ASSIGNMENT - 1

CSE 421

NAME:- Tasmia Tabassum

ID:- 2130145 05

SECTION:- 22

CSE 421

Assignment-1

Answer to question no:-1

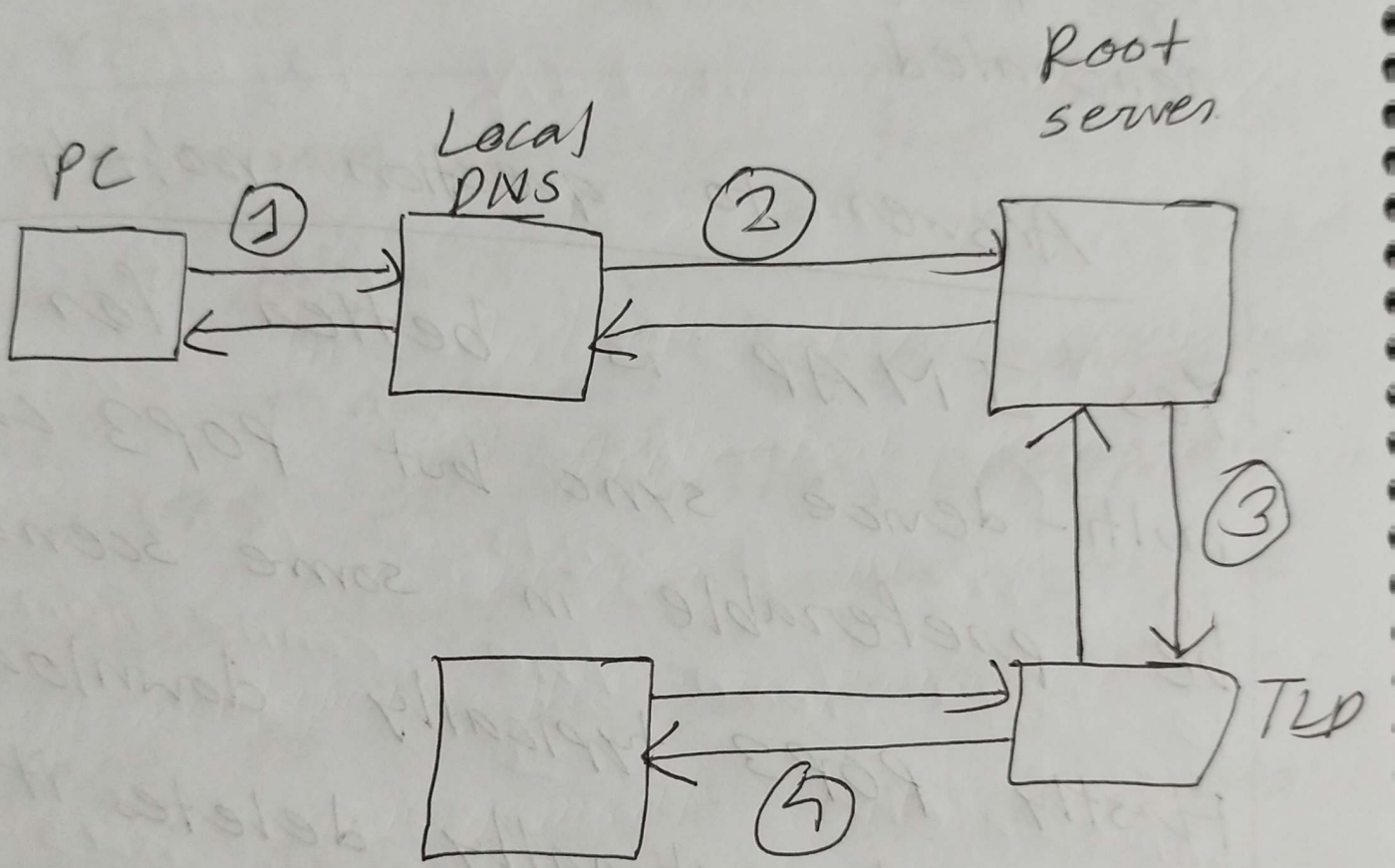
The layer 7, 6 and 5 of the OSI model were combined into one layer in the TCP/IP because in TCP/Ip model the Application layer combines OSI layers Application, Presentation and Session because in real implementations the responsibilities of session management, data ~~representation~~ representation and ~~apt~~ application services are commonly implemented together. So combining ~~this~~ these ~~re~~ three layers reduces protocol complexity.

Answer to question no:-2

The reason behind this is cookies. Firstly the side understood that I had visited this site earlier because on Thursday when we first visited it the site created a session identifier and stored it in the browser which is a cookie. ~~and~~ Secondly in Friday, the request that allowed my cart to still contain items because the browser included the same cookie header so the server recognized the existing session ID and retrieved the cart contents previously

stored for that session.

Answer to question no:-3



Total 4 pairs.

Here the Local DNS server asked for root server. Then the Root server asked the TLD

server. Then the ~~FD~~ TLD asked the autharative server. For each of the query a response was generated.

Answer to question no!-4

Yes IMAP is better for multi-device sync but POP3 can be preferable in some scenarios.

Firstly POP3 typically downloads mail and optionally deletes it from the server, that is making space for server.

Secondly POP3 is simpler to implement.

So POP3 is useful when we want a

Simple, server-space-saving,
offline setup

Answer to question no:-5

The reason for which the source ports differ is each browser tab opens a separate TCP connection to the server. The operating system assign a unique source port to each connection. Even though the source IP is same separate connections must ~~use~~ use different source-port numbers.

Typically the destination port is 80 or port 443. The transport protocol is TCP.

Answer to question no!-6

Normally the server replies ACK to the client's FIN and later sends its own FIN to close the server. The server does not send a FIN in the far many reasons.

Firstly If the server encounters an error it sends a RST reset to tear down the connection immediately.

Secondly if the server has already closed the connection and transitioned to closed it ~~na~~ may not send a second FIN in ~~reply~~ reply to the clients FIN.

Thirdly if the server has timed out or explicitly chooses to abort the session.

Answer to question no:-7

i) Transmission time per object

$$\frac{1.5 \times 10^6}{60 \times 10^6} = 0.025$$

Total for all x objects.

$x = x \times (0.025 + 0.007) = 1.184$

or, $x \times 0.032 = 1.184$

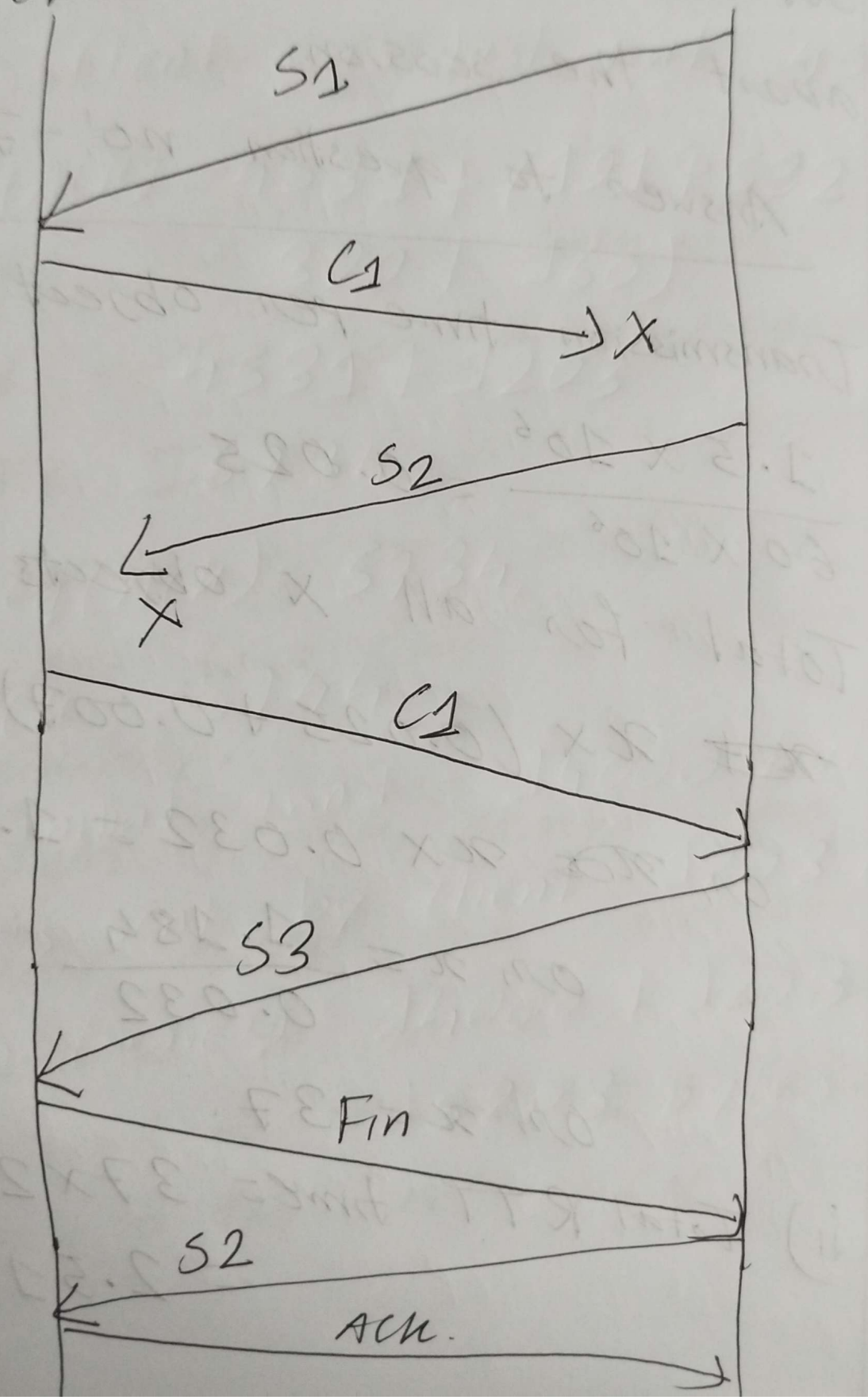
or $x = \frac{1.184}{0.032}$

or $x = 37$.

ii) Total RTT time $= 37 \times 2 \times 0.034$

$= 2.516$ sec.

Answer to question no:-8



i) FIN is sent after all data from server to client.

S1's sequence number = 8742

Seq (FIN) = Last byte sent + 1
= 8743

Ack number (FIN) = Last Ack received from client = 4531 (since client acknowledged up ~~to~~ that).

∴ Seq(FIN) = 8743,
Ack (FIN) = 4531.

ii) When client receives FIN (seq = 8743, 1 byte for FIN). client sends Ack = 8744 (next expected byte).

ACK segments sequence number is the next in clients own sequence line (Client was last at 4531)

seq (ACK) = 4531 + (191 + 532 + 320 + 160)

= 4531 + 1203

= 5734.

∴ seq (ACK) = 5734,

ACK = 8744.

iii) Initial rwnd = 14000 bytes.

Bytes sent by client = 1203 bytes

rwnd (server) = 14000 + 1203

= 15203 bytes.