Certainly! Below is a template-style lab report for "Hub Connection Between Two PCs."

Title:
Hub Connection Between Two PCs

Objective:
To establish a basic network connection between two PCs using a hub and test connectivity by pinging between the devices.

Equipment:

- CISCO Packet Tracer software
- 2 PCs (PC1 and PC2)
- 1 Hub (4-port or 8-port)
- 2 Straight-through Ethernet cables

Theory:
In a hub-based network, multiple devices are connected to a hub, which broadcasts any incoming data to all connected devices. A hub operates at Layer 1 of the OSI model (Physical Layer) and does not filter or direct traffic based on MAC addresses like switches do. Hubs are simple network devices that can only extend the communication range between devices but do not manage traffic efficiently.

When two PCs are connected to a hub and assigned unique IP addresses within the same subnet, they can communicate with each other via a process called *pinging*. The *ping* command sends ICMP (Internet Control Message Protocol) packets to the destination device, and if the devices are properly connected, the destination will send a reply. This allows us to verify network connectivity.

Procedure:

1. Open the **CISCO Packet Tracer** software.
2. From the **End Devices** section on the left side of the interface, drag and drop **2 PCs** onto the workspace. These will be referred to as PC1 and PC2.
3. From the **Network Devices** section, select **Hub** from the list and place a hub in the workspace.
4. Use **Straight-through Ethernet cables** to connect PC1 and PC2 to the hub:
    - Click on **PC1** and select the **FastEthernet0** port. Then click on the hub and connect it to **Port 1**.
    - Click on **PC2** and connect **FastEthernet0** to the hub's **Port 2**.
5. Assign IP addresses to the PCs:
    - On PC1, go to **Desktop → IP Configuration** and assign the IP address **192.168.1.1** with a subnet mask of **255.255.255.0**.
    - On PC2, go to **Desktop → IP Configuration** and assign the IP address **192.168.1.2** with the same subnet mask **255.255.255.0**.
6. Test the connection between PC1 and PC2 using the **ping** command:
    - On PC1, open the **Command Prompt** from the **Desktop** and type `ping 192.168.1.2`.
    - Observe the replies from PC2 to verify successful communication.
7. Switch to **Simulation Mode** in Packet Tracer and run the ping test again. Observe the packet flow between the two PCs as the ICMP request and reply messages pass through the hub.

Results:
When the ping command is executed from PC1 to PC2, the following observations were made:

- In **Real-Time Mode**, the ping requests from PC1 to PC2 were successful, confirming that the two PCs are properly connected via the hub.
- In **Simulation Mode**, the packet flow showed the ICMP request and reply being sent and received through the hub, which broadcasts data to both PCs.

Conclusion:
In this lab, we successfully connected two PCs through a hub and verified network connectivity using the ping command. The use of a hub allows the connected devices to communicate, but the hub broadcasts all incoming traffic to every port, which may lead to network inefficiencies in larger setups. This lab demonstrated basic networking concepts and reinforced the functionality of a hub as a simple, non-intelligent device operating at the Physical Layer of the OSI model.

Let me know if you'd like to dive into any specific concepts, such as the function of the OSI layers, or need further explanation!