Name : Md. Shariful islam

CT Assignment no-01

ID-(IT-17013)

1.

a) What is a computer network & components of computer network? 4

b) Briefly describe method for feature of computer network? Explain architecture of computer network? 6

c) Discuss computer network types and transmission methods? 4

2.

a) Discuss classification of computer network? 6

b) Discuss personal area network, Local area network, metropolitan area network wide area network? 8

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3.

a) Brifly describe ethernot, fast-ethernel, Giga ethernel virtual LAN? 2

b) Discuss point to point, bus topology star topology, Ring topology, Mesh topology, tree lopology? 6

4.

a) Brifly describe hybrid topology and tree topology? 4

b) What is OSI model and describe layer of OSI model? 5

c) Discuss secret key encryption, public key encryption and message digest? 5

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5.

a) What is application layer? Service of application layer? 4

b) Describe network application architecture? 5

c) What is the feature of p2p architecture and discuss client and server process? 5

6.

a) What is client and server model and describe client and server? 5

b) Discuss advantage of client server network? 4

c) Describe disadvantage of client-server network? 5

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7.

a) what is domain name system? what is mail transfer protocol? 4

b) Describe file transfer protocol, post office protocol? 5

c) Discuss HTTP (hyper text transfer protocol)? 5

8.

a) Briefly describe directory service? 5

b) Discuss file service, application service? 5

c) Describe Communication Service? 4

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Answer no-01(a)

Computer network: A computer is a set of devices connected though link. A node can be computer, printer or any other devices capable of sending or receiveding the data. The links connecting the nodes are known as communication channels. The aim of the computer network is the sharing of the resources among various devices. In this case of computer network technology, there are several types of network that vary from simple to complex level.

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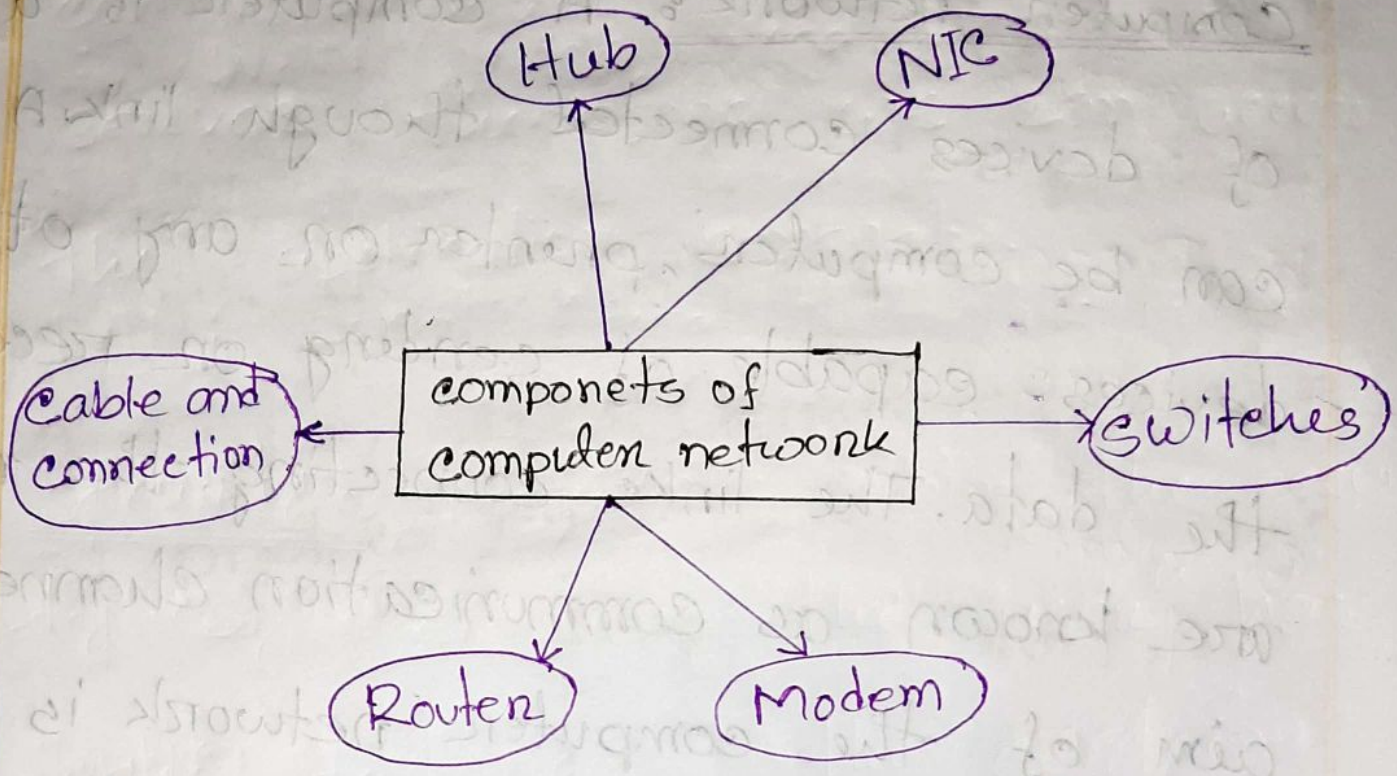
components of computer network:



Answer no- 01(b)

Features of computer networks:

1. communication speed.
2. File sharing.
3. Back up and Roll back is easy.
4. Software and Hardware sharing
5. security.
6. Scalability

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7. Reliability.

File sharing: File sharing is one of the major advantage of computer network. Computer networks provides us to share the file with each other.

Communication speed: Network provides us to communicate over the network in a fast and efficient manner. For example we can do video conferencing, Email, messaging.

Back up and Roll back is easy: we can install the application on the main server therefore the user can access the application centrally.

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Softwen and hardwere sharing: we can install the application on the main server therefore we can access the application centrally.

security: Networks allows the security by ensuring the user has right to access the certain file and application.

Realiablity: Computer networks can use the alternative source for the data communication in case of any hardwere failure.

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Computer network architecture: computer network architecture is defined as the physical and logical design of the software, hardware and protocal and media of the transmission of data.

Two types of network architecture:

(i) peer to peer network
(ii) client/server network.

Answer no-01(c)

Computer network types:

A computer network is mainly of four types.

i) LAN (Local Area Network)
ii) PAN (Personal Area Network)

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iii) MAN (Metropolitan Area Network)

iv) WAN (Wide Area Network)

LAN: Local Area Network is a group of computer connected to each other in a small area such as building, office. LAN is used for connecting two or more personal computer though a communication medium.

PAN: Personal Area network is a network arranged within an individual person, typical within a range of 10 meter.

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MAN: A Metropoliton Area Network is a network that cover a langer geognaphycal area by inter connecting a different LAN.

WAN: A wide Area Network is a network that extends over a langer geognaphycal area such a states or countries. A wide area network is quite bigger than LAN.

Answer no-02(a)

Classification of computer networks:

1. Geognaphical span.
2. Inter-connectivity
3. Administration.
4. Architecture.

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1. Geographically network are following catagories:

1. It may be spanned accross your table, among bluetooth enabled device

2. It may be spanned accross whole city.

3. It may be spanned accross multiple city or provincey.

4. It may be one network covering whole world.

2. Inter- connectivity:

- Every single device can be connected to every other device or network making the network mesh.
- Each device can be connected to its left and Right

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All device connected together with a single device creating start.

3. Administration: From an administration point of view a network can be private network which belongs a single autonomous system and cannot be accessed outside its physical or logical domain.

4. Network Architecture: There can be one or more system acting as server. Two system can be connected point to point.

Answer no-02(b)

Personal Area Network: A personal area network is a network which is very

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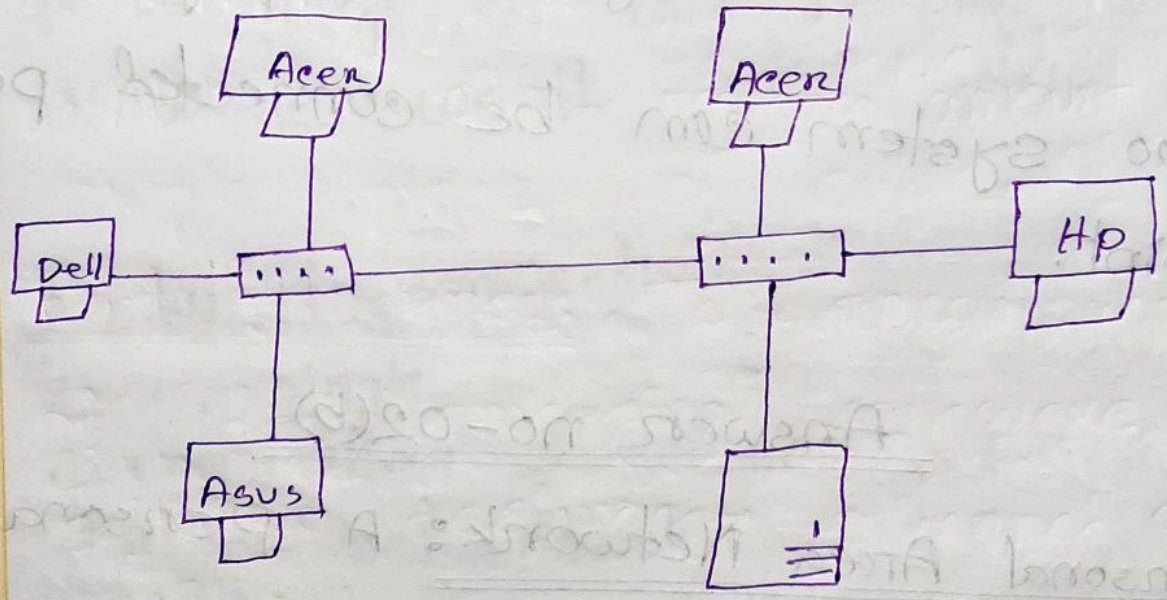
personal to user. This may include bluetooth enabled devices or infrared enabled devices. PAN has connected about 10 meter.

Local Area Network: A computer network spanned inside a building & a operated under single administrative system is generally terms as a local Area network.



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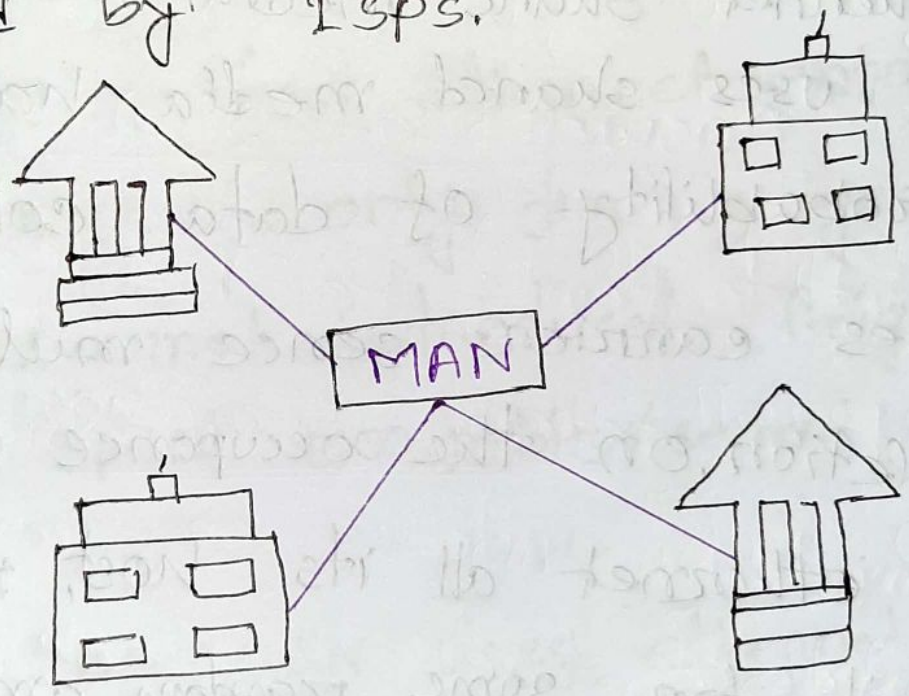
Metropoliton Area Network (MAN): The MAN generally expand thoughout a city such as cable TV network. It can b inform ethernet token ring, atm etc. Metro ethernet is a service which is provided by ISPs.



Wide Area Network (WAN): As the name suggest the WAN covered a wide Area which may span across provinc and even a whole country. Generally telecommunications are WAN.

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Answer no-03(a)

Ethernet: Ethernet is widely deployed lan technology. This technology was invented by Bob. metcalfe.

Ethernet share media, Network which is uses shared media has high probablility of data collision. Ethernet uses carrier sence multi access deletion. on the occupance of collution in ethernet all its host, roll back, wait for some random amount of time.

Fast ethernet: To encompass need of fast emenging hardwere and softwere technology ethernet extends itself. it can run up up, optical

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fiver. It can provide speed up to 100 Mbps. This standard is named as 100 Based in IEEE 803.2 using cat5

Giga ethernet: After being introduced in 1995 fast ethernet enjoy high speed status only for 3 years till giga ethernet introduced. Giga ethernet provide speed 1000 mbits/second.

Virtual LAN: LAN uses ethernet which is turn work on shared media. Shared media ethernet created on single broadcast domain and single collosion domain. Virtual LAN is a solution to devide a single broadcast domain into multiple

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multiple broadcast domain. Host in One VLAN can not speak to a host in another. By default all host are placed into same VLAN.

Answer no-03(b)

Point to Point: Point to point network contain exactly two host such as computer switches or router server connected back to back using a single piece of cable. Often the receiving end of one host is connected to sending end of the other.

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Bus topology: All device share single communication line or cable. Bus topology may have problem while multiple host sending data at the same time. Therefore bus topology either user CSMA/CD technology

Star topology: All host in star topology are connected to a central device known as hub device, using a point to point connection. The hub device can be -

1. Layer 01: device such as hub or repeater.
2. Layer 02: device such as switch or bridge.
3. Layer 03: device such a router.

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Ring Topology: In ring topology each host connected to exactly other machine creating a circular network structure. When one host tries to communicate or send sms to a host which is not adjacent to it.

Mesh topology: This type of topology a host is connected to one or more multiple host. This topology has hosts in point to point connection in every other host.

Tree topology: This topology devides the networks in a multiple level of network. The lowermost is access-layer

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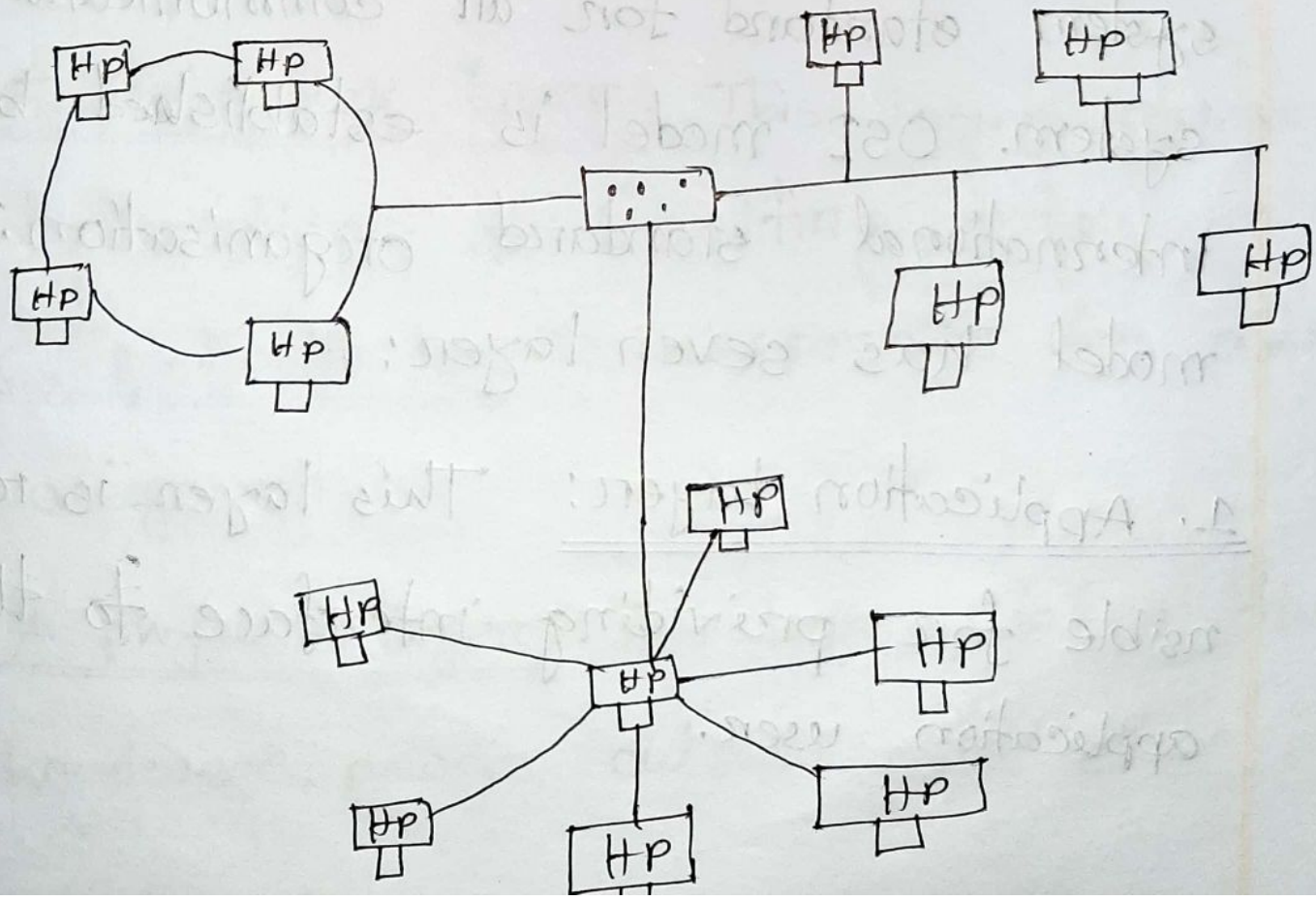
where computer are attacted. The midle layer is known as distribution layer.

Answer no-04(a)

A network structure whose design contain more than one topology is said to be hybrid topology.



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Tree topology: This topology also known as Hierarchical topology. This topology devides the network into multiple level. The ~~ti~~ Highest layer known as core layer.

Answer no-4(b)

Open system interconnect is an open system standard for all communication system. OSI model is established by international standard organisation. This model has seven layer:

1. Application layer: This layer is responsible for providing interface to the application user.

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2. Presentation layer: This layer define how data in the native format in remote host.

3. session layer: This layer maintain session between remote host.

4. Transporte layer: This layer responsible for end to end delivery between host.

5. Data link layer: This layer responsible for reading and writing data.

6. Network layer: Responsible for address assignment.

7. physical layer: This layer define the hardwere, power output pulse etc.

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Answer no-04(c)

Secret key encryption: Both sender and receiver have one secret key. This secret key used to encrypt the data. at the sender end after the data is encrypted, it is send on the public domain to the receiver.

public key encryption: In this encryption system, every user has it own secret key and it is not in the shared on public domain.

Message digest: In this method, actual data is not send insted a hash value is calculated and send to other end user computer its own hash value

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and compared with the one just received

Answer no- 05(a)

The application layer in the OSI model is the closed layer to the end user which means that the application layer and end user can interact directly with the software application. The application layer are programme are based on client and server

Service of application layer:

1. Network virtual terminal: An application layer allows a user to log on to remote host. The application creats a software emulation of a terminal to

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remote host.

2. File transfer, Access and management:
An application allows a user to application access file from remote computer

3. Addressing: To obtain communication between client and server.

4. Mail service: An application layer from provides forwarding and storage.

Answer no-05(c)

Features of P2P architecture: self scalability: In file sharing system, although each peer generation a

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workload by requesting the file, each peer also add a service capacity by distributing the file to the peer.

cost effective: it is cost effective as it does not require significant server infrastructure and server bandwith.

Clint and Server process: A network application consists of a peer of process that send the massage each other over a network. In P2P file sharing system, a file is transfered from a process to one peer to process in another peer. With P2P file sharing, the peer which is downloading the file is known as client and the

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peer which is uploading file is known as a server. We have observed some application such as ~~server~~ p2p file sharing a ~~person~~ process can be both client and server.

Answer no-06(a)

Client and server model: A client and server model is a networking model which computer such as server provides the network service to the other computer such as client to performed a user based task. This model is known as client server networking model.

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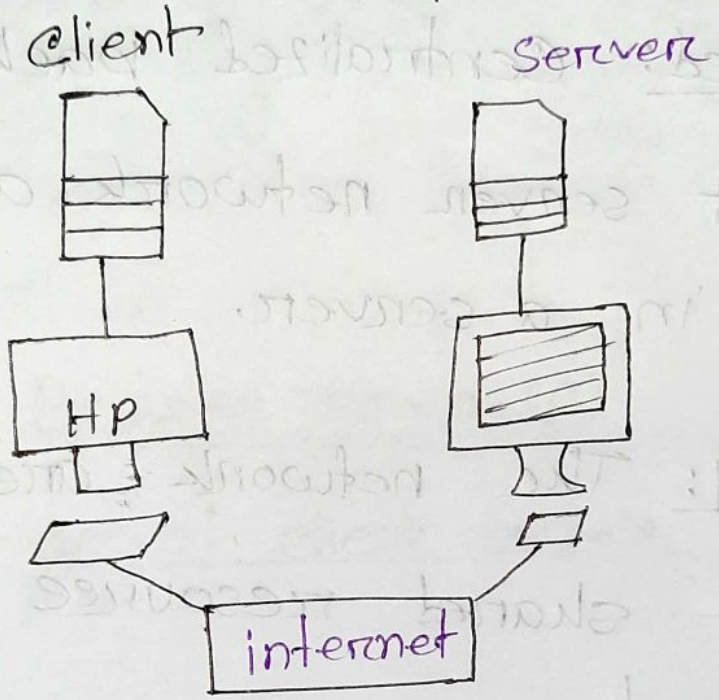
This application programme using the client server model should follow the given bellow categories:



Client: A client is a programme that runs on the local machine requesting service from the server.

Server: A server is a programme that runs on that remote machine providing to the client.

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Answer no-06(b)

Advantage of client server network:

Centralized: Centralized back up is possible in client server network. all the data stored in a server.

Security: The network are more secure all the shared resource are centrally administred.

Performence: The use of the dedicated server increses the speed of sharing resorce. This increse the performance of the overall system.

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scalability: we can increase the number of client and server separately. The new element can be added a new in a network at any time.

Answer no-06(c)

Disadvantage of client server network:

1. Traffic congestion: is big problem in client server network. when a large of client send request to the same ~~request~~ server may cause the traffic congestion.

2. It doesn't have a robuntees of a network. when the server is down, then the client request cannot be meet.

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3. A client server network is very sensitive. Sometimes regular computer hardware does not serve a certain number of client. In such situation, specific hardware required at the server side to comple the network. sometimes the resource exit in the server but maynot exit in the client. For example if the application is web, then we cannot take the printout directly on printer without taking out the print view windows.

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Answer no-07(a)

Domain name system: The domain name system works on client server model. It uses UDP protocal. For transport layer communication. DNS uses hierarchical domain based naming scheme. The DNS server is configured with fully qualified Domain names and email address mapped with their respective internet protocol.

Simple mail transfer protocol: The simple mail transfer protocol is used to transfer electronic mail from one user to another. This task is done by means of email client software the user

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is using. user agent help the user to type and format the mail and store it until internet is available. When an email is submitted to send, the sending process is handed by massage transfer agent.

Answer no-07(b)

File transfer protocol: The file transfer protocol is the most widely used protocol for file tranfer over the network. FTP uses TCP/IP for communication and it work on TCP port 21. FTP work on client/server model where a client request file from server send request resources.

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post office protocol: The post office post protocol version 3 is a simple mail retrives protocol used by user agent to retrives mail from mail server. it open a connection with the server on TCP ~~protocol~~ port 110. user can than access his mails and download them in local computer. pop3 work in two nodes. The most common nodes is delete node, is to delete the email from remote server after they are downloaded to local machine.

Answer no-07 (c)

Hyper text transfer protocol: The hyper text transfer protocol is a foundation of world wide web. Hyper text is well

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organised documentation system. which uses hyper link to link the pages in the text document. HTTP work on client server model. When a user want to access a http page on the internet, the client machine at user end initiate a TCP connection to server on port 80. When the server accept the client request, the client is authorized to access web-page. To access web-page a client normally uses web browsers. who are responsible for intertaining, maintaining and closing TCP connection. HTTP is a stateless protocol which means the server maintain no information about earlier request by a client.

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Answer no-08(a)

Those service are mapping between name and its value, which can be variable value or fixed. This software helps to store the information organize it.

Accounting: In an organization, a number of user have their users name and password mapped to them.

Authentication and authorization: user credentials are checked to authorization a user at the time of login. user account can be set into hierarchical structure and their access to resource can be controlled using authorization scheme.

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Domain name service: DNS is widely used and one of the essential service on which internet work. This system map ip address and human tendo Because network operates with the help of ip address and human tend to remember website name.

Answer no-08(b)

File service:

File sharing: One of the reason which gave birth to networking was file sharing. File sharing enabled is user to share their data with other user. User can upload file to a

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specific server, which is accessible by all internet users. As an alternative, user can make it file share on it own computer and provide access to intended user.

File transfer: This is an activity to copy or move file from one computer to another computer or to multiple computer with the help of underlying networks. Network enabled its users to locate others user in the network and transfer file.

Application service: Resource sharing is the efficiently and economically network provides a mean to share them.

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Answer no-08(c)

Communication services:

Email: Electronic mail is a communication method and something a computer user cannot work without it. This is the basis of today internet feature. Email system has one or more email server. all its users are provides with unique IDs.

Social Networking: Recent technology made technical life social. The computer some peoples can find other know people or friends.

Internet chat: Internet chat provides instant text transfer service between two host.

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Discussion board: Discussion board provide a machinism to connect multiple people with same interested.

Remote Access: This service enables user to access the data receiving on the remote computer.

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