# CSS2C08

# COMPUTER NETWORKS

# MODULE 4

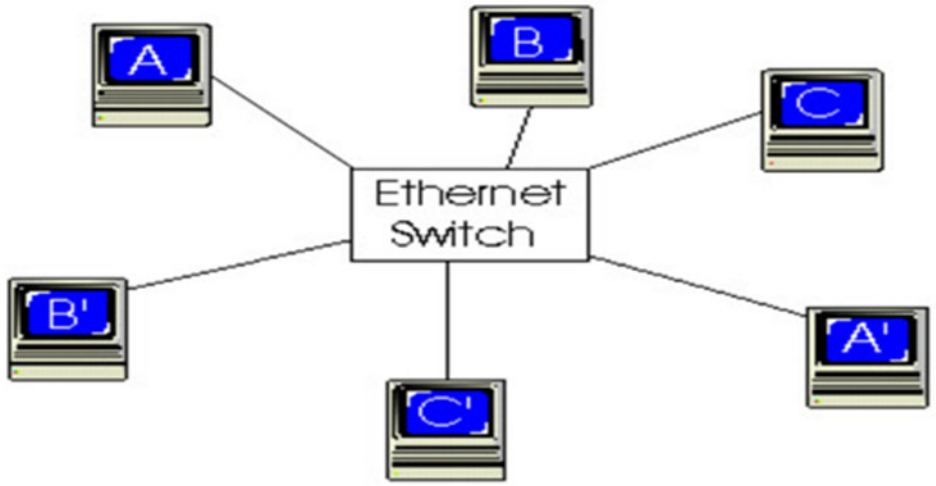
1. LINK LAYER SERVICES
2. ERROR DETECTION AND CORRECTION
3. MULTIPLE ACCESS PROTOCOLS
4. LAN ADDRESS
5. ARP
6. ETHERNET
7. HUBS ,BRIDGES and SWITCHES
8. WIRELESS LINKS
9. PPP
10. ATM

# Switches

- A **switch** is a device in a computer **network** that connects other devices together. Multiple data cables are plugged into a **switch** to enable communication between different networked devices.
- A network switch is a multiport network bridge that uses MAC addresses to forward data at the data link layer (layer 2) of the OSI model.
- Switches for Ethernet are the most common form of network switch.

- The most important difference between a bridge and switch is that bridges usually have a small number of interfaces (i.e., 2-4), whereas switches may have dozens of interfaces. A large number interfaces generates a high aggregate forwarding rate through the switch fabric, therefore necessitating a high-performance design (especially for 100 Mbps and 1 Gbps interfaces).

- One of the advantages of having a switch with a large number of interfaces is that it creates direct connections between hosts and the switch.
- When a host has a full-duplex direct connection to a switch, it can transmit (and receive) frames at the full transmission rate of its adapter; in particular, the host adapter always senses an idle channel and never experiences a collision. When a host has a direct connection to a switch (rather than a shared LAN connection), the host is said to have **dedicated access**.




An Ethernet switch providing dedicated Ethernet access to six hosts.

An Ethernet switch provides dedicated access to six hosts. This dedicated access allows A to send a file to A' while that B is sending a file to B' and C is sending a file to C'. If each host has a 10Mbps adapter card, then the aggregate throughput during the three simultaneous file transfers is 30 Mbps. If A and A' have 100 Mbps adapters and the remaining hosts have 10 Mbps adapters, then the aggregate throughput during the three simultaneous file transfers is 120 Mbps.