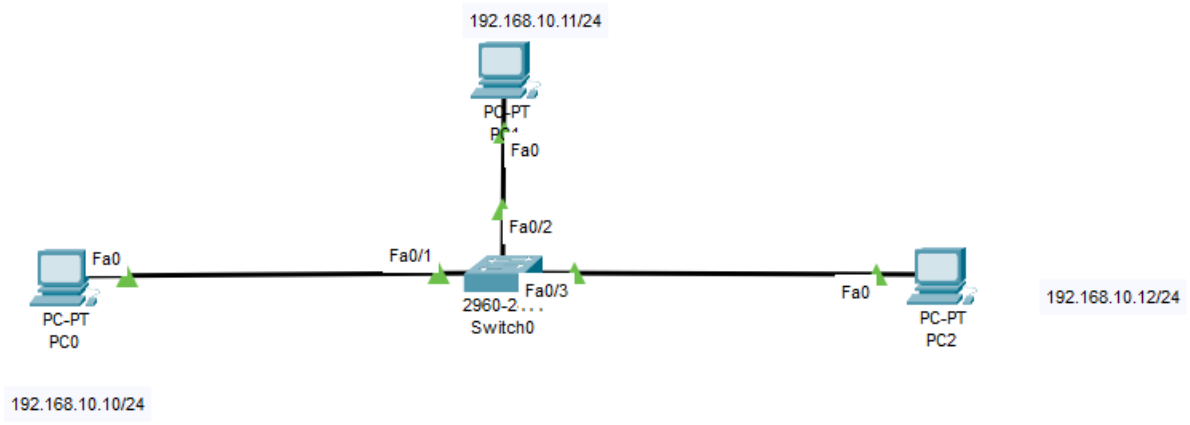
Lab3: Switching and ARP Basics

Objective :

1. Observe switch functions: auto-learning, forwarding, and flooding.
2. Understand how ARP resolves IP addresses to MAC addresses.
3. Manually configure a switch (hostname, VLAN, and port security).

step1 Topology:



Fill the following table

	IPaddress/mask	MAC address
PC0		
PC1		
PC2		

Step 2 Observe Switch Functions

1. Open the **Simulation Mode** in Packet Tracer.
2. Send a **ping** from **PC0** to **PC1**:
    - Go to PC0's command prompt and type: `ping 192.168.1.11`.
3. Observe the following:
    - **Auto-learning**: The switch learns the MAC addresses of PC0 and PC1 and adds them to its MAC address table. fill the following switcher forwarding table using the command **SW1# show mac address-table**

Port	Mac Address

- **Forwarding**: The switch forwards the ping packet only to PC1 (not PC2) because it knows the destination MAC address.
- **Flooding**: If you disconnect PC1 and ping again, the switch will flood the packet out all ports (except the source port) because it doesn't know where PC1 is.

To clear the MAC address table on the switch:

```
SW1# clear mac address-table dynamic
```

Step 3: IP to MAC with ARP

1. Clear the ARP cache on all PCs:
   - On each PC, go to the command prompt and type: `arp -a` (to view the ARP table).
   - Then type: `arp -d` (to clear the ARP table).
2. Send a ping from **PC0** to **PC1** again.
3. Observe the ARP process:
   - PC0 sends an ARP request to resolve the MAC address of `192.168.1.11`.
   - PC1 responds with its MAC address.
   - PC0 updates its ARP table with PC1's MAC address.
4. Check the ARP table on PC0:
   - Type: `arp -a` to see the IP-to-MAC mapping.