

- 1.
- (a) what is TCP? Explain TCP Three-way Handshake process?
- (b) what are the TCP flags?
- (c) what is the difference between PUSH and URG flag? what does window size indicate?

1 Answer to the question - (a)

Transmission Control protocol is a protocol Connection-oriented protocol. This means that before any data transfer can take place certain parameters have to be negotiated in order to establish the connection.

Explain TCP three-way Handshake process:

For Reliable connection, the transmitting device first establishes a connection-oriented (reliable) session with its peer system, which is called three way handshake. Data is then transfer.

1. In the first part of three way handshake, the source sends a TCP SYN segment with the initial segment number x indicating the desire to open the connection.

2. In second part, when destination receives TCP SYN, it acknowledges this with Ack ($x+1$) as well as its own SYN. This response is called SYN/Ack.

3. In the third part the source an Ack (Ack = $y+1$) segment to the destination indicating that the connection is set up. Data transfer can then begin.

1 Ans. to the question no-(b)

Tcp flags:

TCP flags are used to influence the flow of data across a TCP connection.

(i) push → It pushes the buffered data to the receiver application. If data is to be sent on the immediate basis we will push it.

(ii) Reset → It Reset the connection.

(iii) Finish (FIN) → It finishes the session. It means No more data from the sender.

(iv) Urgent (URG) → It is use to set the priority to tell the receiver that this

data is important for us.

Acknowledgement (Ack) - All packets after SYN

packet sent by the client should have this

flag set. Ack = 10 means host has received

0 through 9 and is expecting byte 10 next.

(vi) **Synchronize (SYN)** - It initiates a connection

• It synchronizes the sequence number.

3 Ans. to the question no 1 (c)

The psh flag in the TCP header informs the receiving host that the data should be pushed up to the receiving application immediately.

URG flag is used to inform a receiving station that certain data within a segment is urgent and should be prioritized.

According to me when psh flag is set, it indicates that data will have to be sent immediately to the wire and on receiving side the data has to be pushed to the application immediately.

when one flag is set it indicates that urgent
that urgent data has to be sent immediately
to wine from sender side on receiving end:
the urgent data has to be sent immediately
to application.

window size indicate:

It is 16 bit window field which indicates
the numbers of bytes a sender will
send before receiving and acknowledgement
from the receiver.

- 2.
- (a) what is the importance of sequence number and acknowledgement number?
 - (b) How does TCP work? Explain transmission Control protocol, TCP
 - (c) Comparison between TCP/IP & OSI model

Ans. to the question no 2(a)

Sequence number is a 32 bit field which indicates the amount of data that is sent during a TCP session. By sequence number the sender can be assured the receiver received the data because the receiver uses this sequence number as the acknowledgement number in the next acknowledgement segment it send to acknowledge the received data. When the TCP session start, the initial sequence number can be any number in the range 0 -

4294967295

Acknowledgement number is used to acknowledge the received data and is equal to the received sequence number plus 1.

Ans. to the question no- 2 (b)

Tcp uses a three-way handshake to establish a connection between client and server. It uses SYN, ACK, and FIN flags. for connecting two endpoints. After the establishment of the connection data is transferred sequentially. If there is

any loss of packet if transmits data.

Explain transmission control protocol.

Tcp is a connection-oriented protocol. It simply means when data is transferring from source to destination, protocol takes care of data integrating by sending data packet again if it lost during transmission.

Tcp ensure reliability and error-free data stream.

Tcp packet contain field such as sequence number, Ack number, Data offset reserved, control bit, window, urgent point,

Ans. to the question - 2 (c)

TCP/IP is the alternative model that also explain the information flow in the network. It is simpler representation in comparison to the OSI model but contains fewer details of protocols than the OSI model.

TCP / IP model	OSI model
Application layer	Application layer Representation layer
Transport layer	Session layer
Network layer	Transport layer Internet layer
Access layer	Data link layer Physical layer

3.
(a) what is the major difference between UDP and TCP/IP protocol.

(b) write UDP/Sock diagram? And How to get IP header of a UDP message?

(c) what is trojan? How many types of transmission there?

Ans. to the question - 3 (a)

Transmission control protocol User datagram protocol

1. It is a communication protocol using which the data is transmitted between system over the network. It is same as the TCP protocol except this doesn't guarantee the error checking and data recovery.

work.

2. TCP is a connection oriented protocol.

2. UDP is a connection less protocol.

3. In TCP the data is transmitted in a particular sequence. as compared to UDP.

3. On the other hand there is no sequencing of data in UDP in order to implement ordering it has to be managed by the application layer.

Ans to the question no 3 (b)

To implement the UDP service we must create socket by Socket system call which takes argument as Socket_DGRAM which is used for to pass the data of the datagrams.

Get IP header of a UDP message:

Actually ip header is not in a udp message . it comes at network link layer while udp message generate at transport layer

So that it's tricky question meaningless.
we think so may be not sure.

Ans. to the question no 3 (c)

Named after the Trojan horse of ancient Greek history, a Trojan is a network software application designed to remain hidden on a target computer. Trojan generally serve malicious purposes and are therefore a form of malware like viruses.

Trojan Some, for example access personal information stored locally on home or business computer, then send these data to a remote party via the internet.

Two types of transmission:

1. Serial.

2. parallel.

Serial means sending one bit at a time over a single wire used over long distance, more efficient. used to send data to external systems.

parallel means sending bits at a time on different wires used over short distance efficient but not serial. used to send data in internal transfers.

Ans. to

4.

- (a) which is the faster protocol Either UDP or TCP.
- (b). what does we mean about ISP ; and what do ISP work ?
- (c). How long does it takes to send out a single character of 8 bit ! and send a file of 100000 character ?

Ans. to the question - no- 4 (a)

UDP is the faster protocol as it doesn't wait for acknowledgement so, it is not at all having reliability as compared to TCP.

UDP is faster than TCP. and the simple reason is because its non-existing acknowledgement packet that permits a continuous packet system, instead of TCP that acknowledge a set of packet, calculated by using the TCP window size and round-trip time.

The reason is because TCP will try and buffer the data and fill a full network segment thus making more efficient use of the available bandwidth.

Ans. to the question no. 4(b)

ISP: Internet service protocol (ISP) which provides internet service. A internet service provider is a company that provides internet access to organization and home user.

Work of ISP:

i) Provides internet service

ii) Web server service

iii) Virtual hosting.

At the top of the internet access pyramid.

one Tier

Internet Service provider.

A Tier 1 Internet Service provider is an ISP that has access to all the network on the internet using only network peering agreements they do not have to pay for.

Ans. to the question no-4(c)

We know,

$$\text{time} = \sqrt{\frac{8}{2000}}$$

$$= 0.004 \text{ sec.}$$

give

8 bits,

it will take 0.004 Secound.

and, single character is of 8 bits. So

we know,

$$\text{time} = \frac{8 \times 100000}{2000}$$

$$= \frac{800000}{2000}$$

$$= 400 \text{ sec.}$$

it take 400 sec.

5. (a) what is an object server and in client Server environment?
- (b) what is structured query Language (SQL)?
- (c) and what is OLTP in client Server environment?
- (d) what are all the base services provided by the os in client Server environment?

Ans. to the question - no- 5 (a)

With an object server, the client/server application is written as a set of environments communicating objects. Client object communicate with server object using an object request broker. The client invokes a method on a remote object. The ORB locate an instance of that object server class. Invokes the requested method and return the result to the client. Object server object must provides support for concurrency and sharing.

Ans to the question no 5 (b)

SQL is a powerful set-oriented language which was developed by IBM research for databases that adhere to the relational model. It consists of a short list of powerful yet highly flexible commands that can be used to manipulate information collected in tables. Through SQL we can manipulate and control set of records at a time.

Ans. to the question no- 5(c)

Task preemption

Task priority

Semaphores

Interprocess communication

Threads

Intertask protection

Multiuser

High performance file system

Efficient memory management and

Dynamically linked run-time extensions

- 6.
- (a) List the criteria to check the network reliability?
 - (b) What is MAE address? Does it have some link or something in common to mac os of apple?
 - (c) What is private and public IP address?

Ans. to the question no- 6(a)

A network reliability is measured by the following factors.

- ① Down time is the time it takes to recover.
- ② Failure frequency is the frequency when it fails to work the way it is intended.

The modern web is enjoyed by wide swath of people, using a range of different devices and types of network connections.

Your creations can reach users all over the world but delivering a reliable

experience on the web for all of our users can be challenging. It can be challenge fast to understand what reliability means.

Ans. to the question 6 (b)

MAC-Media access control. MAC is the address of the device identified at media access control layer of network architecture.

Similar to IP address MAC address is the unique address. i.e. no two device can have same MAC address. MAC address is stored at the non-read only memory.

of the device.

MAc address and MAC OS are two different things and it should not be confused with each other. Mac OS is a POSIX standard operating system developed upon Free BSD used by apple device.

Ans. to the question - no 6 (c)

Three range of IP addresses have been reserved for private address and they are not valid for uses on the internet if you want to access internet with these address you must have to use proxy server or NAT Server.

If we decide to implementation a private IP address range, you can use IP address from any of the following class.

class A: 10. 0. 0. 0. 10. 255. 255

class B: 172. 16. 0. 0. 172. 31. 255. 255

class C: 192. 168. 0. 0. 192. 168. 255. 255

Public IP address:

A public IP address is a address leased from and ISP allows an enable direct Internet communication.

- Q.
- (a) what is wireless transmission system?
 - (b) what are the main component of wireless signal?
 - (c) how wireless signal work? what is the fading in wireless transmission?

Ans. to the question no. 7(a)

wireless transmission is a form of unguided media. wireless communication involves no physical link establish between two or more device communicating wirelessly.

wireless transmission is a form of un-

guide media. wireless communication involves no physical link establish between two or more devices. Communicating wirelessly, wireless signal are spread over in the air and are received and interpreted by appropriate antennas.

When an antenna is attached to electrical circuit of a computer or wireless device it convert the digital data into wireless signal and spread all over within its frequency range.

Ans. to the question 7 (-b)

Depending on the application of equipment signal one transmitted over a wide range on frequency, the main component of wireless transmission are the antenna transmitter and receiver signal types signal length and degradation and fixed and mobile network.

The physical WLAN architecture is fairly simple

Basic Component of WLAN are typically:

① wireless access point

② network interface card

Ans. to the question no. 7(c)

Wireless signal work:

Wireless Signal are spread over in the air and are received and interpreted by appropriate antenna

when an antenna is attached to electrical circuit of a computer or wireless device

it converts the digital data into wireless

Signal and spread all over the world.

within frequency range.

Wireless use radio waves to transmit information. Most simple is one off used in wireless telegraph, also radio wave

Fading in wireless transmission:

In wireless network, IEEE 802.11 device usually share this RSSI value with consumers due to variation in signal length. All type of signal data in wireless transmission have to deal with degradation. One form of degradation is called fading which results in weakened Signal strength.

8.

(a) what is a client server relationship?

(b) what is client/server architecture? and

what is peer to peer network?

(c) what is application layer protocol

and how do TCP protocol work?

Ans. to the question no. 8 (a)

client/server is a program relationship in which

one program requests a service or

resource from another program.

client-Server model is a distributed application structure that partitions or works

load between the providers of a sources or
Service, called servers, and Service request
ester called client. often client and server

communicate over a computer network

on separate hardware, but both client

and server may reside in the same

System. A server host runs one or

more server program, which share

their resources with client. A client

does not share any of its resources.

but it request content on service from
a server.

Ans to the question no. 8 (b)

Client - Server architecture Client is a network architecture in which each computer on network is either a client or server. Server are powerful computers or process dedicated to managing disk drives, printers or network traffic.

peer to peer network:

A peer to peer network is one in which two or more PCs share files and access to devices such as printers without

Requesting a separate Server Computer or
Server Software.

In its simplest form a peer to peer network

is created when two or more PCs are

connected and share resources without
going through a separate Server Computer

A P2P network can be an ad-

hoc connection - a couple of computer

Connected via a universal Serial Bus.

to transfer files. A P2P network also

can be permanent infrastructure that

Ans. to the question 8 (c)

Application layer:

The application layer is the seventh layer-layer

osi model. application layer interface directly interacts with the application and provides

Commons web application service. The application

layer also makes also a request to the pre-

sentation layer. Application layer is the hight

level of open system, providing services direct

ly for the application process.

TCP work?

The transmission control protocol (TCP) does

one job very well. it creates an abstraction
that makes an unreliable channel look
a reliable network. For applications built
over an unreliable network like the inter-
net, TCP is a godsend that hides a
lot of the inherent complexity in building
network application. A laundry list
of TCP features that application developer
rely on every day, includes, retransmis-
sion of lost data, in order to data
delivery, data integrity, and congestion contr-
ol.