CSE-421

Assignment-1

Answers no-1:

1(a) Transport layers is responsible for process to process delivery.

Network layers provides host to host delivery. In transport layers, port numbers added so that one process (sending) and communicate with a process on the receiving host. Process to process refers to, delivering data between applications on end systems, whereas host to host refers to delivering packets between networks.

1(b) DNS differentiates services by record type in the query.

For webservice, it uses Address or CNAME records to map a domain to an IP. For mail servers, it uses MX records that point to the mail server handling email for that domain.
So even if the domain names same, DNS requests specify which record type is needed.
Example: "google.com" has an A record mapping it to a Google web servers IP, and an MX record pointing "google.com" to the mail server mail.servers.com.

(1) (c) (i) When a joins, it can only download from the top four uploaders if they still have available upload capacity and allow new connections. If the four current uploaders are already fully connected or have limited upload slots, a cannot download the file immediately.

(ii) D's rate increases to 40 Mbps.

Client a's total download rate equals the sum of the new top four upload speeds.

If download speed is 130 Mbps then the time will be,

$$890/130 = 6.85 \text{ seconds.}$$

(1) (d) DASH: It helps in adjusting video quality based on the user's available bandwidth by dividing the video into short segments at different bit rates for smooth, interruption-less playback.

Menifest File: This lists all video segments, their URL's, durations and qualities. The client reads and chooses the best quality segment it can download quickly.

Answer no - 28

2(a) Cookies are stored seperately by each browser. The cookie set in chrome for the same website won't match the cookie set in firefox. Neither have any knowledge about the cookies of the other side. And that is why we cannot see the previous search history in firefox.

2(b) The HTTP method is a conditional GET.

The proxy server asks the main server if the stored info is still upto date or not. by sending the data of its cached version. If nothing is changed then main servers lets the proxy server know and action is taken wisely saving time.

(2)(c)

(i) There are 3 DNS servers contacted sequentially.

∴ Total delay = 19 ms × 3 = 57 ms.

(ii) Each object needs 5 ms + 125 ms = 130 ms.

∴ 21 objects need 130 × 21 = 2730 ms

∴ Total time 2730 + 35 (first req) = 2765 ms.

(iii) Total time to load webpag = 57 + 2765 ms

= 2822 ms.

Answers no-3 :

3(a) UDP checksum field is used for error detection of the UDP datagram. It covers the UDP header and data. The sender computes a checksum over these bits and puts it in the header. The recievers recomputes the checksum and compares. If a bit error is detected that UDP is discarded.

3(b) PCA has 700 bytes of urgent data starting at seq. number 3001.

we have, to set the URG flag to 1. Put 700 in the Urgent pointer field.

Here the URG flag signals urgency in data transfers and the urgent pointer value identifies the length of the urgent portion starting at seq 3001 (3001+700-1) = 3700.

3(c)

Client ISN = 2045.

Server ISN = 8935.

Request 1 carried 320 bytes (so last byte = 2045 + 320 = 2365)

Request 2 carried 389 bytes.

(i) For the server's HTTP Request 2 sent to the server,

sequence number is 2366.

acknowledgement number is 10721.

(ii) The Rwnd of the client after the client recieves DS-5 is 30200 bytes. All pending data delivered to the app, so, the advertised window returns to the full recievers buffer.

(iii) For the client after recieving DS-4 the,

acknowledgement numbers is 11021.

sequence numbers is 2366 + 389 = 2755.