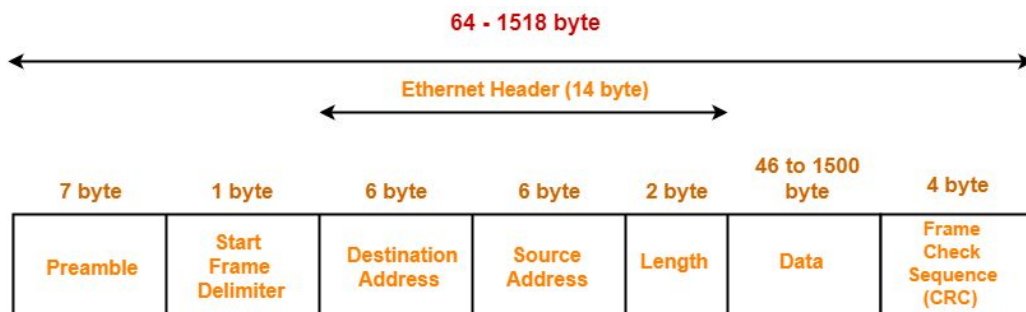Topic: Ethernet
1. Connecting multiple devices over LAN while following protocols to remain secure. A device connected to ethernet can communicate with any other device on ethernet.
2. Ethernet is a method of creating a local area network (LAN)
3. Frame: information sent by devices

IEEE 802.3 Ethernet Frame Format

Node: each device attached to the network

MAC Address: sent through the frame (destination followed by source) in hexadecimal format

Ethernet Protocol: set of rules for constructing frames ex. Min and max lengths along with required information included (like MAC addresses)

Broadcast: frame sent to all nodes on the network

CSMA/CD: carrier-sense multiple access with collision detection, multiple devices all talk to each other while only sending one message to avoid collisions

4.

Sending and receiving Ethernet frames on a bus
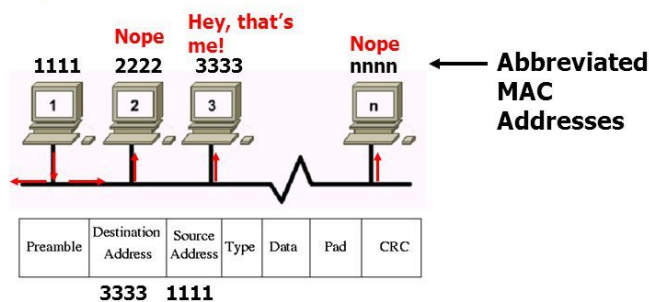
- Each NIC card compares its own MAC address with the Destination MAC Address.
- If it matches, it copies in the rest of the frame.
- If it does NOT match, it ignores the rest of the frame.
  - Unless you are running a Sniffer program

5. Ethernet uses MAC addresses along with following standards/protocols to be secure. May have switches as a part of their network.

Topic: Switching
1. A switch is connected to an ethernet network and determines where to send an incoming message frame by looking at the MAC address and maintaining tables of each address.
2. Switches help a network channel information easier
3. Frame: the messages sent/received from devices which contain the MAC addresses the switch needs to read

   Source Address Table: the table a switch maintains of each known MAC address and known device associated with the MAC address

   MAC Address Table: all MAC addresses known in the network

   Broadcast: if a MAC address is not in the switches source address table, the message is broadcast to all nodes

   Flood: sending a broadcast when an unknown destination MAC address is entered

4. Frame received from a node, source MAC address is added. If destination is known, frame is sent to known node, otherwise broadcast to all nodes.
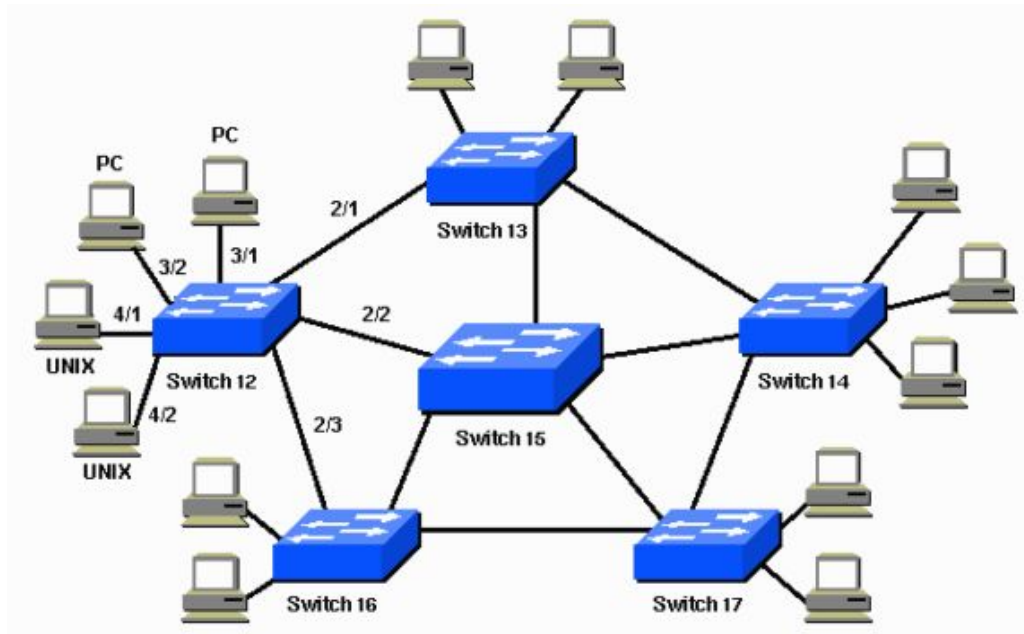
5. Switching is used when the network is connected by ethernet. Operates at level 2, frame level, in the OSI.

Questions for other topics-
Networks, standards, and models: Common standards used today
                                                Different types of most common network connections
ARP: How it works at all
        Which layer of OSI model

ICMP: What types of messages are sent
Which layer of OSI model
IPv4: Difference between IPv4 and IPv6
Which layer of OSI model

Notes on other topics-
Networks, standards, and models: protocols to keep networks secure and safe
ARP: address resolution protocol, connect network and data layer, transfer IP to MAC address, in layer 2 of OSI, reply follows request, TCP/UDP protocol
ICMP: internet control message protocol, send error/diagnostic messages for condition of the network, layer 3 of OSI model, "time to live" exceeded
IPv4: fourth version of internet protocol used today, used more than IPv6, layer 3 of OSI model, routes internet traffic, used by almost all devices with IP addresses