



## **American International University- Bangladesh (AIUB)**

**Course: Computer Networks**

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1.

Interconnecting devices are hardware components that connect different devices in a computer network. Examples of interconnecting devices include switches, routers, hubs, bridges, and gateways.

2.

A switch is a network device that connects multiple devices in a network and allows them to communicate with each other. Switches use MAC addresses to forward data between devices. When a switch receives a data packet, it checks the destination MAC address and forwards the packet only to the device with the matching MAC address. This helps to minimize network congestion and improve network performance.

3.

A router is a networking device that connects multiple networks and directs data traffic between them. Routers use IP addresses to forward data between networks. When a router receives a data packet, it checks the destination IP address and forwards the packet to the appropriate network. Routers also use routing tables to determine the best path for data to travel between networks.

4.

Different devices can be connected in a network using various connection types such as wired connections, wireless connections, or a combination of both. Wired connections can include Ethernet cables, fiber optic cables, or coaxial cables. Wireless connections can include Wi-Fi, Bluetooth, or Infrared.

5.

DHCP (Dynamic Host Configuration Protocol) is a network protocol that allows network administrators to automatically assign IP addresses and other network configuration parameters to devices on a network. When a device connects to a network, it sends a DHCP request to the DHCP server, which responds with an available IP address and other configuration parameters.

6.

A broadcast domain is a logical division of a network where all devices can receive broadcast messages sent by any other device within the same broadcast domain. A collision domain is a logical division of a network where packets can collide with each other, causing network performance issues. In Ethernet networks, a collision domain is typically defined as all devices connected to the same physical segment of a network.

7.

DNS (Domain Name System) is a system that translates domain names into IP addresses. When a user enters a domain name in their web browser, the DNS system looks up the IP address associated with that domain name and returns it to the user's computer. This allows the user's computer to establish a connection with the server hosting the website associated with that domain name.

8.

VLSM (Variable Length Subnet Masking) is a technique used to divide a network into smaller subnets of different sizes. In a VLSM problem, the goal is to determine the subnet sizes and addresses that will be used to efficiently allocate IP addresses to devices on a network.

9.

ARP (Address Resolution Protocol) Cache is important because it allows devices to quickly lookup the MAC addresses associated with IP addresses on a network. When a device needs to send data to another device on the network, it first checks its ARP cache to see if it already knows the MAC address of the device. If the MAC address is not in the cache, the device sends an ARP request to the network to get the MAC address. By caching MAC addresses, devices can reduce network traffic and improve network performance.