

EECS 489 - WN 23

Discussion 11

Announcements

Assignment 4 is out.

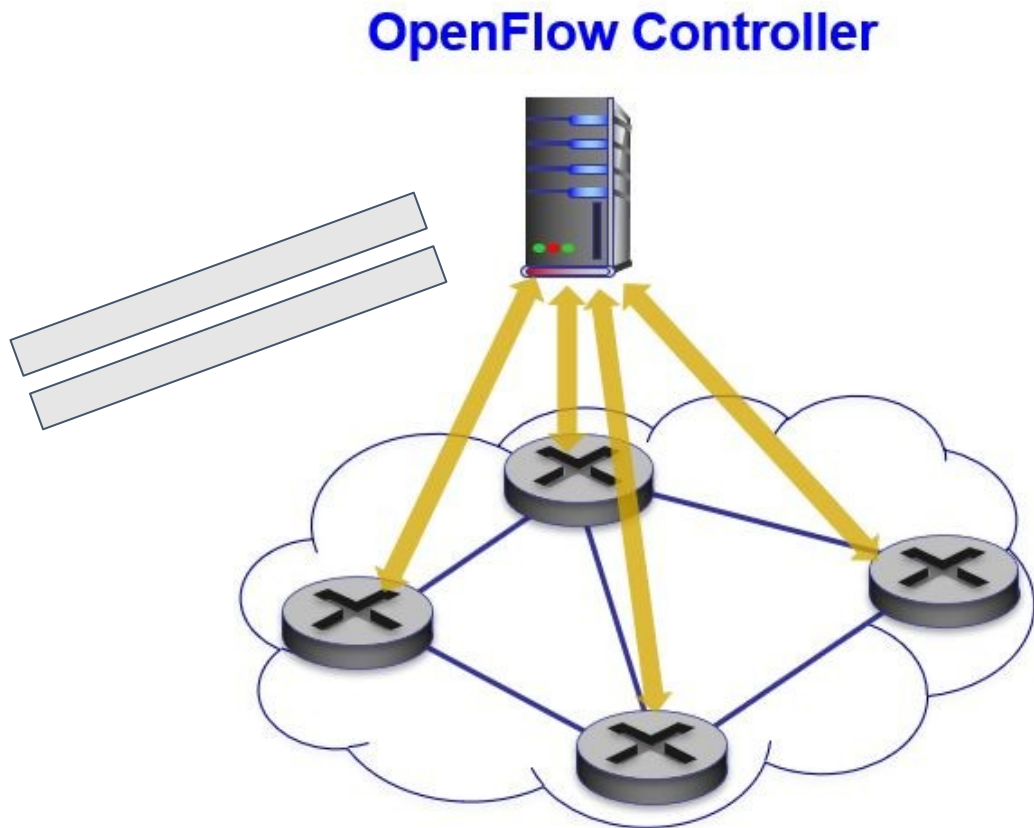
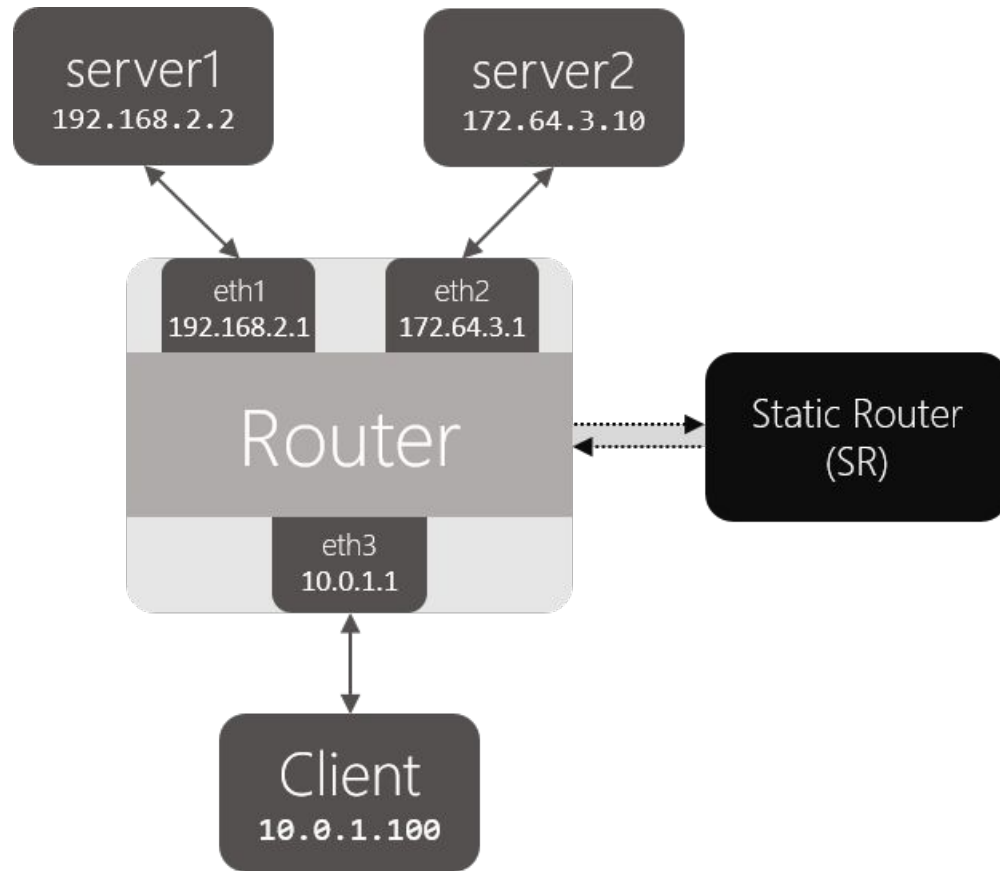
Due date: **04/21 2023, 11:59 PM**

Lateday policy:

You have 3 group latedays in total for assignment 2 - 4.

Please compile your code in the VM and test it carefully.

Assignment 4 & SDN



Data Link Layer

- Protocols
 - Ethernet (IEEE 802.3)
 - CSMA(Carrier-sense multiple access)/CD
 - after collision is detected
 - Wi-Fi (IEEE 802.11)
 - CSMA/CA
 - avoid collision
 - etc.
- Devices working in this layer use MAC addresses

Address Resolution Protocol

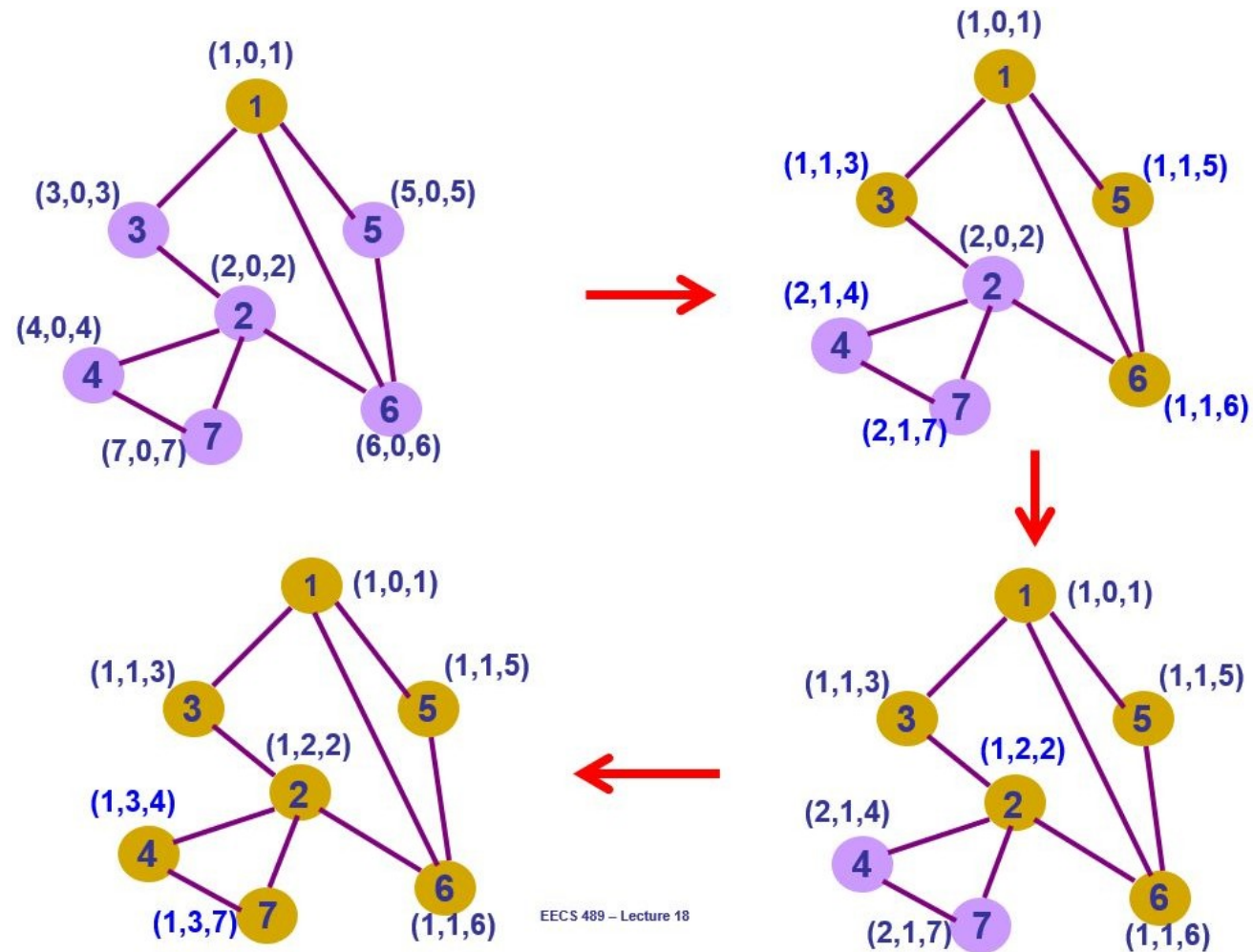
- Used to find the MAC address of another device
 - IP address to MAC address
 - ARP requests need to be broadcast
 - ff:ff:ff:ff:ff:ff is the broadcast address

Octet offset	0	1
0	Hardware type (HTYPE)	
2	Protocol type (PTYPE)	
4	Hardware address length (HLEN)	Protocol address length (PLEN)
6	Operation (OPER)	
8	Sender hardware address (SHA) (first 2 bytes)	
10	(next 2 bytes)	
12	(last 2 bytes)	
14	Sender protocol address (SPA) (first 2 bytes)	
16	(last 2 bytes)	
18	Target hardware address (THA) (first 2 bytes)	
20	(next 2 bytes)	
22	(last 2 bytes)	
24	Target protocol address (TPA) (first 2 bytes)	
26	(last 2 bytes)	

Spanning Tree Algorithm

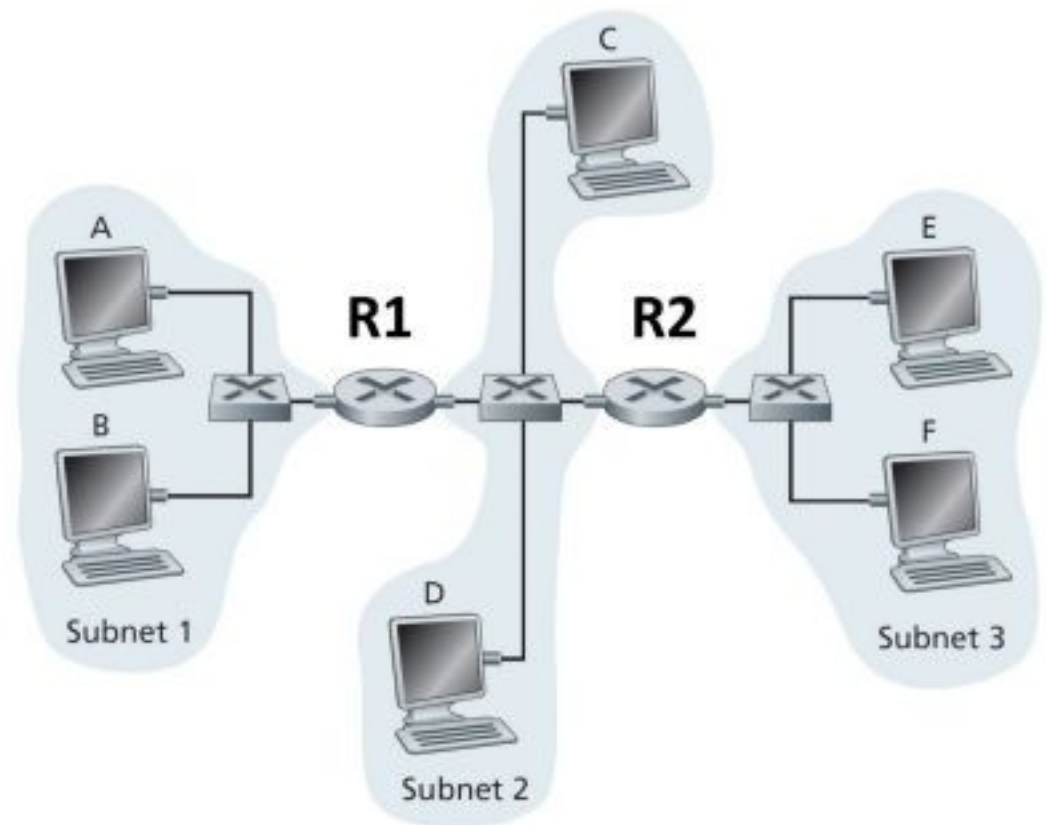
- Used to avoid broadcast storm
- Steps:
 - Initially, each switch proposes itself as the root
 - Switch X announces $(X, 0, X)$ to its neighbors
 - Switches update their view of the root
 - Upon receiving (Y, d, Z) from Z , check Y 's id
 - If Y 's id $<$ current root: set root = Y
 - Switches compute their distance from the root
 - Add 1 to the shortest distance received from a neighbor
 - If root or shortest distance to it changed, send neighbors updated message $(Y, d+1, X)$

Spanning Tree Algorithm



Q1 Forwarding

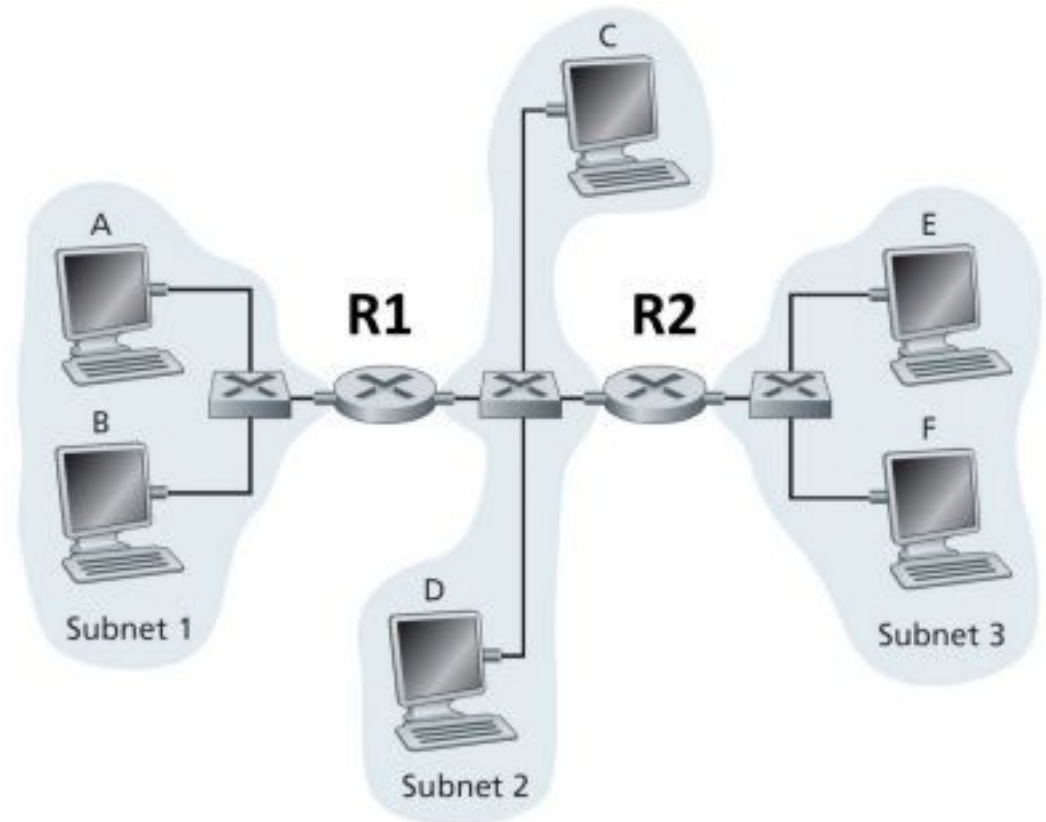
Consider sending an IP packet from Host E to Host F. Will Host E ask router R2 to forward the packet? Why?



Q2 ARP

Consider E sending an IP packet to B. Assume E's ARP cache is empty. Will E make an ARP request to find B's MAC address?

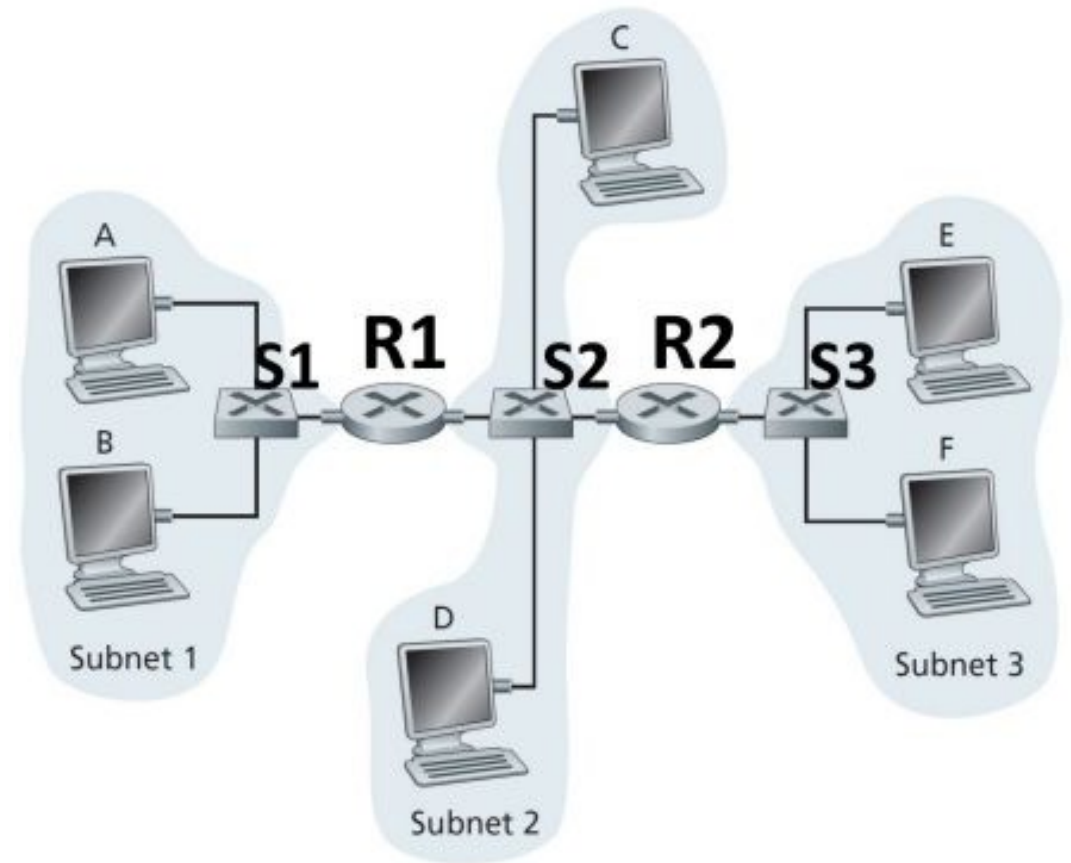
Will E make an ARP request to? If yes, to whom?



Q3 ARP and IP

Consider E sending an IP packet to B.

In the Ethernet frame of the IP packet going to B that is delivered to **router R1**, what are the source and destination IP and MAC addresses?



Thanks

Have a good one!