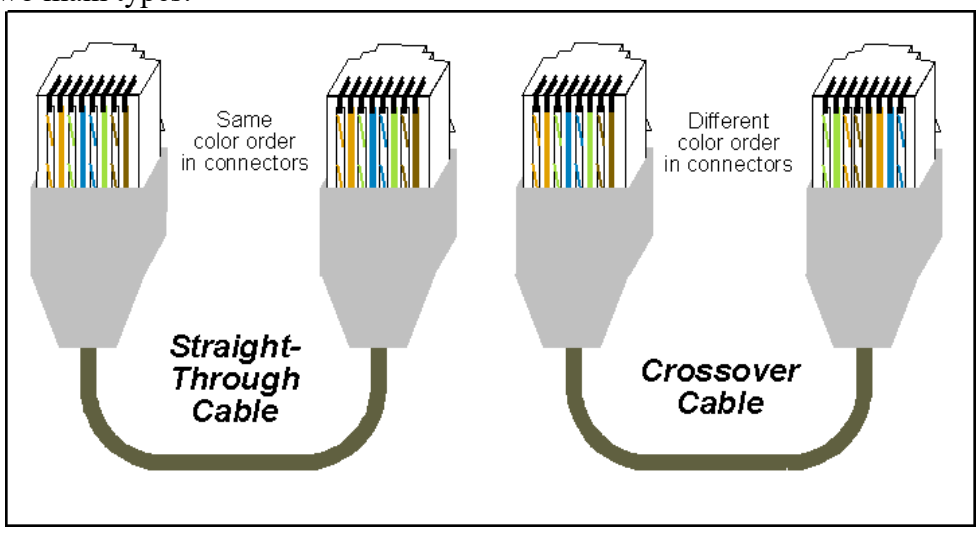
RJ11 and RJ45 are types of connectors used in networking. RJ11 is typically used for telephone connections, while RJ45 is used for Ethernet networking. The latter is essential for connecting computers to switches, routers, and other network devices.

Benefit: Provides standardized connections for various network devices, ensuring compatibility and ease of installation.

8. **Twisted pair cable – Straight through cable & Cross Over cable**

Twisted Pair Cables consist of pairs of insulated copper wires twisted together to reduce electromagnetic interference.

There are two main types:



8.Twisted Cables 8.1 Straight-Through Cable 8.2 Crossover Cable

Straight Through Cable: Used to connect different types of devices, such as a computer to a switch.

Cross Over Cable: Used to connect similar devices directly, such as computer to computer.
Benefit: Offers flexibility in network configurations and enhances signal quality by reducing interference.

Conclusion : From this assignment, I have gained a comprehensive understanding of the fundamental components and tools involved in setting up a small network. The NIC is essential for enabling network connections, while hubs and switches play crucial roles in managing data traffic within the network. Understanding network topology helps in designing efficient and scalable networks. Proper usage of crimping tools and LAN testers ensures reliable network cabling, and familiarity with various connectors and cables allows for appropriate device connections. Overall, this assignment has enhanced my practical knowledge and theoretical understanding of computer networking, which is invaluable for my future endeavors in the field.