

PRACTICE QUESTION: chap 3-4

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MTWTFSS

ROLLNO: 19K-110b
SEC: B
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Date: _____

Question 1:

a: Application developer choose to run their application over UDP rather than TCP because they want to control TCP congestion control also many application don't require reliable data transfer.

b: Yes it is possible for application to enjoy reliable data transfer even in UDP but it requires some significant amount of work and debugging.

Question 2:

a: Firewalls usually block TCP UDP traffic, Using TCP for voice and video to allow the traffic go through it.

b: We can't handle this situation with UDP because it (UDP) doesn't provide any congestion control algorithm, but TCP in this situation will adjust automatically.

Question 3:

a: Yes both section will directed to Host C and Host C will identifies both section with different IP address.

b: Even though the request from A-B pass through different socket the identifier for both of these socket have destination port 80.

Question 4:

- a) by SequenceNumber, we find out duplicate packets
- b) by timer, we handle losses in channel if acknowledgement is not receive in within time , packet will lose.
- c) A timer will still necessary in sdT 3-0 even though the delay between them constant , it will detect the loss for each packets.

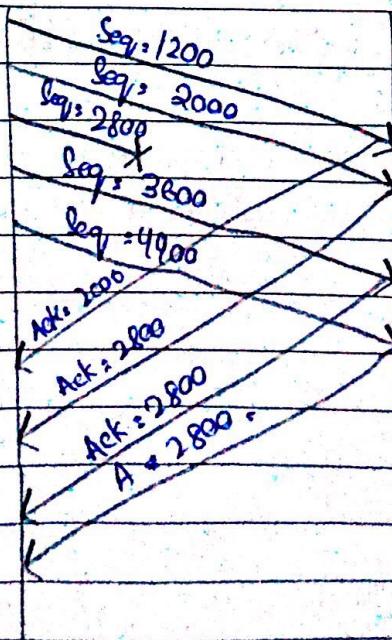
Question 5:

- a: 20 bytes
- b: AcknowledgmentNumber : 90

Question 07:

- a: True , it is possible to take there outside the window
- b: True.

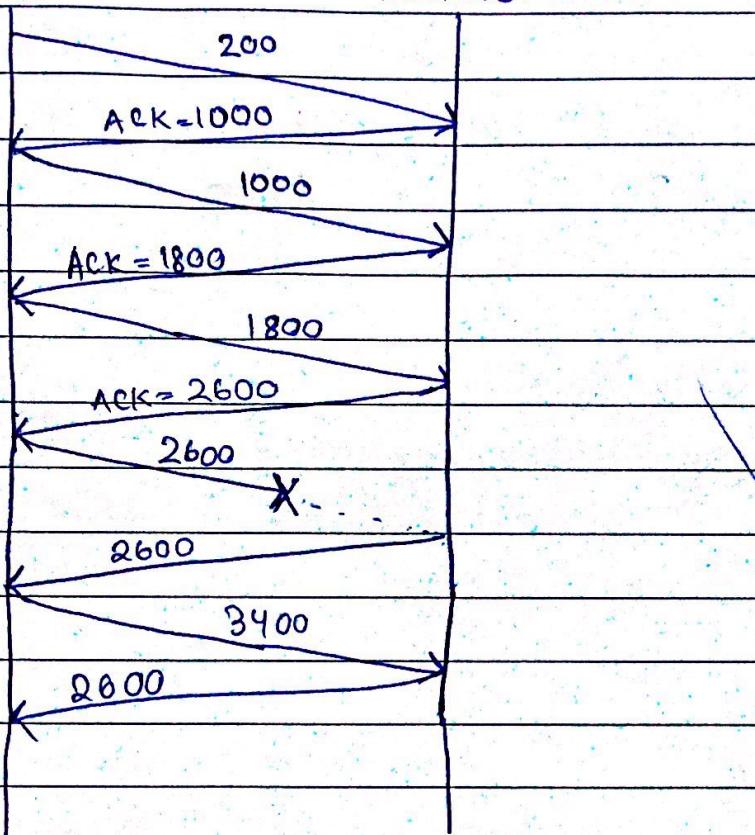
QUESTION: 8 (a) Sender Receiver,



QUESTION: 8

b:

Sender Receiver

**QUESTION: 9**

$$\text{a: estimated RTT} = 15 \text{ ms}$$

$$\text{deviation} = 1.9 \text{ ms}$$

$$\text{Sample RTT} = 20 \text{ ms}$$

$$\begin{aligned} \text{Estimated RTT} &= (1-\alpha) * \text{estimated RTT} + \alpha * \text{sample RTT} \\ &= (1 - 0.125) * 15 + 0.125 * 20 \end{aligned}$$

$$\boxed{\text{Est RTT} = 15.625 \text{ ms}}$$

$$\begin{aligned} \text{deviation} &= (1-\beta) * \text{devRTT} + \beta * (\text{sample RTT} - \text{estimated RTT}) \\ &= (1 - 0.25) * 1.9 + 0.25 * (20 - 15.625) \\ &= 2.518 \text{ ms} \end{aligned}$$

$$\text{RTO} = \text{estimated RTT} + \text{DevRTT} * 4$$

$$\text{RTO} = 25.7 \text{ ms}$$

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b: estimated RTT - $(1-\alpha) \times \text{est.RTT} + \alpha \times \text{Samp RTT}$
 $= (1-0.125) \times 25 + 0.125 \times 30$
 $= 25.625$

deviationRTT = $(1-\beta) \times \text{Dev.RT} + \beta \times (\text{sample - estimated})$
 $= (1-0.25) \times 2.8 + 0.25 (30 -$
 $= 3.19$

RTT₀ = estimated + DevRTT × 4
= 38.4 ms

QUESTION: 10

a: 1-6, 23-26

b: 6-14

c: triple duplicate ACK

d: timeout

e: 32

f: 22

g: 13

h: 7

i: 4

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Question = 11

Subnet	1	2	4	8	16	32	64	128	256
Host	256	128	64	32	16	8	4	2	1
	124	125	126	127	128	129	130	131	132

Problem = 3

Network address = 148.75.0.0 /26

0-63

64-127

128-191

192-255

- Address Class: class B
- Default Subnet Mask: 255.255.255.0
- Custom Subnet Mask: 255.255.255.192.
- Total No of Subnets: $2^3 = 1024$
- Total Number of host addresses = $2^6 = 64$
- Number of bit borrowed = 10 -
- Number of usable addresses = $64 - 2 = 62$

Problem = 1

Number of needed Subnet = 14

Number of needed usable hosts:

Network Address: 192.0.10.0

0-15

16-31

32-47

48-63

64-79

80-95

96-111

112-127

128-142

143-159

160-175

176-191

192-207

208-223

224-239

240-255

Sol:

- Address Class: C

- Default Subnet Mask: = 255.255.255.0

- Total No of Subnet: = $2^4 = 16$

- Total No of Host Address : 16

- No of Usable host address : $16 - 2 = 14$

- No of bit borrowed = 4

- Default Subnet Mask: = 255.255.255.240

1 2 4 8

Problem: 2

Number of Subnets = 1000

Number of usable Host = 60

0-63

Network address: 165.100.0.0

64-127

128-191

Sols

Address Class: C

0

192-255

Default Subnet: 255.255.0.0

Total No of Subnet, $16 - 6 = 10 \Rightarrow 2^4 = 1024$

Total No of Host address, $2^6 = 64$

Total No of Usable Host Address, $64 - 2 = 62$

Number of bit borrowed: 10

Custom Subnet Mask, 255.255.255.192

QUESTION: 12

IP: 192.168.1.0

Netcom has 50 host

Subnet 1	2	4	8	16	32	64	128	256
host 256	128	64	32	16	8	4	2	1
124	125	126	127	128	129	130	131	132
No of needed host: 50								

No of bit borrowed: 2

0-63

Total No of Subnet: $2^2 = 4$

69-127

Total No of Host address: $8 - 2 = 6 = 2^3 = 64$

128-191

Total No of Usable Host Address, $64 - 2 = 62$

192-255

Default Subnet: 255.255.255.0

Custom Subnet Mask, 255.255.255.192

Range: 192.168.1.0 - 192.168.1.63

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- Cyber Cafe has 48 host.

Class : C

No of bit borrowed = 2

Total Subnet = $2^2 - 4$

Total No of subnet needed host = 48

Total No of Host address $2^2 - 2 = 6 = 2^6 = 64$

Total No of usable host address = $64 - 2 = 62$

Default Subnet = 255.255.255.0

Custom Subnet Mask = 255.255.255.192

IP range :

192.168.1.64 - 192.168.1.127

- CNRP-Zone has 120 host

0 - 127

Class : C

bit borrowed = 1

Needed host = 120

Total Subnet = $2^2 - 2$

Total No of host address = $8 - 1 = 7 = 2^7 = 128$

Total No of usable host address = 126

Default Subnet = 255.255.255.0

Custom Subnet Mask = 255.255.255.128

IP range :

192.168.1.128 - 192.168.1.255

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Q 13 :-

MTU = 1020 bytes

data part = 5960 bytes

IP header = 20 bytes

No of fragment = ?

	Total length	Flag	Fragment offset.
Original Packet	1000 + 20	1	0
Fragment #1	1000 + 20	1	1000/8
Fragment #2	1000 + 20	1	2000/8
Fragment #3	1000 + 20	1	3000/8
Fragment #4	1000 + 20	1	4000/8
Fragment #5	960	0	5000/8.

Q UESTION: 6

(b) In slt 3-0, is used to transfer data from sender to receiver.
If a sender transfer a packet to receiver then receiver will receive and send ACK to the sender for confirmation., if the sender receive ACK then go to the next level , In this process we need sequence No to the Sender for finding duplicating packets data or ACK data. if sender find any duplicate ACK then ignore it , In this process ACK packet s doesn't require sequence No!

(A) In this case that packets get lost due to congestion , TCP will reduce the transition rate whenever the retransmission timeout is triggered in order to avoid further congestion .