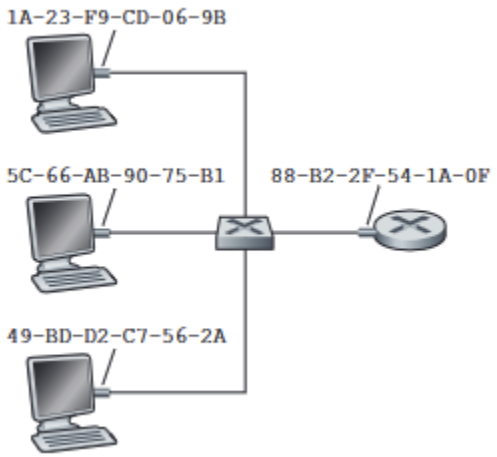
Please read the file MAC_ARP.pdf and answer the following questions.
1. What is the address used in link-layer?
Mac Address



2. Page #481: DNS resolves host names to IP addresses. Address resolution protocol (ARP) resolves IP addresses to link-layer addresses. What is the big difference between the way they (DNS and ARP) work? (Basically, the range of the network.)

The big difference between the two resolvers is that DNS
resolves host names for hosts anywhere in the Internet, whereas ARP resolves IP addresses only for hosts and router interfaces on the same subnet

3. Page #482: When a host (222.222.222.220) wants to send a datagram to another host (222.222.222.222) in the same subnet, it will need to figure out the MAC address of the destination to fill in the link-layer header (ex. Ethernet). How does it figure out the MAC address? Please describe the whole process, starting with broadcasting an ARP query.

When a host wants to send a datagram to another host in the same subnet, it first checks its ARP table for the destination's MAC address. If the address isn't found, the host broadcasts an ARP query to all devices on the subnet, asking, "Who has this IP address?" The device with the matching IP responds with its MAC address in an ARP reply. The sender then updates its ARP table and sends the datagram, now properly addressed with the destination's MAC address.

4. Page #483: Based on your answer to question 2, you will know that ARP works in a limited range. What if a host needs to send out datagram to a different subnet? What will be the destination MAC address?

If a host needs to send a datagram to a different subnet, the destination MAC address will be the MAC address of the router (gateway) on the same subnet. The host sends the datagram to the router, which then forwards it to the appropriate destination subnet using its own routing mechanisms.