

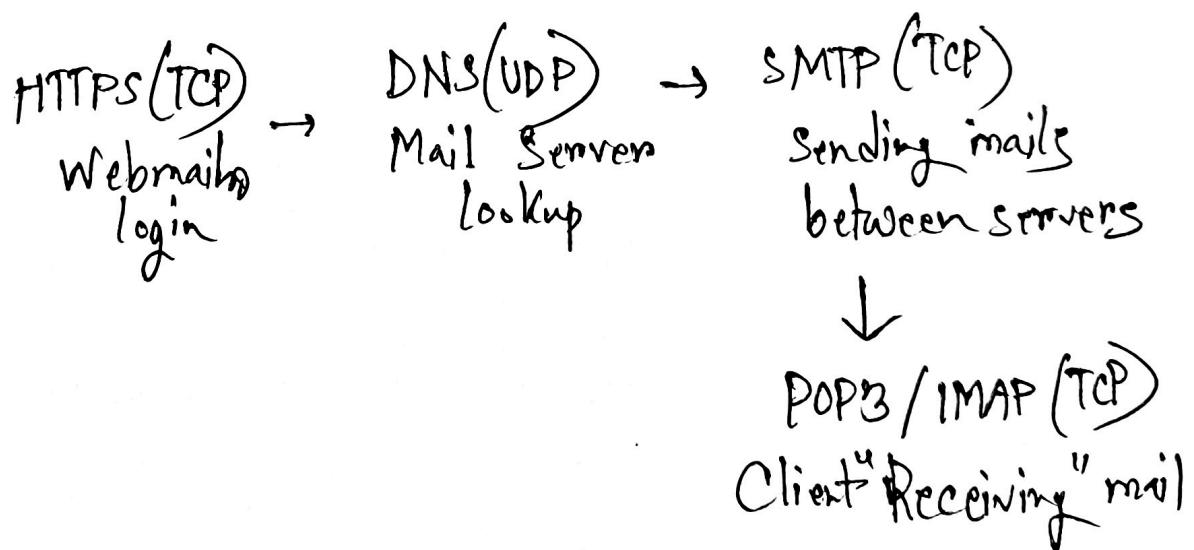
Q1

- I. Application
- II. Physical
- III. Data link

Q2

Cookies are stored per browser. Chrome and Internet explorers maintain separate cookies store, so cookies set in Chrome are not accessible in IE, hence no personalized content.

Q3



Q4

Type: A

Name RR = (www.gamingforall.com, 200.10.20.8, A)

↓  
name      ↓ value      ↓ type

RR = (gamingforall.com, ns, NS)

↓  
name      ↓ value      ↓ type

(Domain)      (Authoritative)

Q5

Protocol: UDP

Port type: Ephemeral (source port)

• Servers differentiates requests by destination IP address and possibly multicast group address  
But since source port is same, differentiation by source IP address.

Q6

i. Number of items =  $1 + 3^4 = 35$

Total RTT =  $35 \times 65 = 2275 \text{ ms}$

ii. Transmission time per object =  $92/64 = 0.55$   
 $\Rightarrow 500 \text{ ms}$

Total transmission time =  $35 \times 500 = 17500 \text{ ms}$

Q7

i. Avg =  $0.4 \times 15 + 0.3 \times 00 + 6.3 \times 300$   
 Response time  
 $\approx 105 \text{ ms}$

ii. FEE dept proxy miss, BRACU proxy hit  $\rightarrow$   
 delay =  $30 \text{ ms}$

Q8)

i. Server re-sends S1 because either the original S1 segment was lost or the acknowledgment from the client for S1 was lost. Since they are using selective repeat, the client will accept S1 if it is within its current receiving window, buffer it and send an ACK for S1 if it hasn't already been acknowledged.

ii. C1 starts 1911 (ISN+1) → ends 2331

C2 starts at 2332.

S1: 1533 → 1792

S2: 1793 → 2012

Client has received S1 & S2 successfully; so it ACKs the next expected byte = 2013.

So, Sequence number = 2332

Ack num = 2013

(iii)

$$\begin{aligned}\text{Total received} &= c_1 + c_2 + c_3 \\ &= 921 + 320 + 111 \\ &= 852 \text{ bytes}\end{aligned}$$

$$\text{Initial round} = 12000 \text{ bytes}$$

$$\begin{aligned}\therefore \text{New round} &= 12000 - 852 \\ &= 11468 \text{ bytes}\end{aligned}$$

$\therefore$  Server round after receiving  $c_3 = 11468$  bytes.