Call by Value	Call by reference

…..
x = 10 ;
call_by_val(x) ;
……..
void call_by_val(int a)
{
a= a * 2 ; // here a becomes 20 and x remains
} as 10
	…..
	x = 10 ;
	call_by_ref(x) ;
	……..
	void call_by_ref(int &a)
	{
	a= a * 2 ; ; // here a and x becomes 20
	}

****

Chapter – 11 Computer Networks

1. What is the need for computer networks? **[March 2020, Score 3]**

Ans.1. Resource Sharing**:** The sharing of available hardware and software resources (like programs, printers , hard disk etc.)In a computer network is called resource sharing.

2. Reliability**:** A file can have copies in different computers. So breaking down of one system will not cause data loss.

3. Scalability**:** Computing and storage capacity can be increased or decreased easily by adding/removing computer or storage devices to the network.

2. Explain the functions of the following Network devices: **[March 2020, Score 5]**

(a) Modem

(b) Switch

(c) Gateway

(d) Multiplexer

(e) Router

Ans.

a) Modem**:** It is used for communication between computers through telephone lines. It converts digital signals received from a computer into analogue signals (Modulation) and analogue signals received from telephone lines into digital signals (Demodulation).

b) Switch**:** Switch can be considered as an intelligent hub. It store addresses of all the devices connected to it.

c) Gateway**:** It can interconnect two different networks using the different protocols.

d) Multiplexer**:** It divides the transmission medium into several logical frequency channels through which we can send many different signals at a time.

e) Router**:** It can interconnect two networks of the same type using the same protocol.

3. Write short notes on : **[July 2019, Score 2]**

a) Bluetooth

b) Wi-Fi

Ans a) Bluetooth: Its frequency ranges from 2.402 GHz to 2.480 GHz. It is a short distance communication (approx. 10m). It is uses in cell phones, wireless keyboard etc.

b) Wi-Fi: Its frequency ranges from 2.4 GHz to 5 GHz. It can connect more devices at a time.

4. Define network topology. Explain about the four major topologies

[July 2019, Score 5]

Ans. Topology is the way in which computers are physically interconnected to form a network. Common types of topologies are:

Bus Topology**:** There is a main cable called bus from the server to which every nodes are connected by short drop cables. A small device called terminator is attached at the end of the bus. When a data signal reaches the terminator at the end, it is absorbed and the bus is free to carry new signal.

Advantages:

i). Easy to install

ii). Less cable is needed. So less expensive

iii). Failure of node does not affect the network.

Disadvantages:

i). Fault detection is difficult.

ii). Failure of cable, server or terminator will affect entire network.

Ring Topology**:** All node computers are connected to a circular cable. All data are passing through this cable.

Advantages:

i). No signal amplification required because each node will do it.

ii). requires less cable, so cost effective

Disadvantages:

i). If a node fails, entire network will fail.

ii). Addition of nodes is difficult.

Star Topology**:** In star topology there is hub/server at its center and all other work stations are connected to it through separate connections. All messages are passed through the server. When a message goes from one computer to another, it is first send to the server, which then retransmits the message to the destination computer.

Advantages:

i). If one workstation fails, it does not affect the whole network.

ii). Easy to install

iii). It is easy to expand

iv). Easy to find faults and remove workstations.

Disadvantages:

i). requires more cables than Bus topology

ii). If the central device fails it affect entire network

Mesh Topology**:** In this Topology each node is connected to other nodes. So there is more than one path between two nodes. Here, failure of one node may not affect the data communication.

Advantages:

i). If one workstation or a path fails, it does not affect the whole network.

Disadvantages:

i). requires more cables, so very expensive.

ii). Very complex and difficult to manage.

5. Write short notes on. **[March 2019, Score 3]**

a) Bluetooth

b) Wi-Fi

c) Satellite

Ans. a) Bluetooth: Its frequency ranges from 2.402 GHz to 2.480 GHz. It is a short distance communication. It is uses in cell phones, wireless keyboard etc. It can connect up to 8 devices

b) Wi-Fi: Its frequency ranges from 2.4 GHz to 5 GHz. Data transfer speed is up to 54Mbps. Data transfer speed is up to 54Mbps

c) Satellite: These are like repeaters but can cover a large foot area due to its position 36000KM above earth. Geostationary satellites are used for this. Its transponders receive the sending signal from earth), strengthen them and slightly change its frequency to avoid mixing with the up linking signal and retransmit it to earth

6. Explain the network topologies with diagrams. **[March 2019, Score 5]**

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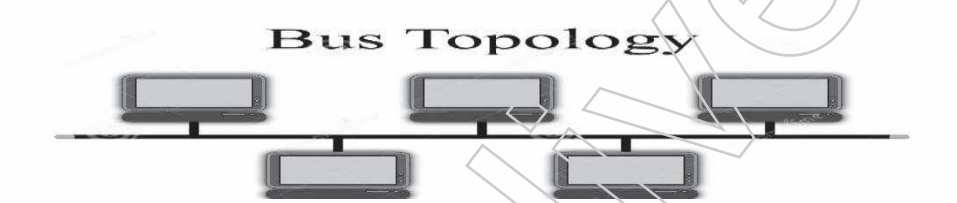

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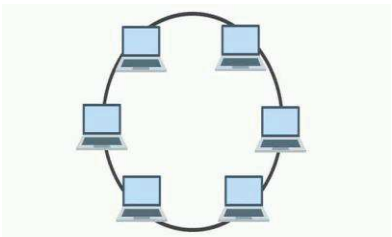

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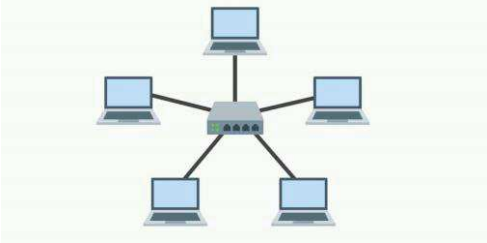

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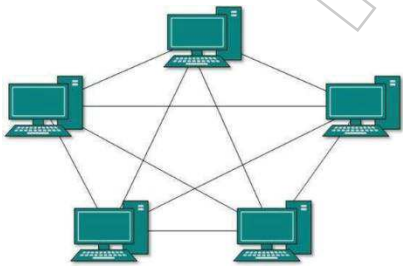

Advantages:

i). If one workstation or a path fails, it does not affect the whole network.

Disadvantages:

i) Requires more cables, so very expensive.

ii). Very complex and difficult to manage.

7. In ..... Network topology, each node is directly connected to a hub/ switch.

[July 2018, Score 1]

Ans. Star

8. Write a short note on WiMAX **[July 2018, Score 2]**

Ans. WiMAX: Worldwide Interoperability for Microwave Access

It combines the benefits of wireless and broadband. Its frequency ranges from 2 GHz to 11 G Hz. Hundreds of users can connect at a time. It requires high cost of installation and power consumption.

9. a) What is peer-to-peer network? **[July 2018, Score 2]**

b) Specify the type of network given below: **[July 2018, Score 3]**

ATM network, Cable television network, Network within the school, Network at home using Bluetooth, Telephone network, Railway network

Ans. a) A peer-to-peer network has no dedicated servers. Here a number of computers are connected together for the purpose of sharing information or devices. All the computers are considered equal. Any computer can act as a client or as a server at any instance. This network is good for small networks where there is no need for dedicated servers.

b) PAN –Network at home using Bluetooth

LAN – Network within the school

WAN – Railway network, telephone network, ATM,

MAN – Cable TV network

10. An electronic device used for communication between computers through telephone line is …….. **[March 2018, Score 1]**

Ans. Modem.

11. a. URL stands for ---------- **[March 2018, Score 1]**

b. Explain the format of URL with an example. **[March 2018, Score 3]**

c. What is the use of URL in computer networks? **[March 2018, Score 1]**

Ans. a. Uniform Resource Locator

b. A URL is divided in to 3 parts

i. Network protocol(scheme)

ii. Domain Name: (Host name/ address)

iii. File name

eg: http://www.dhsekerala.gov.in/index.html

Here, http is the protocol used, dhsekerala.gov.in is the domain name and index.html is the file name.

c. URL is the Address of the website. It is used to identify the webserver.

12. Which one of the following transmission media carry information in the form of light signals?

a) Coaxial cable

b) Shielded twisted pair

c) Optical fibre cable

d) Wi-Fi **[July 2017, Score 1]**

Ans. c) Optical fibre cable

13. Internet is an example of ..... **[July 2017, Score 1]**

a) MAN

b) PAN

c) WAN

d) LAN

Ans. WAN

14. Explain the advantages of forming networked computers than keeping stand-alone computers.

[July 2017, Score 3]

Ans. Following are the advantages of networks.

1. Data communication is possible**.** Computer network helps user to communicate with any other user of the network through its services like e-mail chatting etc.

2. Resource Sharing**:** The sharing of available hardware and software resources (like programs, printers , hard disk etc.)in a computer network is called resource sharing.

3. Reliability: A file can have copies in different computers. So breaking down of one system will not cause data loss.

15. a) Different networks with different protocols are connected by a device called ---------

i) Router

ii) Bridge

iii) Switch

iv) Gateway **[March 2017, Score 1]**

b) Define protocol **[March 2017, Score 1]**

Ans. a).iv) Gateway

b) Protocol is a special set of rules to be followed in a network when devices in the network communicates. Each protocol specifies rules for formatting data, compressing data, error checking, making connections and making sure that the data packets reach its destination

16. Compare any three types of networks based on span of geographical area.

[March 2017, Score 3]

Ans. a) Personal Area Network (PAN): Network of communication devices in the proximity of an individual. Eg. Bluetooth communication.

b) Local Area Network (LAN): Networking of communication devices within a limited area like a building, room or a campus. It can set up using wired media (UTP/STP cable) or wireless media (infra-red, radio waves etc.) and can cover up to a few kilometers.

c) Metropolitan Area Network (MAN): It is a networking of communication devices within a city. Its coverage may up to a few hundred kilometers. It can interconnect a number of LANs and computers.

17. Write notes on the following: **[July 2016, Score 3]**

a) IP address

b) MAC address

c) Modem

Ans. a) It is a unique 4-part numeric address assigned to each node on a network for unique identification of them. It is normally expressed in “dotted decimal Number”.

Eg. 192.165.1.1

b) Media Access Control Address is universal, unique and permanent address (12 digit hexadecimal number) assigned to each NIC by its manufacturer. Its first half contains the ID of the manufacturer and second half is the serial number of the particular adapter. The usual format of MAC address is:

MM : MM : MM : SS : SS : SS

c) Modem: It is used for communication between computers through telephone lines. It converts digital signals received from a computer into analogue signals and analogue signals received from telephone lines into digital signals.

18. Define network topology. Explain any four network topologies in detail

[July 2016, Score 5]

Ans. Topology is the way in which computers are physically interconnected to form a network. Common types of topologies are:

Bus Topology**:** There is a main cable called bus from the server to which every node is connected by short drop cables. A small device called terminator is attached at the end of the bus. When a data signal reaches the terminator at the end, it is absorbed and the bus is free to carry new signal.

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19. Identify the type of LAN topology in which there are more than one path between nodes.

[March 2016, Score 1]

a) Star

b) Ring

c) Mesh

d) bus

Ans. c) Mesh

20. ABC Ltd., required to connect their computers in their company without using wires Suggest suitable medium to connect the computers. Explain **[July 2015, Score 3]**

Ans. Unguided Media is used to connect the computers. There are three types of Unguided Media:

Radio waves: It transmits data at different frequencies ranging from 3 kHz. to 300 GHz.

Microwaves: Microwave signals can travel in straight line if there is any obstacle in its path, it can't bend. So, it uses tall towers instead of short one.

Infrared waves: These waves are used for transmitting data in short distance and its frequency range is 300 GHz to 400 GHz.

21. In …… topology all the nodes are connected to a main cable.

[July 2015, Score 1]

Ans. bus

22. Bluetooth can be used for ---------- communication. **[July 2015, Score 1]**

i) long distance ii) short distance iii) mobile phone iv) all of these

Ans ii) Short distance

23. Any device which is directly connected to a network is called ----------

[March 2015, Score 1]

Ans. node

24. a**)** To make data transfer faster, a switch stores two different addresses all the devices connected to it. What are they? **[March 2015, Score 1]**

b) There are five computers in a lab. Write short notes on any three possible methods to interconnect these computers. Draw the diagram of each method

[March 2015, Score 3]

Ans. a) Source address and destination address

b) Bus Topology**:** There is a main cable called bus from the server to which every node is connected by short drop cables. A small device called terminator is attached at the end of the bus. When a data signal reaches the terminator at the end, it is absorbed and the bus is free to carry new signal.

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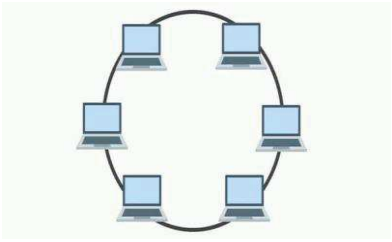

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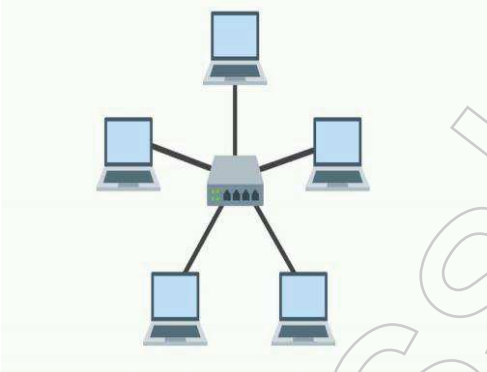

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