Assignment - 2

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(CCA-102) Data Communications (1)

Q1: What are the different types of network?

Ans: Network is the connection of two or more computers that are linked to share files, resources and allow communication. In 1969 first computer-to-computer link was established.

Based on number of devices, location and distance between devices, network are of mainly four types, viz.

a) Local Area Network (LAN)
b) Personal Area Network (PAN)
c) Metropolitan Area Network (MAN)
d) Wide Area Network (WAN)

Some other network types:-

e) W-LAN (Wireless-Local Area Network)
f) Storage Area Network (SAN)
g) Virtual Private Network (VPN

Q2: Explain the Shielded Twisted Pair (STP) and Unshielded Twisted Pair.

Ans: **STP:-**

Shielded Twisted Pair cable has individual pairs of wires wrapped in foil, which are then wrapped again for double protection. These are expensive as these reduce electromagnetic and radio frequency interference.

UTP:- Unshielded Twisted Pair has each pair of wires twisted together. These wires are then wrapped in tubing without any other protection. These are less costly and are more popular.

Q3:- What is the difference between baseband and broadband transmission?

Ans:- The points of difference between baseband and broadband transmission are as follows:

Baseband Transmission	Broadband Transmission
a) Baseband is a digital signal transmitted on the medium using signal codes.	a) Broadband system use modulation techniques to reduce effect of noise in environment.
b) It is digital signalling and is bi-directional transmission.	b) It is analog signalling and transmission of data is unidirectional.
c) Here, entire bandwidth is for single signal transmission.	c) In broadband system, simultaneous transmission of multiple signals over different frequencies is possible.
d) Example: Ethernet is using basebands for LAN.	d) Example: Used to transmit cable TV to premises.

Q4:- What is the difference between a hub, modem, router and a switch?

Ans:- **Hub:-** It is a networking device that works under the physical layer of OSI model and connects a bunch of computers in a Local Area Network (LAN). It doesn't filter data.

Modem:- Modem stands for modulator-demodulator. It is a computer hardware device that converts

data from a digital format into a format suitable for an analog transmission medium such as telephone or radio.

→ **Router:-** It is a networking device that operates under the network layer of OSI model and is used to connect two or more networks. It is a device that establishes a common link between networks to enable data flow between them.

→ **Switch:-** Switch is a multicast networking device that works under DataLink layer of OSI Model and connects computers in network. It can send a private message by using MAC address to identify which device is connected to which port.

Q5:- When you move NIC cards from one PC to another PC, does the MAC address gets transferred as well?

Ans:- Yes, because MAC addresses are hard-wired into the Network Interface Card (NIC), not the PC. Thus, MAC address is transferred along with NIC.

This also means that a PC can have a different MAC address when NIC card was replaced by another one.

Qno6:- When troubleshooting computer network problems, what common hardware related problems can occur?

Ans:- A large part of computer network is made up of hardware. While troubleshooting, common ~~not~~ problems that can occur range from malfunctioning hard drives, broken NICs and even hardware startups.

Q.7:- In a network that contains two servers and twenty workstations, what is the best place to install an Anti-virus programme?

Ans:- The best solution is to install anti-virus on all computers in the network. This is because individual users can access any workstation and introduce a virus when plugging in their removable hard drives or flash drives.

Qno8: Define Static IP and Dynamic IP? Discuss difference between IPV4 and IPV6.

Ans: Internet Protocol (IP) address is a distinctive numerical symbol alloted to every device on a network to spot each affiliation easily.

→ Static IP address does not change any time, thus if it is provided once, then it can not be changed or modified. It is less secure.

→ Dynamic IP is provided by Dynamic Host Configuration Protocol (DHCP). It changes any time. It is more secure.

→ IPV4:-

a) IPV4 is a 32-bit address (4 Bytes)
b) IPV4 is version 4 of Internet Protocol which can generate 4.29×10^9 address spaces.
c) Example of IPV4 → 66.94.29.13 (Each field is seperated by dot)

→ IPV6:-

a) It is the new version of Internet Protocol which is better than IPV4 in terms of complexity and efficiency.
b) IPV6 has a 128-bit address length
c) IPV6 consist of 8-fields, seperated by colon (:)
d) It can generate 3.4×10^{38} address spaces.
→ Example of IPV6 → 2002:0000:3238:DFE1:0063:0000:0000:FEFB.

Q9:- Discuss TCP/IP model in detail.

Ans:- TCP/IP stands for Transmission Control Protocol/Internet Protocol. TCP/IP is a concise version of the OSI model. It contains four layers instead of seven layer in the OSI model. These layers are:-

1) Process / Application Layer.
2) Host-to-Host / Transport Layer.
3) Internet Layer.
4) Network Access / Link Layer.

→ TCP/IP is more reliable and follows a horizontal approach.

→ It doesn't have very strict boundaries.

→ The protocols cannot be replaced easily in TCP/IP model.

Q10:- What is Web-Browser? Give some examples.

Ans:- A web browser is an application used to access and view websites or webpages.

Common web browsers include Microsoft Edge, Mozilla Firefox, Google Chrome, Apple Safari etc.

Q11:- What is search engine. Give some examples.

Ans:- A search engine is a soft-ware system designed to carry out web searches. It is a tool that enables users to locate information on World Wide Web (WWW) in the form of webpages.
Example: Google, Yahoo, Bing etc.

Q12:- What is Internet and WWW? What are the uses of Internet in our daily life?

Ans:- Internet is a global computer network providing a variety of information and communication facilities. It consists of inter-connected networks that use standardized communication protocols. (TCP/IP).

→ World Wide Web is a collection of websites or web pages stored in web-servers and connected to local computers through Internet. These websites contain text-pages, digital images, audios, videos etc.

→ Uses of Internet:-

Internet has become a crucial part of our life because it provides many services and is the backbone of modern technology. Some of its uses are:

i) Information Sharing
ii) Communication paths (like Email, social media etc)
iii) Research
iv) Downloading stuff from various web pages
v) Cashless Transactions
vi) Online Banking
vii) Booking and Orders etc.

Q13:- What is Internet Service Provider. Give an example of ISP in India.

Ans:- Internet Service Provider (ISP) is a company or organization that provides individuals and other organizations access to the internet and other related services.

ISP has the equipment and telecommunication line access required to have a point of presence on the internet for geographic area served.

Some Examples of ISP are BSNL, Bharti Airtel, Reliance Jio, Fibernet etc. that operate in India.

Q14:. Discuss difference between MAC address, IP address and Port address.

Ans:- MAC address stands for Media Access Control Address It is assigned to the network interface card by the manufacturer and is used for communication within local area network. It is globally unique address.

→ An IP address is used for communication within local area network and for communication between networks on internet. Example→ 192.168.0.2

Port number is part of addressing information used to identify senders and receivers of messages in computer networking. Ports are identified for each protocol and is considered as communication end-point.

→ Example: 80 for HTTP, 67 and 68 for DHCP traffic.

Q15:. How do we view my Internet Browser's history?

Ans: a) Open the browser (Google Chrome)
b) On the top-right corner, click ⋮ (3-dots)
c) A drop-down menu appears which shows 'History'
d) Click on 'History' to view browsing history.