Week 5 Summary Exercises

Due Nov 3 at 11:59pm **Points** 65 **Questions** 24
Available Oct 27 at 12am - Nov 3 at 11:59pm 8 days **Time Limit** 360 Minutes
Allowed Attempts 2

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	146 minutes	65 out of 65
LATEST	Attempt 2	146 minutes	65 out of 65
	Attempt 1	178 minutes	61 out of 65

Score for this attempt: **65** out of 65
Submitted Nov 3 at 10:16pm
This attempt took 146 minutes.

Question 1

1 / 1 pts

Compute the sum with carry-wraparound (sometimes called 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). Please note this is different than the checksum calculation.
NOTE: Canvas will remove any leading zeros from your answer. This will not cause your answer to be marked as incorrect.

```
10000001
10000001
```

Correct!

11

orrect Answers

11 (with margin: 0)

Question 2

2 / 2 pts

If I want to be reasonably sure the recipient received my transmitted information, I would use the TCP protocol.

Answer 1:

Correct!

TCP

Question 3

2 / 2 pts

The TCP protocol provides error detection and correction.

- True
- False

Correct!

Question 4

2 / 2 pts

The UDP protocol provides error detection and correction.

- True
- False

Correct!

Question 5

2 / 2 pts

If I want to be sure I don't overwhelm the receive host with too much information, I would use the TCP protocol.

Answer 1:

Correct!

TCP

Question 6

2 / 2 pts

Which of the following best describes reliable data transfer in the internet (using networking terminology)?

- The ability to send and receive information that you are 100% sure is exactly what was sent, without losing any information.

Correct!

- The ability to send and receive information that you are reasonably sure is what was sent, without losing any information.

- The ability to know whether or not your sent or received information was changed in transit.

- The ability to send information into the internet reliably.

Question 7

2 / 2 pts

Server X is running XBox Live services on port #3072. Client A is running an application that uses port #1796 to request an XBox Live TCP connection to Server X. Client B is running an application that uses port #2076 to request an XBox Live TCP connection to Server X.

IP addresses:

- Server X: 201.164.10.123
- Client A: 128.193.11.113
- Client B: 128.193.45.227

The connection created for Client B is identified by the sockets at the endpoints as follows:

	IP Address	Port Number
On Client B	[Select]	[Select]
On Server X	128.193.45.227	[Select]

Answer 1:

Correct!

201.164.10.123

Answer 2:

Correct!

3072

Answer 3:

Correct!

128.193.45.227

Answer 4:

Correct!

2076

Question 8

2 / 2 pts

A Go-back-N -type retransmission protocol will retransmit all un-ACK'd segments upon a countdown timer interrupt.

Answer 1:

Correct!

Go-back-N

Question 9

2 / 2 pts

The TCP sequence numbers are used to implement in-order delivery .

Answer 1:

Correct!

in-order delivery

Question 10

2 / 2 pts

What is the minimum TCP header size?

Correct!

- (•) 20 bytes
- ( ) 8 bytes
- ( ) 4 bytes
- ( ) 12 bytes

Question 11

2 / 2 pts

A TCP fast-retransmit will occur after...

Correct!

- (•) Three duplicate ACKS for the same segment.
- ( ) There is no such thing as fast retransmit.
- ( ) Three ACKs for the same segment.
- ( ) Four duplicate ACKs for the same segment.

Question 12

2 / 2 pts

Select the proper equation for calculating EstimatedRTT.

Correct!

- (selected) $EstimatedRTT_{New} = (1-\alpha)\, EstimatedRTT_{Prev} + \alpha \times SampleRTT_{Recent}$
- $EstimatedRTT_{New} = (1-\alpha)\, EstimatedRTT_{Prev} + (1-\alpha)\, SampleRTT_{Recent}$
- $EstimatedRTT_{New} = (1-\alpha)\, SampleRTT_{Recent} + \alpha \times EstimatedRTT_{Prev}$
- $EstimatedRTT_{New} = \alpha \times EstimatedRTT_{Prev} + \alpha \times SampleRTT_{Recent}$

Question 13

2 / 2 pts

The TCP countdown timer is used to implement reliable data transmission .

Answer 1:

Correct!

reliable data transmission

Question 14

2 / 2 pts

Pipelining is intended primarily to increase network utilization .

Answer 1:

Correct!

increase network utilization

Question 15

2 / 2 pts

What is the maximum TCP header size?

- 12 bytes
- Correct! 60 bytes
- 48 bytes
- 20 bytes

Question 16

2 / 2 pts

In a Selective acknowledgement scheme, a received ACK indicates only that the ACK'd segment was received.

Answer 1:

Correct! Selective

Question 17

2 / 2 pts

The TCP sequence numbers are used to implement reliable data transmission .

Answer 1:

Correct! reliable data transmission

Question 18

4 / 4 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 #2,238. HostA now sends segments of the same application data stream in order:

P: 286 bytes
Q: 482 bytes
R: 152 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 Q?

Correct!

2,239

orrect Answer

2,239

Question 19

4 / 4 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 #2,620. HostA now sends segments of the same application data stream in order:

P: 477 bytes
Q: 201 bytes
R: 184 bytes

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

Correct!

3,483

orrect Answer

3,483

Question 20

4 / 4 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 #4,141. HostA now sends segments of the same application data stream in order:

P: 135 bytes
Q: 486 bytes
R: 276 bytes

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

Correct!

4,277

orrect Answer

4,277

Question 21

4 / 4 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 #2,813. HostA now sends segments of the same application data stream in order:

P: 471 bytes
Q: 285 bytes
R: 229 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 R?

Correct!

3,799

orrect Answer

3,799

Question 22

4 / 4 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 #4,676. HostA now sends segments of the same application data stream in order:

P: 387 bytes
Q: 260 bytes
R: 461 bytes

Suppose that segments P, Q, and R are received, but the acknowledgements for segments P and Q are lost. If there are more segments waiting to be transmitted, what is the sequence number of the next segment transmitted after the ACK for segment R is received?

Correct!

5,785

orrect Answer

5,785

Question 23

4 / 4 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 #1,209. HostA now sends segments of the same application data stream in order:

P: 462 bytes
Q: 219 bytes
R: 473 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!

1,891

orrect Answer

1,891

Question 24

8 / 8 pts

Assume a TCP sender is continuously sending 1,244-byte segment. If a TCP receiver advertises a window size of 9,234 bytes, and with a link transmission rate 22 Mbps an end-to-end propagation delay of 13.4 ms, what is the utilization? Assume no errors, no processing or queueing delay, and ACKs transmit instantly. Also assume the sender will not transmit a non-full segment. Give answer in percentages, rounded to one decimal place, without units (e.g. for an answer of 10.43% you would enter "10.4" without the quotes).

Correct!

11.6

orrect Answer

11.6 margin of error +/- 0.1

Quiz Score: **65** out of 65