## N+ Assignment

#### Module 5. Network Fundamentals and Building Networks

##### Beginner Question

* + 1. What is network?

A network, in computing, is a group of two or more devices or nodes that can communicate. The devices or nodes in question can be connected by physical or wireless connections. The key is that there are at least two separate components, and they are connected

* + - * List Common Network Components
      * Types of network devices
      * Switches.
      * Bridges.
      * Routers.
      * Firewalls.
      * Repeaters.
      * Gateways.
      * Hubs.
      * Modems.
    1. Add and configure loopback adaptor in network and sharing center
* Done

##### Intermediate Question

* + 1. Explain application of network

A network application is any application running on one host providing communication to another application running on a different host. Network applications allow network operators to easily manage and monitor network traffic as well as analyze data that can be used to improve network systems.

* + 1. What do you mean by Node?

A node is a point of intersection/connection within a data communication network. In an environment where all devices are accessible through the network, these devices are all considered nodes.

* + 1. practice of simple file folder sharing
* done

##### Advance Question

* + 1. List types of devices

Types of devices

Input devices, which write data to a computer, includes keyboards, mice, touchpads, joysticks, scanners, microphones, barcode scanners, and webcams. ...

Output devices, which accept data from a computer, includes display monitors, printers, speakers, headphones, and projectors.

* + 1. Explain types of router

Wired routers are older versions of routers with cable connections at both ends to receive and distribute data packets. Wireless routers, which transmit data directly to computers and other electronic devices via radio signals, are more advanced.

#### Topic: Types of Network

##### Beginner Question

* + 1. What is Difference between a LAN, MAN, WAN?

MAN is an acronym for Metropolitan Area Network. WAN is an acronym for Wide Area Network. LAN is a network that usually connects a small group of computers in a given geographical area. MAN is a comparatively wider network that covers large regions- like towns, cities, etc.

* + 1. Common Network Components

Some important network components are NIC, switch, cable, hub, router, and modem.

##### Intermediate Question

* + 1. Explain Wide Area Network

In its simplest form, a wide-area network (WAN) is a collection of local-area networks (LANs) or other networks that communicate with one another. A WAN is essentially a network of networks, with the Internet the world's largest WAN.

* + 1. Explain Network Backbone

A backbone or core network is a part of a computer network which interconnects networks, providing a path for the exchange of information between different LANs or subnetworks. A backbone can tie together diverse networks in the same building, in different buildings in a campus environment, or over wide areas.

* + 1. Explain CAN

A controller area network (CAN) bus is a high-integrity serial bus system for networking intelligent devices. CAN busses and devices are common components in automotive and industrial systems. Using a CAN interface device, you can write LabVIEW applications to communicate with a CAN network.

##### Advance Question

* + 1. Define Physical Network Topologies

Physical Topology : Physical topology indicates arrangement of different elements of a network. It reflects physical layout of devices and cables to a form a connected network. It is concerned with essentials of network ignoring minute details like transfer of data and device type

* + 1. Network Architecture: Peer-to-Peer

Peer to peer architecture is a type of computer networking architecture in which there is no division or distinction of abilities amidst the various workstations or nodes of a network. Every section has the exact same responsibilities and can perform the same set of actions

* + 1. Point-to-multipoint network

The point-to-multipoint topology consists of a central base station that supports several subscriber stations. These offer network access from a single location to multiple locations, permitting them to use the same network resources between them

#### Topic: Network Devices

##### Beginner Question

* + 1. Why we use Network and Devices

Networking devices serve the following general purposes: Facilitate data transmission and communication between devices. Enable efficient and secure network connectivity. Enhance network performance and optimize traffic flow

* + 1. Explain Switch?

A network switch connects devices in a network to each other, enabling them to talk by exchanging data packets. Switches can be hardware devices that manage physical networks or software-based virtual devices.

##### Intermediate Question

* + 1. Define list of cables in use of network

The type of network cable used in a network infrastructure is one of the most vital aspects of networking across various industries.

Coaxial Cable.

Fiber Optic Cable

Shielded Twisted Pair (STP) Cable.

Unshielded Twisted Pair (UTP) Cable.

* + 1. Explain Define Access point

An access point (AP) is a term used for a network device that bridges wired and wireless networks. Consumer APs are often called a “wireless routers” because they typically also serve as both internet routers and firewalls.

* + 1. Which types of transmission modes in computer network

There are 3 types of transmission modes which are given below: Simplex mode, Half duplex mode, and Full-duplex mode. These are explained below. Simplex mode: In simplex mode, Sender can send the data but the sender can't receive the data.

* + 1. Practice on Remote Desktop connection
* done
  + 1. Practice on remote assistance
* done

##### Advance Question

* + 1. Explain Repeater and router

A Wi-Fi repeater, extender, or booster is a device that forwards wireless signals from the router to cover a larger area, such as multiple floors of a house. The repeater creates a new network based on signals from the originating network, and the clients that connect to the repeater are thus on a separate network.

* + 1. What is multiplexer?

In electronics, a multiplexer (or mux; spelled sometimes as multiplexor), also known as a data selector, is a device that selects between several analog or digital input signals and forwards the selected input to a single output line. The selection is directed by a separate set of digital inputs known as select lines.

* + 1. Explain MODEM

A modem is a hardware which connects to a computer, broadband network or wireless router. Modem converts information between analogue and digital formats in real time making seamless two-way network communication. The full form of Modem or modem stands for modulator–demodulator.

#### Topic: Install and configure DHCP, DNS

##### Beginner Question

* + 1. Explain DHCP Dynamic host configuration protocol

Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.

* + 1. Application of DHCP with one example

DHCP provides the following benefits.

Reliable IP address configuration. DHCP minimizes configuration errors caused by manual IP address configuration, such as typographical errors, or address conflicts caused by the assignment of an IP address to more than one computer at the same time.

Reduced network administration.

##### Intermediate Question

* + 1. Explain Domain naming Services

A Domain Name System (DNS) turns domain names into IP addresses, which allow browsers to get to websites and other internet resources. Every device on the internet has an IP address, which other devices can use to locate the device.

* + 1. Application of DNS with one example

DNS, or the Domain Name System, translates human readable domain names (for example, www.amazon.com) to machine readable IP addresses (for example, 192.0.2.44).

#### Topic: Network Topologies

##### Beginner Question

* + 1. What are the 5 network topologies?

The way the data is transferred and the devices are connected how the network topology will take shape. Bus, Star, Ring, Mesh, Tree, and Hybrid topologies are the different shaped physical topologies. A network's design can directly affect how well it works.

* + 1. What is Internet topology?

Internet topology is the structure by which hosts, routers or autonomous systems (ASes) are connected to each other. The majority of existing Internet topology research focuses on the AS-level.

* + 1. What is protocol

In networking, a protocol is a set of rules for formatting and processing data. Network protocols are like a common language for computers. The computers within a network may use vastly different software and hardware; however, the use of protocols enables them to communicate with each other regardless.

##### Intermediate Question

* + 1. What is the most common network topology?

Star topology: Star topology is the most commonly used topology system. Every node connects to a central network device in this layout, like a hub, switch or computer.

* + 1. Explain star topology in networking?

Star topology is a type of network topology in which every device in the network is individually connected to a central node, known as the switch or hub. When represented visually, this topology resembles a star which gives it its name.

##### Advance Question

* + 1. Explain Hybrid topology

As the term suggests, hybrid topology is a type of network topology in which two or more different topologies are integrated or combined to lay out a network. In layman's terms, hybrid topology is the combination of two or more networks. The network type could be Star, Ring, Bus, or Mesh.

* + 1. What is physical and logical topology?

A physical topology describes how network devices are physically connected - in other words, how devices are actually plugged into each other. We're talking about cables, wireless connectivity, and more. A logical topology describes how network devices appear to be connected to each other.

* + 1. What are the types of logical topology?

The two logical topologies are broadcast (also known as bus) and sequential (also known as ring). In a broadcast topology, all devices on the network receive every message transmitted. Each device is responsible for recognizing messages meant for it. If a device is not the intended receiver, the message is ignored.

#### Topic: OSI Model

##### Beginner Question

* + 1. What is OSI model explain?

The OSI Model (Open Systems Interconnection Model) is a conceptual framework used to describe the functions of a networking system. The OSI model characterizes computing functions into a universal set of rules and requirements in order to support interoperability between different products and software.

* + 1. List of Application layer protocol

TELNET. Telnet stands for the TELetype NETwork. ...

FTP. FTP stands for File Transfer Protocol. ...

TFTP. ...

NFS. ...

SMTP. ...

LPD. ...

X window. ...

SNMP.

* + 1. How many types of protocols are there?

There are three main types of network protocols. These include network management protocols, network communication protocols and network security protocols: Communication protocols include basic data communication tools like TCP/IP and HTTP.

##### Intermediate Question

* + 1. What is the difference between TCP IP model and OSI model?

OSI refers to Open Systems Interconnection, whereas TCP/IP refers to Transmission Control Protocol. OSI follows a vertical approach, whereas TCP/IP follows a horizontal approach. OSI model, the transport layer, is only connection-oriented, whereas the TCP/IP model is both connection-oriented and connectionless.

* + 1. What is TCP IP networking?

TCP/IP stands for Transmission Control Protocol/Internet Protocol. TCP/IP is a set of standardized rules that allow computers to communicate on a network such as the internet

1. What is a wired Internet connection?

A wired network uses cables to connect devices, such as laptop or desktop computers, to the Internet or another network. A wired network has some disadvantages when compared to a wireless network. The biggest disadvantage is that your device is tethered to a router.

1. What are the disadvantages of wired networks?

However, there are disadvantages to using a wired network: they are expensive to install or reconfigure. users can't instantly move a device from one location to another as there may not be a network connection available.

1. How do I configure network authentication?

Password-based authentication. Passwords are the most common network authentication method. ...

Two-factor authentication. ...

Multi-factor authentication. ...

CAPTCHAs. ...

Biometrics authentication. ...

Certificate-based authentication.

1. Practice of Team viewer, Any Desk, Google Hangout, Skype, zoom

What is the difference between TeamViewer and Zoom?

TeamViewer is a remote support, remote access & online meetings management software which supports remote computer restart,... Zoom is a scalable, cloud based video conferencing & web conferencing platform enabling online meetings, webinars, file sharing,...

1. Download google chrome

Download the installation file.

If prompted, click Run or Save. If you choose Save, to start installation, either: ...

If you're asked, "Do you want to allow this app to make changes to your device," click Yes.

Start Chrome: Windows 10 and up: A Chrome window opens after everything is done.

1. configure "date and time" opting in control panel

Choose Start > Control Panel > Clock, Language, and Region > Date and Time. Click the clock in the taskbar's notification area; then click Change Data and Time Settings. Right-click the taskbar clock and choose Adjust Date/Time.

#### Topic: TCP/IP

##### Assignment level Basic:

* + 1. What is TCP/IP?

TCP/IP stands for Transmission Control Protocol/Internet Protocol and is a suite of communication protocols used to interconnect network devices on the internet.

* + 1. What is the full form of TCP/IP?

TCP/IP stands for Transmission Control Protocol/Internet Protocol. TCP/IP is a set of standardized rules that allow computers to communicate on a network such as the internet

##### Assignment level Intermediate:

* + 1. List out the types of IP

There are four different types of IP addresses: public, private, static, and dynamic. While the public and private are indicative of the location of the network—private being used inside a network while the public is used outside of a network—static and dynamic indicate permanency.

* + 1. What is protocol?

What Does Protocol Mean? A protocol is a set of rules and guidelines for communicating data. Rules are defined for each step and process during communication between two or more computers. Networks have to follow these rules to successfully transmit data.

* + 1. DO a practical to set the tcp/ip in network adapter?

Select Start , then select Settings > Network & Internet .

Do one of the following: For a Wi-Fi network, select Wi-Fi > Manage known networks. ...

Under IP assignment, select Edit.

Under Edit IP settings, select Automatic (DHCP) or Manual. ...

When you're done, select Save.

#### Topic: Cables

##### Beginner Question

* + 1. Types of cables and connectors?

Types of Cables. “Wireless” appears to be the goal in our connected society, yet some network cables are necessary to allow computers to transfer information. ...

Voice and Data Cables. ...

Coaxial Cables. ...

Fiber Optic Cables. ...

Types of Connectors. ...

Ethernet Cable Connectors. ...

Coaxial Cable Connectors. ...

USB Connectors.

* + 1. Explain twisted pair cable and shielded twisted pair cable

Each signal on twisted pair requires both wires. Unlike unshielded twisted pair (UTP), shielded twisted pair also encloses these wires in a shield and grounds them to further reduce electromagnetic and radio frequency interference. STP cables are more expensive and harder to install than UTP wiring.

##### Intermediate Question

* + 1. Which of these cables connect computers to monitors?

The acronym VGA stands for Video Graphics Array. It is a cable that is used to send video signals from a device to another. The VGA cable works as a connection between the monitor and your PC screen and sends video waves

* + 1. How do I connect to a shared printer?

Select the Start button, then select Settings > Devices > Printers & scanners. Under Add printers & scanners, select Add a printer or scanner. Choose the printer you want, and then select Add Device. If you don't see the printer you want, select The printer that I want isn't listed.

1. Which cable that is commonly used to connect a computer to a printer?

Our systems have detected unusual traffic from your computer network. This page checks to see if it's really you sending the

1. What are the different ports and connectors?

Select the Start button, then select Settings > Devices > Printers & scanners.

Under Add printers & scanners, select Add a printer or scanner.

Choose the printer you want, and then select Add Device.

1. How do I connect my laptop to my printer without cable?

Select Start > Settings > Bluetooth & devices > Printers & scanners . ...

Next to Add a printer or scanner, select Add device.

Wait for it to find nearby printers, then locate the one you want to use, and select Add device.

1. Application and brief explanation of fiber optic cable and Coaxial cable

Optical fibre and Coaxial cables, both are different types of guided media cables. Optical fibre is made up of plastic and glass and is used to transmits signals in form of light or optics whereas coaxial cable is made using plastic and copper wires and is used to transmits signals in form of electric signals.

1. Which of following operates at the 5GHz frequency range?

802.11n and 802.11ax can use either the 2.4 GHz or 5 GHz band; 802.11ac uses only the 5 GHz band. The segment of the radio frequency spectrum used by 802.11 varies between countries. In the US, 802.11a and 802.11g devices may be operated without a license, as allowed in Part 15 of the FCC Rules and Regulations.

1. What frequency does 802.11g use?

2.4 GHz 20 MHz

1. What standard is compatible with 802.11a?

Which standard is 802.11 a?

IEEE 802.11a is an amendment to the 802.11 standard for wireless LANs. It is of of the specifications that is more commonly known as Wi-Fi. 802.11a uses radio frequencies in the 5 GHz band and supports theoretical throughput of up to 54 Mbps.

#### Topic: TCP/IP concepts - IPv6, IPv4

##### Beginner Question

* + 1. .What is the difference between IPv4 & IPv6? 2.Explain TCP/IP

IPv4 is composed of 32-bit address length and is the fourth version of the Internet Protocol (IP). IPv6 is composed of 128-bit address length and is the latest updated version of the Internet Protocol (IP).

* + 1. Explain IPV6 Address with Address structure

An IPv6 address is 128 bits in length and consists of eight, 16-bit fields, with each field bounded by a colon. Each field must contain a hexadecimal number, in contrast to the dotted-decimal notation of IPv4 addresses.

* + 1. Define IPV6 reserve address

Unlike IPv4, which has many small reserved blocks in various locations in the address space, in IPv6 the reserved block is at the “top” of the address space: the ones starting with “0000 0000” (or 00 for the first hexadecimal octet). This represents 1/256th of the total address space.

* + 1. Explain Difference between public ip and private ip

**Unlike IPv4, which has many small reserved blocks in various locations in the address space, in IPv6 the reserved block is at the “top” of the address space: the ones starting with “0000 0000” (or 00 for the first hexadecimal octet). This represents 1/256th of the total address space.**

* + 1. Create straight and cross cables and it's testing

Usually, straight through cables are primarily used for connecting unlike devices. And crossover cables are use for connecting unlike devices alike devices. Use straight through cable for the following cabling: Switch to router.

##### Intermediate Question

* + 1. Brief explanation of ip Addresses

An Internet Protocol (IP) address is a unique numerical identifier for every device or network that connects to the internet. Typically assigned by an internet service provider (ISP), an IP address is an online device address used for communicating across the internet.

* + 1. What is the advantage of IPv6 over IPv4?

IPv6 has a much larger address space than IPv4, allowing for more devices, networks, and services to be connected. IPv6 also offers some advantages over IPv4, such as improved security, performance, and scalability.

* + 1. Assign multiple IPv4 in single network adapter [lan card]

Yes you can have more than one IP address when using a single Network Card. Setting this up is different in each Operating System, but may involve creating a new Network

* + 1. Assign simple IPv6 between two system and ping it.

Can one Ethernet card be assigned multiple IPv4 addresses?

Yes you can have more than one IP address when using a single Network Card. Setting this up is different in each Operating System, but may involve creating a new Network

* + 1. Assign and configure simple IPv4 between systems

Right-click on the network adapter you want to assign an IP address and click Properties. Highlight Internet Protocol Version 4 (TCP/IPv4) then click the Properties button. Now change the IP, Subnet mask, Default Gateway, and DNS Server Addresses. When you're finished click OK.

##### Advance Question

* + 1. 1.Which is faster IPv4 or IPv6? 2.What does TCP do?

Though the IP header size of IPv6 address is 4 times larger than IPv4 address, the IPv6 headers are only 2 times the size of IPv4. This greatly reduces the overhead of packet processing and header bandwidth and that makes it faster.

* + 1. Give security in sharing

8 tips for secure file sharing

Use end-to-end encryption. Make sure your files are end-to-end encrypted. ...

Choose a privacy-focused provider. ...

Use strong passwords. ...

Turn on two-factor authentication (2FA) ...

Password-protect files. ...

Set sharing time limits. ...

Monitor file access. ...

Use a VPN on public WiFi

* + 1. Configure "Map network drive"

Map a network drive to get to it from File Explorer in Windows without having to look for it or type its network address each time. Open File Explorer from the taskbar or the Start menu, or press the Windows logo key + E. Select This PC from the left pane. Then, on the Computer tab, select Map network drive.

#### Topic: IP routing and Routing protocols

##### Beginner Question

* + 1. What Is Routing?

Routing is the process of path selection in any network. A computer network is made of many machines, called nodes, and paths or links that connect those nodes. Communication between two nodes in an interconnected network can take place through many different paths.

* + 1. How Routing Starts Up?

The routing process starts when software on a host device uses a packet's contents, destination, or purpose to select a possible route from a routing table. A routing table is a repository of all the routes to all the destinations in use by a network

##### Intermediate Question

* + 1. What Is Hybrid Routing Protocol?

Hybrid Routing protocol: It basically combines the advantages of both, reactive and pro-active routing protocols. These protocols are adaptive in nature and adapts according to the zone and position of the source and destination mobile nodes

* + 1. What Are the Range of Ad Values?

It is an integer value ranging from 0 to 255 where 0 shows that the route is most trusted and 255 means that no traffic will be passed through that route or that route is never installed in the routing table. The smaller the value of AD, the more reliable the routing protocol is.

* + 1. What Is an Autonomous System?

An autonomous system (AS) is a network or a collection of networks that are all managed and supervised by a single entity or organization

##### Advance Question

* + 1. Define Static Routing?

**Static routing is a form of routing that occurs when a router uses a manually-configured routing entry, rather than information from dynamic routing traffic. In many cases, static routes are manually configured by a network administrator by adding in entries into a routing table, though this may not always be the case.**

* + 1. Explain Dynamic Routing?

Dynamic routing, also called adaptive routing, is a process where a router can forward data via a different route for a given destination based on the current conditions of the communication circuits within a system.

#### Topic: Switching and VLANS

##### Beginner Question

* + 1. What is VLAN?

A virtual local area network (VLAN) is a virtualized connection that connects multiple devices and network nodes from different LANs into one logical network.

* + 1. Which two benefits of creating VLANs?

VLANs provide a number of advantages including ease of administration, confinement of broadcast domains, reduced network traffic, and enforcement of security policies. VLANs enable logical grouping of end-stations that are physically dispersed on a network

* + 1. What is Dynamic VLAN?

Dynamic VLAN assignment separates and isolates devices into different network segments based on the device or user authorization and their characteristics. The flow of traffic between those VLANs is governed by a firewall or another routing device which can then enforce specific network access rules.

* + 1. What is Static VLAN?

A static VLAN is a group of ports designated by the switch as belonging to the same broadcast domain. That is, all ports carrying traffic for a particular subnet address would belong to the same VLAN. Using a VLAN, you can group users by logical function instead of physical location.

##### Intermediate Question

* + 1. What is VLAN and INTERVLAN?

Inter-VLAN routing refers to the movement of packets across the network between hosts in different network segments. VLANs make it easier for one to segment a network, which in turn improves the performance of the network and makes it more flexible, since they are logical connections.

* + 1. What is trunk port?

A trunk port is a type of connection on a switch that is used to connect a guest virtual machine that is VLAN aware. Generally, all frames that flow through this port are VLAN tagged

##### Advance Question

* + 1. How to configure Trunk port?

To configure a trunk interface, the switchport mode trunk interface command is used. This type of interface can carry traffic of multiple VLANs. An example will help you understand the concept. VLAN 1 doesn't have to be created, it exists by default.

* + 1. How to delete VLAN information from Switch?

Deleting the VLAN Database from a Cisco Switch

1) Deleting the switch configuration. This is the easy part. ...

Switch#erase startup-config. ...

Switch#reload.

2) Deleting the switch Vlans. ...

Switch#show vlan brief. ...

Switch#show flash: ...

Switch#delete vlan.dat. ...

Switch#sh flash.