Lab 1:

Task1: Configuring a DHCP Server

Step-by-Step Guide

1. **Set Up the Network Layout:**
    - **Place Devices:** Open Cisco Packet Tracer, then add a **Router**, a **Switch**, and three **PCs** from the **Network Devices** and **End Devices** menus.
    - **Connect Devices:** Use the **Connections** (lightning icon) and select **Automatic Connections** to connect each PC to the Switch and the Switch to the Router.
2. **Configure the Router as a DHCP Server:**
    - **Open the Router's GUI:**
        - Click on the Router.
        - Select the **Config** tab.
    - **Enable DHCP on the Router:**
        - Under **Config** > **Global Settings**, enable DHCP.

          If GUI is not shown then write this command

Scenario:

- **Network Address**: 192.168.1.0/24
- **Router Gateway (Default Router)**: 192.168.1.1
- **DNS Server**: 8.8.8.8 (Google DNS)
- **DHCP Pool Name**: `LAN_POOL`
- **Excluded IP Range**: 192.168.1.1 - 192.168.1.10 (Reserved IPs)

Step-by-Step Commands

1. **Access the CLI** on the router and enter privileged EXEC mode:

   ```
   enable
   ```

2. **Enter global configuration mode**:

   ```
   configure terminal
   ```

3. **Exclude the IP range** you don't want to be assigned by DHCP:

   ```
   ip dhcp excluded-address 192.168.1.1 192.168.1.10
   ```

4. **Create a DHCP pool** with a name (e.g., `LAN_POOL`):

   ```
   ip dhcp pool LAN_POOL
   ```

5. **Define the network and subnet mask** for the DHCP pool:

   ```
   network 192.168.1.0 255.255.255.0
   ```

6. **Set the default gateway** (router) that clients should use:

   ```
   default-router 192.168.1.1
   ```

7. **Specify the DNS server IP address**:

   ```
   dns-server 8.8.8.8
   ```

8. **Exit configuration mode**:

   ```
   end
   ```

9. **Save the configuration** (optional but recommended):

   ```
   write memory
   ```

Complete Command Sequence

Here's how the complete command sequence will look in the router CLI:

```
enable
configure terminal
ip dhcp excluded-address 192.168.1.1 192.168.1.10
ip dhcp pool LAN_POOL
network 192.168.1.0 255.255.255.0
default-router 192.168.1.1
dns-server 8.8.8.8
end
write memory
```

After these commands, your router will serve as a DHCP server for the network `192.168.1.0/24`, assigning IP addresses starting from `192.168.1.11` up to `192.168.1.254` and providing the specified gateway and DNS information.

3. **Set PCs to DHCP Mode:**
   - Click each **PC** > **Desktop** > **IP Configuration**.
   - Select **DHCP** for IP Configuration. The PC should receive an IP address automatically from the DHCP server.
   - Verify each PC's IP address by going to **Desktop** > **Command Prompt**, typing `ipconfig`, and checking the assigned IP.
4. **Testing DHCP:**
   - Check that each PC receives a unique IP address from the DHCP server.

Exercise Questions:

1. What is DHCP, and how does it work in a network?
2. How does a device know it has successfully obtained an IP address from a DHCP serv

To place a server on the workspace in Cisco Packet Tracer, here is a detailed step-by-step guide from Lab 2 onward, breaking down each action clearly:

Task 2: Setting Up an FTP Server

Step 1: Adding a Server to the Workspace

1. **Open Cisco Packet Tracer**: Make sure you have Cisco Packet Tracer running.
2. **Access Network Devices**:
    - At the bottom of the screen, you'll see a row with icons labeled **Network Devices** and **End Devices**.
    - Click on **Network Devices** to view a set of options like **Routers**, **Switches**, and **Servers**.
3. **Select the Server Device**:
    - In the **Network Devices** section, look for an icon labeled **Server**.
    - Click on it to activate the server tool, which allows you to place servers on the workspace.
4. **Place the Server**:
    - After clicking on the server icon, click anywhere on the empty workspace area to place the server.
    - A server icon should now appear on your workspace.

Step 2: Connecting the Server to the Network

1. **Connect the Server to the Switch**:
    - Use the **Connections** tool (the lightning icon) at the bottom of the screen to draw connections.
    - Choose **Automatic Connections**, then click on the server and connect it to the **Switch** on the workspace.
2. **Configure the Server's IP Address**:
    - Click on the server to open its configuration window.
    - Go to the **Config** tab on the server window.
    - In the **FastEthernet0** section, assign a static IP address, such as `192.168.10.50`.
    - Set the **Subnet Mask** to `255.255.255.0`.

Step 3: Enable FTP Service on the Server

1. **Open the Services Tab**:
    - While still in the server configuration window, click on the **Services** tab.
    - From the list of services on the left, select **FTP**.
2. **Turn On FTP**:
    - By default, FTP might be off. Turn it **On** by clicking the power button.
3. **Create an FTP User Account**:
    - In the **FTP** section, add a **Username** and **Password** (for example, `user1` and `pass123`).
    - This will allow any connected PC to access the server's FTP service using these login credentials.

Step 4: Access the FTP Server from a Client PC

1. **Open a PC's Command Prompt**:
    - Click on any **PC** connected to the switch to open its configuration window.
    - Go to **Desktop** > **Command Prompt**.
2. **Test the FTP Connection**:
    - In the command prompt, type `ftp 192.168.10.50` and press Enter.
    - When prompted, enter the **Username** and **Password** you set up in the FTP service.
    - If successful, you'll be able to run FTP commands like `put` to upload files and `get` to download files.

Task 3: Setting Up a Web Server

Follow similar steps for adding a server to the workspace and configuring it:

Step 1: Adding and Configuring a Web Server

1. **Place Another Server**:
    - Repeat the steps above to place another server on the workspace.
2. **Assign an IP Address**:
    - Click on this new server, go to **Config**, and set a static IP address, such as `192.168.10.60`.

Step 2: Enable HTTP Service

1. **Go to Services Tab**:
    - In the **Services** tab, select **HTTP**.
2. **Turn on the HTTP Service**:
    - Enable the HTTP service to make this server a web server.
    - You can also customize the webpage content here, but the default settings will work fine.

Step 3: Access the Web Server from a Client PC

1. **Open a PC's Web Browser**:
   - Go to **Desktop** > **Web Browser** on any PC.
2. **Enter the Server's IP Address**:
   - In the URL bar, type `http://192.168.10.60` and press Enter.
   - This should load the default webpage hosted on the web server.

Task 4: Configuring DNS with an HTTP Server (Revised)

Step-by-Step Guide

Step 1: Add and Configure the DNS Server

1. **Place a Server on the Workspace**:
   - Open **Network Devices** > **End Devices** at the bottom panel in Cisco Packet Tracer.
   - Select **Server** and place it on the workspace.
   - Connect the server to the **Switch** using the **Connections** tool (lightning icon). Choose **Automatic Connections** to create a link.
2. **Assign an IP Address**:
   - Click on the server to open the **Physical Device** view.
   - Go to the **Config** tab.
   - Under **FastEthernet0**, assign a static IP address, such as `192.168.10.60`, and set the **Subnet Mask** to `255.255.255.0`.

Step 2: Enable and Configure the DNS Service

1. **Access the Services Tab**:
   - While still in the server's configuration window, go to the **Services** tab at the top.
2. **Enable DNS**:
   - In the left-hand column of services, select **DNS**.
   - You should see an option to turn **DNS Service On**—click to enable it.
3. **Add a DNS Entry**:
   - You'll see a table to add domain names and their corresponding IP addresses.
   - In the **Name** field, type `mysite.com` (or any domain name you'd like).
   - In the **Address** field, enter the IP address of the server running the HTTP service (`192.168.10.60`).
   - Click **Add** to save this DNS entry.

(At this point, your DNS table should show `mysite.com` with IP `192.168.10.60`. This indicates that the DNS server will resolve `mysite.com` to the server's IP address.)

Step 3: Configure DNS Settings on Client PCs

1. **Set the DNS Server on Each Client PC**:
    - Click on each **PC** connected to the network to open its configuration.
    - Go to **Desktop** > **IP Configuration**.
    - Under **DNS Server**, type `192.168.10.60` (the IP address of your DNS server).
    - This tells each PC to use this server for resolving domain names.

Step 4: Testing the DNS and HTTP Configuration

1. **Open a Web Browser on a Client PC**:
    - On one of the PCs, go to **Desktop** > **Web Browser**.
2. **Access the Website by Domain Name**:
    - In the URL bar, type `http://mysite.com` and press Enter.
    - The browser should load the default webpage from the HTTP server. If it loads, it confirms that the DNS is resolving `mysite.com` to the HTTP server's IP address.

Exercise Questions:

1. **Why is DNS important in networking?**
2. **What would happen if the DNS server was unavailable?**
3. **How does DNS make it easier for users to access services over the network?**