Week 5 Summary Exercises

Due Jul 30 at 11:59pm **Points** 82 **Questions** 32
Available Jul 23 at 12am - Jul 30 at 11:59pm 8 days **Time Limit** 360 Minutes **Allowed Attempts** 2

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	57 minutes	79.51 out of 82
LATEST	Attempt 2	57 minutes	79.51 out of 82
	Attempt 1	69 minutes	72.67 out of 82

Score for this attempt: **79.51** out of 82
Submitted Jul 27 at 12:34am
This attempt took 57 minutes.

Question 1

2 / 2 pts

Retransmitting a missing segment before the segment's countdown timer expires is called...

- retransmission avoidance
- duplicate transmission
- fast retransmission

Correct!

- early retransmission

Question 2

2 / 2 pts

A TCP fast-retransmit will occur after...

- Four duplicate ACKs for the same segment.
- Three ACKs for the same segment.

Correct!

- Three duplicate ACKS for the same segment.

There is no such thing as fast retransmit.

Question 3

2 / 2 pts

The TCP protocol provides reliable, connection-oriented service.

Correct!

- (•) True
- ( ) False

Question 4

2 / 2 pts

HostA has established a TCP connection with HostB in a remote network. HostA is sending packets to HostB. Assume we have configured TCP, somehow, to ACK every segment (no ACKing every other segment). Assume that the timeout is the same for all packets. HostB's "window size" is 20000 bytes. HostB has already received and acknowledged everything sent by HostA's application up to and including byte #2175. HostA now sends segments of the same application data stream in order:

P: 237 bytes
Q: 175 bytes
R: 394 bytes

What is the sequence number on segment P?

Correct!

2176.0000

Correct Answer

2176.0

Question 5

2 / 2 pts

Compute the one's complement sum of the following two numbers. Give answer in 8-bit binary, zero-padded to 8 bits if necessary, with no spaces (e.g. 00101000).

```
10000010
10000001
```

Correct!

100.0000

orrect Answers

100.0 (with margin: 0)

Question 6

0.4 / 2 pts

What are some causes of network congestion? (Check all that apply)

Correct Answer

- [ ] Dropped TCP Packets.

Correct Answer

- [ ] Reliable Data Transfer schemes.

Correct Answer

- [ ] Parallel TCP Connections.

Correct Answer

- [ ] Typical Internet Usage.

Correct!

- [x] High utilization.

Question 7

2 / 2 pts

TCP implements network fairness indirectly.

Correct!

- (•) True
- ( ) False

Question 8

2 / 2 pts

TCP has a congestion control mechanism.

Correct!

- (•) True
- ( ) False

Question 9

2 / 2 pts

TCP implements network fairness directly.

- [ ] True
- [x] False

Correct!

Question 10

2 / 2 pts

In host-inferred congestion control, congestion is detected based on delayed and/or dropped packets.

Answer 1:

host-inferred

Correct!

Question 11

2 / 2 pts

What are some possible consequences of network-core congestion? (Check all that apply)

Correct! - [x] Out-of-order packet arrival

Correct! - [x] Increased network congestion

- [ ] Server shutdown

Correct! - [x] Delayed packets

Correct! - [x] Dropped Packets

Correct! - [x] Network collapse

Question 12

2 / 2 pts

Select the proper equation for TCP's calculation of DevRTT.

- $DevRTT_n = (1-\beta) \cdot DevRTT_{n-1} + \beta \cdot |SampleRTT_{old} - EstimatedRTT_{n-1}|$

Correct!

- **$DevRTT_n = (1-\beta) \cdot DevRTT_{n-1} + \beta \cdot |SampleRTT_{new} - EstimatedRTT_{n-1}|$**

- $DevRTT_n = \beta \cdot DevRTT_{n-1} + (1-\beta) \cdot |SampleRTT_{new} - EstimatedRTT_{n-1}|$

- $DevRTT_n = (1-\beta) \cdot DevRTT_{n-1} + \beta \cdot |SampleRTT_{new} - EstimatedRTT_n|$

Question 13

2 / 2 pts

UDP implements network fairness.

- True

Correct!

- False

Question 14

3.56 / 4 pts

Select the appropriate ***new*** CongWin sizes for the following TCP Reno congestion scenario. Assume **ssthresh** is initially set to 8 MSS:

1. Connection Established with new server host. CongWin = [Select]
2. ACK(s) received from first segment set. CongWin = [Select]

3. ACK(s) received from next segment set. CongWin =

[Select]

4. ACK(s) received from next segment set. CongWin =

[Select]

5. ACK(s) received from next segment set. CongWin =

[Select]

6. ACK(s) received from next segment set. CongWin =

[Select]

7. Triple Duplicate ACK occurs. CongWin = [Select] ,

ssthresh = [Select]

8. ACK(s) received from next segment set. CongWin =

[Select]

Answer 1:

Correct! 1 MSS

Answer 2:

Correct! 2 MSS

Answer 3:

Correct! 4 MSS

Answer 4:

Correct! 8 MSS

Answer 5:

Correct! 9 MSS

Answer 6:

Correct! 10 MSS

Answer 7:

Correct Answer 8 MSS

You Answered

4 MSS

Answer 8:

Correct!

5 MSS

Answer 9:

Correct!

9 MSS

Question 15

3.56 / 4 pts

Select the appropriate ***new*** CongWin sizes for the following TCP Reno congestion scenario. Assume **ssthresh** is initially set to 8 MSS:

1. Connection Established with new server host. CongWin = [Select]
2. ACK(s) received from first segment set. CongWin = [Select]
3. ACK(s) received from next segment set. CongWin = [Select]
4. ACK(s) received from next segment set. CongWin = [Select]
5. ACK(s) received from next segment set. CongWin = [Select]
6. ACK(s) received from next segment set. CongWin = [Select]
7. Timeout occurs. CongWin = [Select] , ssthresh = [Select]
8. ACK(s) received from next segment set. CongWin = 2 MSS

Answer 1:

Correct!

1 MSS

Answer 2:

Correct! 2 MSS

Answer 3:

Correct! 4 MSS

Answer 4:

Correct! 8 MSS

Answer 5:

Correct! 9 MSS

Answer 6:

Correct! 10 MSS

Answer 7:

Correct! 1 MSS

Answer 8:

Correct Answer 5 MSS

You Answered 10 MSS

Answer 9:

Correct! 2 MSS

Question 16

4 / 4 pts

Imagine a mythical set of protocols with the following details.

Maximum Link-Layer data frame: 1266 bytes

Network-Layer header size: 17 bytes

Transport-Layer header size: 37 bytes

What is the size, in bytes, of the MSS? (Give answer without units)

Correct!

1212.0000

Correct Answer

1212.0

Question 17

4 / 4 pts

Given a effective delay of 76ms when network usage is 82%, what is the effective delay when network usage = 31% ? (Give answer is miliseconds, rounded to one decimal place, without units. So for an answer of 0.10423 seconds you would enter "104.2" without the quotes).

Correct!

19.7000

Correct Answer

19.8 margin of error +/- 0.1

Question 18

4 / 4 pts

Given a 1 Gbps link with TCP applications A, B, and C.

- Application A has 43 TCP connections to a remote web server
- Application B has 4 TCP connection to a mail server
- Application C has 20 TCP connections to a remote web server.

According to TCP "fairness", during times when all connections are transmitting, how much bandwidth should Application C have? (Give answer in Mbps, rounded to one decimal place, without units. So for an answer of 1234,567,890 bps you would enter "1234.6" without the quotes.)

Correct!

298.5000

Correct Answer

298.5 margin of error +/- 0.1

Question 19

4 / 4 pts

Given a nodal delay of 91.1ms when there is no traffic on the network (i.e. usage = 0%), what is the effective delay when network usage = 9.9% ? (Give answer is miliseconds, rounded to one decimal place, without units. So for an answer of 0.10423 seconds you would enter "104.2" without the quotes).

Correct!

101.1000

Correct Answer

101.1 margin of error +/- 0.1

Question 20

2 / 2 pts

A router's routing table is output by a routing algorithm .

Answer 1:

Correct!

routing algorithm

Question 21

2 / 2 pts

Where do network-layer protocols run?

Correct!

- [x] PCs

Correct!

- [x] Mobile devices

Correct!

- [x] Routers

Correct!

- [x] Laptops

Question 22

2 / 2 pts

In a datagram network, the responsibilities of the network layer include: (check all that apply).

- [ ] connection setup/takedown

Correct!

- [x] packet routing
- [ ] congestion control
- [ ] reliable delivery

Correct!

- [x] host-to-host communication
- [ ] flow control

Correct!

- [x] packet forwarding
- [ ] payload error correction

Question 23

2 / 2 pts

Given a router with 5 input ports and 5 output ports. If the switching fabric is 5 times as fast as the input/output line speed, queueing can occur at an input port.

Answer 1:

Correct!

can

Question 24

2 / 2 pts

The Internet Protocol (IP) header may be 21 bytes long.

- ( ) True

Correct!

- (•) False

Question 25

2 / 2 pts

In addition to a "default" entry, routing tables in an internet store...

Correct!

- (•) the "first hop" in a path to each of the networks known to the router
- ( ) the number of hops in the shortest path to each of the networks known to the router
- ( ) a complete path to each of the networks known to the router
- ( ) all of the above

Question 26

2 / 2 pts

The Internet Protocol (IP) implements congestion control.

- ( ) True

Correct!

- (•) False

Question 27

2 / 2 pts

The process of moving a datagram from a router's input port to output port is called forwarding .

Answer 1:

Correct!

forwarding

Question 28

2 / 2 pts

The process of moving a datagram from a router's input port to output port is handled by the switching fabric .

Answer 1:

Correct!

switching fabric

Question 29

2 / 2 pts

The Internet Protocol (IP) implements flow control.

- True
- False

Correct!

Question 30

4 / 4 pts

Upon encountering a router with the following routing table:

Prefix Match	Port
10011110 00011110 10001111	0
10011110 00011110 10001111 000	1
10011110 00011110 10001111 01	2
10011110 00011110 10001110 0001	3
Default	4

A datagram with the destination IP address 158.30.143.150 would be routed to Port 0 .

Answer 1:

Port 0

Correct!

Question 31

4 / 4 pts

Upon encountering a router with the following routing table:

Prefix Match	Port
10011110 00011110 10001111	0
10011110 00011110 10001111 000	1
10011110 00011110 10001111 01	2

10011110 00011110 10001110 0001	3
Default	4

A datagram with the destination IP address 158.30.143.80 would be routed to Port 2 .

Answer 1:

Correct! Port 2

Question 32

4 / 4 pts

Upon encountering a router with the following routing table:

Prefix Match	Port
10011110 00011110 10001111	0
10011110 00011110 10001111 000	1
10011110 00011110 10001111 01	2
10011110 00011110 10001110 0001	3
Default	4

A datagram with the destination IP address 158.30.142.90 would be routed to Port 4 .

Answer 1:

Correct! Port 4

Quiz Score: **79.51** out of 82