**Computer Network Lab**



**Lab Task 10**

**Submitted by**

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**Section:** 5A

**Program:** Data Science

**Submitted To**

**Sir** Rasikh

**Organization Name**

TeleCom Solutions Pvt. Ltd.

**Number of Floors of the Organization**

3 Floors:

**Ground Floor:** Data Center and Administrative Offices

**1st Floor**: Branch A Operations

**2nd Floor:** Branch B Operations

Number of PCs / Servers in the System

**Total PCs:** 6

**Branch A (1st Floor):** 2 PCs

**Branch B (2nd Floor):** 2 PCs

**Data Center (Ground Floor**): 2 PCs

**Total Servers:** 1

**Data Center Server (Ground Floor):** 1 Server

**Additional Notes**

1) The network includes 3 routers, 3 switches, and proper segmentation using subnetting

and VLANs for efficient communication.

2) Communication across floors and branches is routed through a central router located in the Data Center.

[5:47 AM, 12/1/2024] Zahra Class Fellow✨: CN lab 10

[5:48 AM, 12/1/2024] Zahra Class Fellow✨: 1. DHCP (Dynamic Host Configuration Protocol)

**Definition:**

DHCP is a protocol that automatically assigns IP addresses, subnet masks,

default gateways, and other network settings to devices on a network.

**Example:**

A PC connects to a network, and instead of manually configuring the IP address,

it requests an address from the DHCP server, which assigns it automatically.

**Why Use DHCP?**

1) Saves time and effort in large networks where manually assigning IPs is impractical.

2) Reduces errors caused by manual IP configuration.

2. VLAN (Virtual Local Area Network)

**Definition:**

VLAN is used to logically segment a network into smaller parts,

even if devices are physically connected to the same switch.

**Example:**

In an office, HR and IT departments are on the same physical network

but isolated using VLANs (e.g., VLAN 10 for HR, VLAN 20 for IT).

This ensures data separation and improves security.

**Why Use VLAN?**

1) Enhances security and performance by segregating traffic.

2) Reduces broadcast domains.

3.DNS (Domain Name System)

**Definition:**

DNS translates human-readable domain names (e.g., www.example.com) into IP addresses (e.g., 192.168.1.1).

**Example:**

When you type google.com in a browser, DNS resolves it to an IP like 172.217.5.110 to establish the connection.

**Why Use DNS?**

1)Simplifies access to network resources by using names instead of numeric IPs.

2)Centralizes name resolution for an organization