**Lab Title: Understanding MAC Address Table in a Switch**

**🎯 Objective:**

Students will:

* Understand how MAC addresses work at Layer 2.
* Analyze how a switch learns and uses MAC addresses.
* Use Packet Tracer to inspect the MAC address table.
* Observe unicast and broadcast behavior in a local network.

**🧰 Materials:**

* Cisco Packet Tracer
* 2 PCs
* 1 Switch
* Ethernet cables

**🛠️ Lab Setup Steps:**

**1. Create the Topology**

* Add 2 PCs (PC0, PC1) from "End Devices".
* Add 1 switch (Switch0) from "Switches".
* Connect the devices using copper straight-through cables:
  + PC0 → Switch0 (FastEthernet0/1)
  + PC1 → Switch0 (FastEthernet0/2)

**2. Configure IP Addresses**

On each PC:

* PC0: IP = 192.168.1.1, Subnet = 255.255.255.0
* PC1: IP = 192.168.1.2, Subnet = 255.255.255.0

**3. Ping and Observe MAC Table**

* Open the Command Prompt on PC0 and run:

nginx

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ping 192.168.1.2

**4. Inspect the Switch**

* Click on Switch0, go to the **CLI** tab and enter:

enable

show mac address-table

* Observe the learned MAC addresses and the corresponding ports.

**🔍 Lab Questions for Students:**

1. What is the MAC address of PC0 and PC1?
2. What do you see in the switch’s MAC address table after the ping?
3. What happens if you clear the MAC table? (Hint: Use clear mac address-table dynamic)
4. Try pinging again — does the switch relearn the MAC?