

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[Take the Quiz Again](#)

Attempt History

| | Attempt | Time | Score |
|---------------|---------------------------|------------|-----------------|
| LATEST | Attempt 1 | 69 minutes | 72.67 out of 82 |

Score for this attempt: **72.67** out of 82

Submitted Jul 26 at 1:56pm

This attempt took 69 minutes.

Question 1

2 / 2 pts

In a Cumulative acknowledgement scheme, a received ACK indicates all segments prior to the ACK'd segment were received.

Answer 1:

Cumulative

Correct!

Question 2

2 / 2 pts

The UDP protocol uses a [Select] -bit, 1 's complement of the

[Select]



's complement sum to compute the checksum.

Answer 1:

16

Correct!

Answer 2:

1

Correct!

Answer 3:

Correct!

1

Question 3

2 / 2 pts

The TCP protocol provides error detection and correction.

☐ True

Correct!

☒ 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 #2414. HostA now sends segments of the same application data stream in order:

P: 288 bytes

Q: 411 bytes

R: 475 bytes

Suppose the segments arrive at Host B in the order Q, P, and R. What is the acknowledgment number on the segment sent in response to segment P?

Correct!

Correct Answer

3114.0

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).

11111111
11111111

Correct!

Correct Answers

11111111.0 (with margin: 0)

Question 6

2 / 2 pts

The rate of CongWin size increase (in terms of MSS) while in TCP's Slow-Start phase is Exponential .

Answer 1:

Correct!

Exponential

Question 7

2 / 2 pts

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

Correct!



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



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



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



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

Question 8

2 / 2 pts

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

Correct!

☒ Dropped Packets☐ Server shutdown

Correct!

☒ Network collapse

Correct!

☒ Delayed packets

Correct!

☒ Increased network congestion

Correct!

☒ Out-of-order packet arrival**Question 9**

2 / 2 pts

UDP implements network fairness.

☐ True

Correct!

☒ False**Question 10**

2 / 2 pts

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

Answer 1:

Correct!

host-inferred

Question 11

2 / 2 pts

In network-assisted congestion control, flags may be set during transit which indicate the presence and/or level of congestion in certain portions of the network.

Answer 1:

Correct!

network-assisted

Question 12

2 / 2 pts

The rate of CongWin size increase (in terms of MSS) while in TCP's Congestion Avoidance phase is Linear .

Answer 1:

Correct!

Linear

Question 13

2 / 2 pts

Select the proper equation for TCP's calculation of the Timeout Interval.

☐ $TimeoutInterval = 4 \cdot EstimatedRTT_n + DevRTT_n$

☐ $TimeoutInterval = \alpha \cdot EstimatedRTT_n + (1 - \alpha) \cdot DevRTT_n$

☐ $TimeoutInterval = (1 - \alpha) \cdot EstimatedRTT_n + \alpha \cdot DevRTT_n$

Correct!

☒ $TimeoutInterval = EstimatedRTT_n + 4 \cdot DevRTT_n$

Question 14

3.11 / 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 = 9 MSS

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:

Incorrect Answer

8 MSS

You Answered

4 MSS

Answer 8:

Correct!

5 MSS

Answer 9:

You Answered

1 MSS

Correct Answer

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 =



2. ACK(s) received from first segment set. CongWin =



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



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



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



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



7. Timeout occurs. CongWin = , ssthresh =



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



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

Given a nodal delay of 34.8ms when there is no traffic on the network (i.e. usage = 0%), what is the effective delay when network usage = 23.3% ? (Give answer is milliseconds, rounded to one decimal place, without units. So for an answer of 0.10423 seconds you would enter "104.2" without the quotes).

Correct!

Correct Answer

45.4 margin of error +/- 0.1

Question 17

4 / 4 pts

A host starts a TCP transmission with an EstimatedRTT of 15.5ms (from the "handshake"). The host then sends 3 packets and records the RTT for each:

SampleRTT1 = 16.9 ms

SampleRTT2 = 32.2 ms

SampleRTT3 = 34.9 ms

(NOTE: SampleRTT1 is the "oldest"; SampleRTT3 is the most recent.)

Using an exponential weighted moving average with a weight of 0.4 given to the most recent sample, what is the EstimatedRTT for packet #4? Give answer in milliseconds, rounded to one decimal place, without units, so for an answer of 0.01146 seconds, you would enter "11.5" without the quotes.

Correct!

Correct Answer

27.5 margin of error +/- 0.1

Question 18

4 / 4 pts

Imagine a mythical set of protocols with the following details.

Maximum Link-Layer data frame: 1435 bytes

Network-Layer header size: 15 bytes

Transport-Layer header size: 34 bytes

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

Correct!

Correct Answer

1386.0

Question 19**4 / 4 pts**

Given a effective delay of 2ms when network usage is 67%, what is the effective delay when network usage = 67% ? (Give answer is milliseconds, rounded to one decimal place, without units. So for an answer of 0.10423 seconds you would enter "104.2" without the quotes).

Correct!

2.0000

Correct Answer

2.0 margin of error +/- 0.1

Question 20**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 output port.

Answer 1:

Correct!

can

Question 21**2 / 2 pts**

Where do network-layer protocols run?

Correct!

☒ PCs

Correct!

☒ Mobile devices

Correct!

☒ Routers

Correct!

☒ Laptops

Question 22**2 / 2 pts**

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

☐ True☒ False**Correct!****Question 23****2 / 2 pts**

The network layer manages communications from to .

Answer 1:

host

Correct!**Answer 2:**

host

Correct!**Question 24****2 / 2 pts**

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

Answer 1:

routing algorithm

Correct!**Question 25****0 / 2 pts**

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

Correct Answer

- ☐ 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

You Answered

- ☒ all of the above

Question 26

0 / 2 pts

What can cause packet queueing at a router's output port? (Check all that apply)

You Answered

- ☒ Output port contention.

- ☐ Slow inbound link transmission rate.

Correct!

- ☒ Slow outbound link transmission rate.

Correct Answer

- ☐ Multiple data flows requiring the same outbound link.

You Answered

- ☒ Head of line blocking.

Question 27

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 28**2 / 2 pts**

Which of the following are benefits of a virtual circuit network? (Check all that apply)

Correct!

☒ Connection states are preserved.

Correct!

☒ Guaranteed bandwidth.

☐ Less overhead than a datagram network.

☐ Faster delivery.

Correct!

☒ Guaranteed timing.
Question 29**2 / 2 pts**

In a link between Host A, and Host B, we have three intermediary routers:

Host A ----- Router Snucky ----- Router Jumpy ----- Router Po ----- Host B

Host A's first hop router is Router Snucky .

Answer 1:

Correct!

Snucky

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 158.30.143.10 would be routed to Port 1 .

Answer 1:

Correct!

Port 1

Question 31

4 / 4 pts

What is the longest-common-prefix for the following address range?

10011110 10111001 10011101 00000000 -- 10011110 10111001 10011101 10000000

Correct!

10011110 10111001 10011101

Correct Answers

10011110 10111001 10011101

100111101011100110011101

Question 32

0 / 4 pts

What is the longest-common-prefix for the following address range?

10011110 10111001 10011100 10000000 -- 10011110 10111001 10011101 00000000

You Answered

10011110 10111001

Correct Answers

10011110 10111001 1001110

10011110101110011001110

Quiz Score: **72.67** out of 82