CCA-102

DATA COMMUNICATIONS

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CCA-102: DATA COMUNICATIONS ASSIGNMENT

1. WHAT ARE THE DIFFERENT TYPES OF NETWORK?

a. Local area network (LAN)…
b. Personal area network (PAN)…
c. Wireless local area network (WLAN)…
d. Campus area network (CAN)…
e. Metropolitan area network (MAN)…
f. Wide area network (WAN)…
g. Storage area network (SAN)…
h. Passive optical local area network (POLAN)

2. Explain the shielded twisted pair (STP) and Unshielded twisted pair (UTP)

STP:

Shielded twisted pair cabling acts as a conducting shielded by covering thefour pairs of signal-carrying wires as a means to reduce electromagnetic interference. There are a variety of different types of STP cables, such as a foil twisted pair(FTP) and a shielded foil twisted pair (S/FTP).

UTP:

UTP cables a type of copper cable widely used for networking purposes. UTP cables consist of pairs of insulated wires that are twisted together to reduce interference and cross talk. they are commonly used in ethernet networks for transmitting data signals.

2. What is difference between baseband and broadband transmission?

Basis of Comparison	Baseband Transmission	Broadband Transmission
Type of signal	In baseband transmission, the type of signaling used is digital.	In boardband transmission, the type of signaling used in analog.
Direction type	Baseband transmission bidireactional in nature.	Boardband transmission is unidirectional in natrue.
Signal Transmission	The signal can be sent in both directions.	Sending of signal in one direction only.
Distance covered by the signal	Signals can only travel over short.	Signals can be traveled over.

Basis of comparison	Baseband Transmission	Broadband Transmission
Signal	Distance for long distance, attenuation is required.	Long distance without being attenuated.
Data streams	It can only transfer one data stream at a time in bi-directional mode.	It can send multiple signal waves at once but in one direction only.
Installation maintenance	Baseband transmission is easy to install and maintain.	Broadband transmission is difficult to install and maintain.
cost	This transmission is cheaper to design.	This transmission is expensive to design.

4 .What is the difference between a hub, modern, router and a switch?

Routers - connect a modern to different computer networks, ensuring that internet traffic goes to the right networks. Switches –connect devices within a single network, transfer incoming and outgoing internet traffic between the connected devices. Gateway -regulate traffic between two or more dissimilar networks.

The key difference between hubs, switches and bridges is that hubs operate at layer one of the OSI model, while bridges and switches work with mac addresses at layer2. Hubs broadcast incoming an traffic on all ports, whereas bridges and switches only route traffic towards their addressed destinations.

5. When you move the NIC cards from one PC to another PC, does the MAC address gets transferred as well?

Yes, that's because MAC addresses are hard-wired into the NIC circuitry, not the PC. This also means that a PC can have a different MAC addresses when the NIC card was replace by another one.

6. When trouble shooting computer network problems, what common hardware –related problems can occur?

Some network problems can arise from faulty hardware, such as routers, switches, firewalls, and even from unexpected usage patterns , like network bandwidth spikes ,changes in app configuration ,or security breaches.

7. In a network that contains two servers and twenty workstations, where is the best place to install an anti – virus program?

In a network that contains two servers and twenty workstations, the best place to install an anti- virus is on the server. This is because the server is the main port for all the network traffic, and so it more important to ensure that the server is free of and virus other security risks.

8. Define Static IP and Dynamic? Discuss the difference between IPV4 and IPV6.

Static IP address:

A computer on the internet can have static IP address, which means it says the same over time, or a dynamic IP address , which means address can change over time.

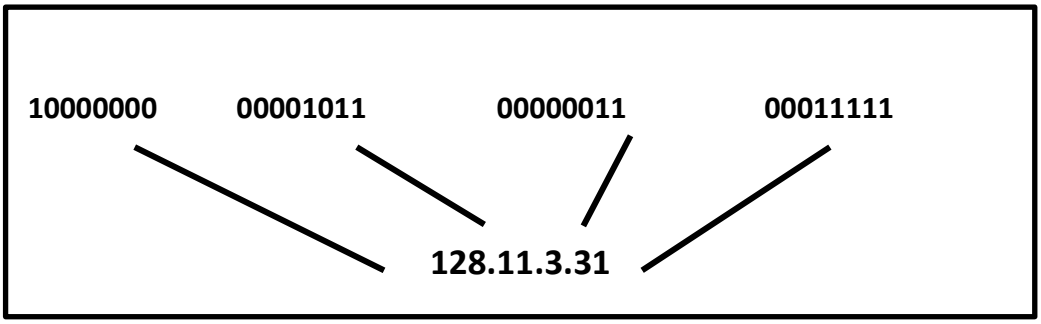
Dynamic IP:

A Dynamic IP address is a temporary address for devices connected to a network that continually changes over time. An internet protocol (IP) address is a number Computers to identify host and network interfaces, as well as different locations on a network.

DIFFERENCE BETWEEN IPV4 AND IVP6.

IPV4:

IPV4 address consists of two things that are the network address and the host address. It stands for internet protocol version four.it was introduced in 1981 by DARPA and was the first deployed version in 1982 for production on SATNET and on the ARPANET in January 1983. IPV4 addresses are 32-bit integers that have to be expressed in Decimal Notation. It is represented by 4 numbers separated by dots in the range of 0-255, which have to be converted to 0 and 1, to be understood by computers. For example, an IPV4 address can be written as 189. 123. 123.90.separated by a dot (.).

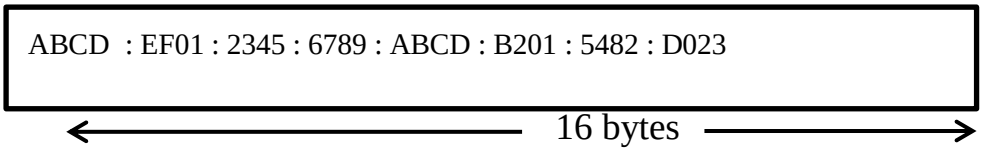


IPV6:

IPV6 is based on IPV4 and stands for internet protocol version 6. It was first introduced in December 1995 by internet engineering task force. IP version 6 is the new version of internet protocol, which is way better than IP version in terms of complexity and efficiency. IPV6 is written as a group of 8 hexadecimal numbers separated by colon (:). It can be written as 128 bits of 0s and IS.

IPV6 Address Format:

IPV6 Address Format is a 128- bit IP Address, which is written in a group of 8 hexadecimal numbers separated by colon (:).



DIFFENCE BETWEEN IPV4 AND IPV6

IPV4	IPV6
IPV4 has a 32- bits lengths	IPV6 has a 128- bits length
It supports Manual and DHCP address configuration	In IPV6 Auto and renumbering address configuration
In IPV4 end to end, connection integrity is unachievable	In IPV6 end-to-end , connection integrity is achievable
It can generate 4.29x109 address space	The address space of IPV6 is quite large it can produce 3.4x1038 address space
The security feature is dependent on the application	IPSEC is an inbuilt security feature in IPV6 protocol
Address representation of IPV4 is in decimal	Address representation of IPV6 is in hexadecimal
Fragmentation performed by sender and forwarding routers	In IPV6 fragmentation is performed only by the sender
In IPV4 packet flow identification is not available	In IPV6 packet flow identification are available and uses the flow label field in the header
In IPV4 checksum field is available	In IPV6 checksum field is not available
It has a broadcast message transmission scheme	In IPV6 multicast and any cast message transmission scheme is available
In IPV4 encryption and authentication facility not provided	In IPV6 encryption and authentication are provided
IPV4 has a header of 20-60 bytes	IPV6 has a header of 40bytes fixed
IPV4 can be converted to IPV6	Not all IPV6 can be converted to IPV4
IPV4 consists of 4 fields which are separated by addresses dot (.)	IPV6 consists of 8 fields, which are separated by a colon (:)
IPV4's IP addresses are divided into five different classes. Class A, Class B, Class C, Class D, Class E.	IPV6 does not have any classes of the IP address

IPV4 supports VLSM(Variable Length subnet mask)	IPV6 does not support VSLM
Example of IPV4: 66.94.29.13	Example of IPV6 :2001:0000:3238:DFEI: 0063:0000:0000:FEFB

9. Discuss TCP/IP model in detail.

Transmission Control Protocol (TCP) is a communications standard that enables application programs and computing devices to exchange over a network. It is designed to send packets across the internet and ensure the successful delivery of data and messages over networks. **TCP** is one the basic standards that define the rules of the internet and is included within the standards defined by the internet engineering task force (IETF). It is one of the most commonly used protocols within digital network communications and ensures end-to-end data delivery.

TCP organizes data so that it can be transmitted between a server and a client it guarantees the integrity of the data being communicated over a network. Before it transmits data, **TCP** establishes a connection between a source and its destination, which it ensures remains live until communication begins. It then breaks large amounts of data into smaller packets, while ensuring data integrity is in place throughout the process. As a result, high-level protocols that need to transmit data all use **TCP** protocol. Examples include peer-to-peer sharing methods like file transfer protocols (FTP), secure shell (SSH), and telnet. It is also used to send and receive email through internet message access protocol (IMAP), post office protocol (POP), and simple mail transfer protocol (SMTP), and for web access through the hypertext transfer protocol (HTTP).

An alternative to TCP in networking is the user Datagram Protocol (UDP), which is used to establish low-latency connections between applications and decrease transmission time. TCP can be an expensive network tools as it includes absent or corrupted packets data delivery with controls like acknowledgments, connection Startup, and flow control. UDP does not provide error connection or packet sequencing nor does, it signal a destination before it delivers data, which makes it less reliable but less expensive. As such, it is a

good option for time-sensitive situations, such as Domain Name System (DNS) lookup, voice over internet protocol (VoIP), and streaming media.

10. What is a web browser (browser)? Give some example of browsers

A web browser is a type of software that allows you to find and view websites on the internet. Even if you didn't know it, you're using a web browser right now to read this page! There are many different web browsers, but some of the most common ones include Google Chrome, Safari, and Mozilla Firefox.

11. What is a search engine? Give example.

A search engine is a web-based tool that enables users to locate information on the World Wide Web. Popular Example of Search engines are Google, Yahoo!, and MSN search. …

12. What is the internet & WWW? What are the uses of internet in our daily life?

Internet:

The internet is a global network of interconnected computers, servers, phones, and smart appliances that communicate with each other using the transmission control protocol (TCP) standard to enable a fast exchange of information and files, along with others types of services.

WWW:

World-Wide Web (also called WWW or W3) is a hypertext –based information system. Any word in a hypertext document can be specified as a pointer to a different hypertext document where more information pertaining to that word can be found.

What are the uses of internet in your daily life?

- Uses of the internet in education. …
- Internet use to speed up daily tasks. …
- Use of the internet for shopping. …
- Internet for research & development. …
- Business promotion and innovation. …
- Communication. …
- Digital transactions. …
- Money management.

13. What is an internet service provider? Gives some example of ISP in India

The example of some internet service providers are Hathway, BSNL, Tata Teleservices, Verizon, reliance Jio, ACT Fibernet and many more working in India as well as worldwide. Internet service providers or IPS are responsible for providing services for using the internet.

14. Discuss the difference between MAC address, IP address and port address

MAC addresses are used to identify a node's unique address, whereas IP addresses are primarily used to identify a node's connectivity to a network. The MAC address is a hardware-based, burnt-in, or physical address, whereas the IP address, whereas the IP address is a software –based or logical address.

15. How do we view by internet browser's history?

On your computer, open Chrome.

In the address bar, enter @history.

Press tab or space. You can also click search history. In the Suggestions.

Enter keywords for the page you previously visited.

Select the page from the list.