

Assignment 01

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Answer to the Question No-01

For the HTTPS response packet, traveling from the web server to pc1 and currently at router R3, the source port is the well-known port 443 (For HTTPS), and the destination port is an ephemeral port initially chosen by pc1. The source IP address is 4 and the destination IP address is 1 which is pc1's address. At the data link layer, the source MAC Address is C and the mac address is A as these are the immediate sender and receiver of the frame at this hop.

Ans to the Question No-02

- I. Post method.
- II. PUT method.
- III. Head method. Head method asks for a response like a Get but without the actual file on body so it is fast and only checks for existence and metadata.

Answer to the Question No-03

The website uses cookies to track users. This is a privacy concern because it builds a profile of your online activity without your consent. Also user can prevent it by regularly clearing their cookies or blocking third-party cookies in their browser settings.

Ans to the Question No-04

The issue is DNS Caching. User's computer and ISP DNS servers save the old IP address for a period (TTL). When the server's IP changes daily, many users are still directed to the old, invalid address from the cache.

Ans No 05

The two TCP header fields are URG (Urgent) flag and the PSH (Push) flag.

The URG flag signals that the data is urgent and should be prioritized.

The PSH flag instructs the receiver to deliver the data to the application immediately, without waiting to fill its buffer. This combination ensures that emergency alerts are processed with minimal delay.

Ans No - 06

The university should use a proxy server. This server stores copies of the textbooks, so when a student requests one it's loaded from the local cache instead of the slow external source, speeding up access for everyone. So basically the slow loading is due to high traffic to the external server.

Ans No - 07

① Given,

$$T_{RTT} = 850 \text{ ms} \quad (\text{includes DNS RTT } 50 \text{ ms})$$

$$\begin{aligned} \text{for the objects } RTT &= T_{RTT} - \text{DNS RTT} \\ &= 850 \text{ ms} - 50 \text{ ms} \\ &= 800 \text{ ms} \end{aligned}$$

p.7.0

23 objects are sent over the ~~same~~^{persistent} connection.

$$850 \text{ ms} = 50 \text{ ms} + 3 \text{ RTT} \times 50, \Rightarrow 3 \text{ RTT} = 800 \text{ ms}$$

~~Single RTT = Total RTTs & 800ms~~
$$\Rightarrow 1 \text{ RTT} = 800/3 \\ = 266.67 \text{ ms} \quad (\text{Ans})$$

(ii) Given,

$$\text{First 5 objects} = 5 \times 6 = 30 \text{ MB}$$

$$\text{Next 19} \quad n = 19 \times 2 = 38 \text{ MB}$$

$$\therefore \text{Total} = 30 + 38 = 68 \text{ MB}$$

$$\text{Now, } 68 \text{ MB} = 68 \times 8 = 544 \text{ Mb} \quad (1 \text{ byte} = 8 \text{ bits})$$

Given,

Server's speed 200 Mbps

$$\text{Now, } 200 \text{ Mbps} = 200/1000 \\ = 0.2 \text{ Mb/ms} \quad (1 \text{ s} = 1000 \text{ ms})$$

Transmission Time = Total Data / Speed

$$= \frac{544 \text{ Mb}}{0.2(\text{Mb/ms})}$$

$$= 2720 \text{ ms}$$

∴ Transmission time 2720 ms.

(Ans)

P.T.O

Ans No - 08
①

C₁ (C → S) Seq: 5678

Size: 546, Next seq: 6224

S₁ (S → C) Seq: 1234

Size: 786 Next seq: 2020

S₂ (S → C) Seq: 2020 Next seq: 2705
(lost)

S₃ (S → C) Seq: 2705 Next: 2961 (Arrives
out of order)

ACK 1 (C → S) ACK: 2020

Seq: 6224 (client's next seq)

For ACK 2

∴ Seq: 6224

ACK: 2961

(Ans)

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