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Section: 22

Assignment - 1

Q1 Ans

I. A device sends image as encoded bytes, meaning encryption is performed, hence presentation layer of OSI model.

II. A process drops data, because it is corrupted, meaning flow and error control, hence transport layer of the OSI model.

III. A device searches for a path to send to a destination, which is routing and performed by the network layer of OSI model.

Q2 Ans Social media platform knew about the choices through preserving cookies. HTTP is stateless, sites use cookies to keep per-user state. Visiting an online clothing store sets a unique cookie ID header to the browser and whenever later visits occur, the browser sends the cookie back and the site looks up ID, cart, recommendations for similar product advertisement.

Q3. Ans: User agent (Outlook) is used by Bob to send an email to Alice using SMTP mail servers.

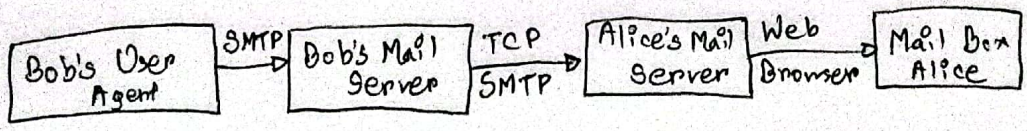

Fig: Diagram of transport and application layer protocol layers.

Q4. Ans: To reach for www.gamingforall.com, we need to store 200.10.20.7 at the DNS server so that the url gets translated to the hosted webpage of the startup.

~~1. Type-A, www.gamingforall.com~~

1. type-A : (www.gamingforall.com, 200.10.20.7, A)

2. Domain mail: (gamingforall.com, mail.gamingforall.com, Mx)

Q5. Ans: When two browsers are opened, two seperate TCP connections to bracu server is created. ~~Not~~ If both the connections go to the same destination IP and port, then each tab will use a different random source port number on the compnter. One tab might use port 49995 and the other uses 49965. This way the server can distinguish between two ~~web~~ browsers.

Q6. Ans:

1. 1 RTT = 12×2 = 24ms, 18 objects.

∴ Total time = (24 + 18×270) = 294ms

2. Each object is 12MB in size

~~∴ Total size = (12×18) =~~

∴ Total size = (12×18×8) bits
= 1728Mbits

∴ TFT = $\frac{1728 \text{ Mbits}}{42 \text{ Mbits/s}}$ = 41.142 s = 41142 ms.

(Ans)

Q7. Ans: i) Average response time = LAN delay + access delay + Internet delay

CSE LAN = 35ms
BRACU LAN = 50ms
∴ Total LAN = 85ms
Access delay = 200ms
Internet " = 300ms

∴ Average response time = (0.9 × 35) + (.25 × 85) + (0.25 × (500+85)) ms

= 185 ms

(Ans)

ii) As the website is visited, it is cached in the CSE department proxy server, so ~~if~~ if it is searched again then response time will be 35ms.

Q8. Ans:

i) As the RTO timer expires with no ACK for S1 through C_2, the Server needs to retransmit S1. When S1 was send, client needs to send an ACK for that packet and if the S1 was lost, or ACK was lost then any other packet segment will be discarded by the client as it is out of order. When S1 is acknowledged by the client and server gets that ACK number, it sends the next packet.

ii) Ans: ISN of client is 1455, ISN of Server = 2010

$\therefore C_1 = 1455 + 320 + 1 = 1776$

$\therefore C_2 = 1776 + 111 = 1887$

$\therefore C_3$ Sequence number = 1887

$\therefore C_3$ Acknowledgement number = $2010 + 1 + 220$
$= 2231$

$\therefore C_3$ seq num = 1887, ack num = 2231

(Ans)

(iii) Ans: rwnd of server = 10,000 bytes

Total bytes received = (320 + 111 + 260) bytes

= 691 Bytes

∴ rwnd of server = (10000 - 691) bytes

= 9303 bytes.

(Ans:)