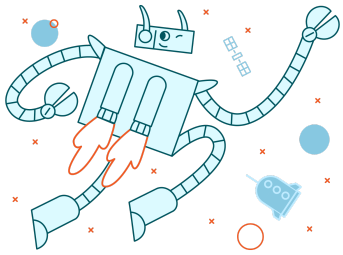
Switch



Goal

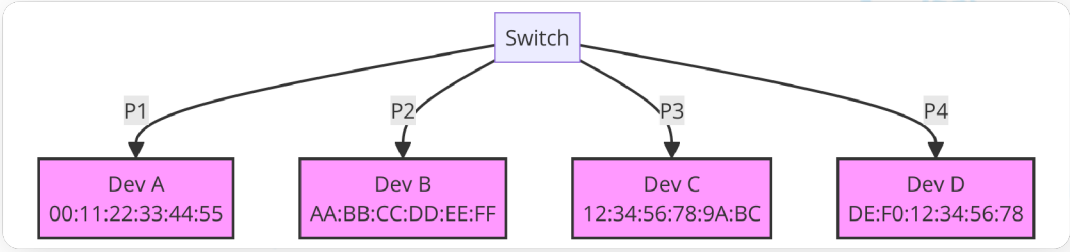
Demonstrate your understanding of how switches operate in a network by analyzing the flow of packets and the switch's learning process in a simple network configuration.

Background

A switch is an intelligent device that learns the MAC addresses of connected devices and directs packets only to the intended recipient, reducing network traffic. When a switch receives a packet, it examines the source MAC address and updates its switching table, associating the MAC address with the port on which the packet arrived. This learning process allows the switch to efficiently forward packets to the correct destination.

In this exercise, you'll be given a network configuration with a switch and four connected devices. The switch's switching table is initially empty. You'll analyze a series of packets and determine which ports the switch will send each packet to based on its current knowledge of the network.

Network Configuration



- Switch: 4-port switch (ports 1-4)
- Device A: MAC address: 00:11:22:33:44:55, connected to port 1
- Device B: MAC address: AA:BB:CC:DD:EE:FF, connected to port 2
- Device C: MAC address: 12:34:56:78:9A:BC, connected to port 3

- Device D: MAC address: DE:F0:12:34:56:78, connected to port 4

Packet Flow

1. Packet 1: Source MAC: 00:11:22:33:44:55 (Device A), Destination MAC: AA:BB:CC:DD:EE:FF (Device B)
2. Packet 2: Source MAC: AA:BB:CC:DD:EE:FF (Device B), Destination MAC: 00:11:22:33:44:55 (Device A)
3. Packet 3: Source MAC: 12:34:56:78:9A:BC (Device C), Destination MAC: DE:F0:12:34:56:78 (Device D)
4. Packet 4: Source MAC: AA:BB:CC:DD:EE:FF (Device B), Destination MAC: 12:34:56:78:9A:BC (Device C)
5. Packet 5: Source MAC: AA:BB:CC:DD:EE:FF (Device B), Destination MAC: DE:F0:12:34:56:78 (Device D)
6. Packet 6: Source MAC: 00:11:22:33:44:55 (Device A), Destination MAC: FF:FF:FF:FF:FF:FF (Broadcast)

Task

For each packet in the packet flow, determine which port(s) the switch will send the packet to based on its current switching table. Fill in the table below, indicating the port number(s) or "Broadcast" if the packet is broadcast to all ports except the one on which it was received.

Packet	Port(s)
1	
2	
3	
4	
5	
6	

To Submit

- The completed table indicating the port(s) each packet is sent to.

Remember, the switch learns the MAC addresses of connected devices as it processes packets and updates its switching table accordingly. If the destination MAC address is not found in the switching table, the switch will broadcast the packet to all ports except the one on which it was received.