

Assignment - 2

CSE421

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Sec: 08

1 No (1)

Total data segments = 15 \rightarrow each segment size = 926 bytes

HTTP request = 241 bytes
($1 \times$ header size + 241 bytes) + 1920 = 2180

Client (Phase) + Server
 $ISN_c = 5193$ $ISN_s = 4992$
 $RWND_c = 11021$ $RWND_s = 21800$

$258 + 62441 = 64999$ sequence number available after 32

(a) Initial data segments @ sequence, $ISN = 5193$ (2)

\therefore Sequence of 4th segment = $5193 + (926 \times 3)$
= 7971

\leftarrow set this as the next byte.

Acknowledgement number = $7971 + 926$
= 8897 (Ans)

(b)

Each data segment is 926 bytes.

So, Sequence number for the 11th data

segment = ISN + (Size of data segment $\times 10$)

$$= 5193 + (926 \times 10)$$

$$= 14453.$$

$$\text{ERIE} = 1421$$

$$\underline{\text{215011}} = \underline{\text{4449}}$$

So, the Acknowledgement number = $14453 + 926$
 $= 15379.$

(c)

Each data segment is 926 bytes.

So, after 5 segments, total data received

by the client will be →

Data received after 5 segment = 5×926

$$= 4630 \text{ bytes.}$$

$$\therefore \text{Remaining RWN}D = 11021 - 4630 \quad (\text{d}) \\ = 6381 \text{ bytes}$$

After sending 13 segments about 12038 bytes
After 13th segment, the client will receive

$$(13 \times 926) \text{ bytes} = 12038 \text{ bytes.}$$

$$\therefore \text{New RWN}D = 11021 - 12038 \\ = -887 \text{ bytes}$$

But RWN^D cannot be negative.

That means the buffer is full.

$$450 + 100 = 550 \text{ bytes. } \underline{\text{No new segment}}$$

$$ASR =$$

(a)

Now S₁ starts with the sequence number 0
How S₃ knows of previous sequence numbers?

S₂ will have seq number 327 ~~328~~

$$\text{PSS} = ASR + 222 = 327$$

$$\underline{S_3 \text{ will have seq num}} = 327 + 222 \\ = 549$$

(b) Sequence Number for $C_2 \rightarrow$
After 1823 = ~~known~~ second ~~known~~ =

C_1 starts after 53,

so now total left known = $868 + 319$ left
total $8681 = 1187$ (as $\times 81$)

C_2 follows C_1 ,

$8681 - 1823 = 6858$ left

So, Sequence num of $C_2 = 1187 + 304$
= 1491

It takes 26 times known to

Now, Now it is noted that the second C_2 follows the first, but

∴ Sequence num of second $C_2 = 1491 + 424$
= 1915

∴ problem simpler with this idea (A)
Acknowledgment number for second C_2 will
 $be = 1915 + 424 = 2339$.
SSC + FSC + new part \rightarrow ~~first~~ \rightarrow ~~1187~~
P.A.

(c) (8)
Not banned RST trigger initiation at
start of table 304 bytes from start of table

Total grid data received after C1 = 304 bytes

total need sent before C2 = 32 bytes
Data in the second C2 is 424 bytes.

now if size of first transmission grows

Data received after second C2 = $304 + 424$
= 728 bytes

fulfilling relation left 32 bytes of table

We know,

RWND size is the buffer size minus data received

$\text{RWND} = \text{Buffer size} - 728 \text{ bytes}$ (9)

now what about in waiting list?

So RWNDS can not be calculated
without Buffer size.

so there is no guarantee of delivery of
all the arriving TCN notifications after each

of the back-to-back transmission set of
notifications

(d)

In selective Repeat TCP connection,
packets can be sent ~~out of~~ of order. There
~~might be~~ = several reason for sending ~~both~~ C2
after S6. C2 might have been lost
~~after ACK in S6 has been sent~~.
(wing transmission) that is why it was
~~ACK + PGS = S9~~ necessary to retransmit after subsequent
~~ACK S8F =~~ packets like S6. Also, the sender might
have had buffer space to send C2
~~after sending S6~~ ^{want to} ~~as in~~
~~because when main~~

(e)

~~Graceful Termination is used here as~~
~~the connection termination method.~~

In this method, both the client and server exchange FIN segments to gracefully close the connection. It ensures all data is transmitted and acknowledged before termination.

3 NO

(d)

(a)

After client sent the connection request
 Client also sends a FIN segment with sequence number 891

Acknowledgment number is 7568

Server sends 2 data segments.

First segment carries 225 bytes.

So, the sequence number for the Ack segment will be →

$$\text{Sequence num} = 891 + 225 = 1116$$

This is known as the window size of 225.

Acknowledgment number will be →

$$\text{Acknum} = 7568 + 167 = 7735$$

Given sequence number is 1116, also we have

$$DEV = 16 \times 256 = 4096$$

(b)

(b)

Sequence number of the first Ack segment sent by client will be the same as the last byte sent by client -
102 address groups

Sequence num = 891

The acknowledgement num will be the sequence num of the next byte.

Acknowledgment num = 7735 ← of ACK

$$(c) 300 = 755 + 108 = \text{new group}$$

The last acknowledgement number sent by the client is 7735.

As the FIN segment indicates the end of the data, the acknowledgement number will = $7735 + 1 = 7736$.

(Ans)