Week 4 Summary Exercises

Due Jul 23 at 11:59pm **Points** 78 **Questions** 32
Available Jul 16 at 12am - Jul 23 at 11:59pm 8 days **Time Limit** 360 Minutes **Allowed Attempts** 2

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	111 minutes	59.33 out of 78

Score for this attempt: **59.33** out of 78
Submitted Jul 21 at 1:29pm
This attempt took 111 minutes.

Question 1

2 / 2 pts

Server X is running Diablo II services on port #4000. Client A is running an application that uses port #450 to request an Diablo II TCP connection to Server X. Client B is running an application that uses port #455 to request an Diablo II TCP connection to Server X.

IP addresses:

- Server X: 152.111.20.36
- Client A: 113.13.131.10
- Client B: 114.192.111.23

Client A starts a second application (running at the same time as the first application) that uses the next incremental port number to request an Diablo II TCP connection to Server X. The connection created for Client A is identified by the sockets at the endpoints as follows:

	IP Address	Port Number
On Client A	[Select] ▼	4000
On Server X	[Select] ▼	451

Answer 1:

Correct!

152.111.20.36

Answer 2:

Correct! 4000

Answer 3:

Correct! 113.13.131.10

Answer 4:

Correct! 451

Question 2

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

Client B starts a second application (running at the same time as the first application) that uses the next incremental port number to request an XBox Live TCP connection to Server X. The connection created for Client B is identified by the sockets at the endpoints as follows:

	IP Address	Port Number
On Client B	201.164.10.123	3072
On Server X	128.193.45.227	2077

Answer 1:

Correct! 201.164.10.123

Answer 2:

Correct! 3072

Answer 3:

Correct! 128.193.45.227

Answer 4:

Correct! 2077

Question 3

2 / 2 pts

Server X is running Diablo II services on port #4000. Client A is running an application that uses port #450 to request an Diablo II TCP connection to Server X. Client B is running an application that uses port #455 to request an Diablo II TCP connection to Server X.

IP addresses:

- Server X: 152.111.20.36
- Client A: 113.13.131.10
- Client B: 114.192.111.23

Client B starts a second application (running at the same time as the first application) that uses the next incremental port number to request an Diablo II TCP connection to Server X. 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	114.192.111.23	[Select] ▼

Answer 1:

Correct! 152.111.20.36

Answer 2:

Correct! 4000

Answer 3:

Correct! 114.192.111.23

Answer 4:

Correct! 456

Question 4

2 / 2 pts

Server X is running Diablo II services on port #4000. Client A is running an application that uses port #450 to request an Diablo II TCP connection to Server X. Client B is running an application that uses port #455 to request an Diablo II TCP connection to Server X.

IP addresses:

- Server X: 152.111.20.36
- Client A: 113.13.131.10
- Client B: 114.192.111.23

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

	IP Address	Port Number
On Client A	[Select] ▼	[Select] ▼
On Server X	[Select] ▼	[Select] ▼

Answer 1:

Correct! 152.111.20.36

Answer 2:

Correct! 4000

Answer 3:

Correct! 113.13.131.10

Answer 4:

Correct! 450

Question 5

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.
- The ability to send information into the internet reliably.
- The ability to know whether or not your sent or received information was changed in transit.

Correct!

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

Question 6

0 / 2 pts

Pipelining is intended primarily to decrease network congestion .

Answer 1:

Correct Answer: increase network utilization

You Answered: decrease network congestion

Question 7

2 / 2 pts

Match the event with the TCP receiver action:

Event	TCP Receiver Action
Arrival of in-order segment with expected sequence number. All data up to expected sequence number already acknowledged.	Delayed ACK. Wait up to 500ms for arrival of another in-order segment. If next in-order segment does not arrive in this interval, send an ACK.

Answer 1:

Correct!

Delayed ACK. Wait up to 500ms for arrival of another in-order segment. If next in-order segment does not arrive in this interval, send an ACK.

Question 8

2 / 2 pts

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

Answer 1:

Correct! Cumulative

Question 9

2 / 2 pts

The UDP protocol provides unreliable, connectionless service.

Correct! (•) True

( ) False

Question 10

2 / 2 pts

Put the steps in the most correct order for closing a TCP Connection.

1. [Select] ▼
2. [Select] ▼
3. [Select] ▼
4. Client sends ACK of received segment

Answer 1:

Correct! Client sends segment with FIN bit set

Answer 2:

Correct! Server sends ACK of received segment

Answer 3:

Correct! Server sends segment with FIN bit set

Answer 4:

Correct! Client sends ACK of received segment

Question 11

2 / 2 pts

If I were going to implement a lossy VoIP connection, I would use the UDP protocol.

Answer 1:

Correct! UDP

Question 12

2 / 2 pts

What is the maximum TCP header size?

Correct!

- (•) 60 bytes
- ( ) 20 bytes
- ( ) 12 bytes
- ( ) 48 bytes

Question 13

0 / 2 pts

The TCP protocol provides error detection and correction.

You Answered

- (•) True

Correct Answer

- ( ) False

Question 14

0 / 2 pts

A simple checksum can detect some 2-bit errors.

Correct Answer — True

You Answered — False

Question 15

1.33 / 2 pts

The TCP protocol uses a [Select] -bit, 1 's complement of the [Select] 's complement sum to compute the checksum.

Answer 1:

Correct! — 16

Answer 2:

Correct! — 1

Answer 3:

You Answered — 16

Correct Answer — 1

Question 16

2 / 2 pts

Select the proper equation for calculating EstimatedRTT.

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

Correct! — $\boldsymbol{EstimatedRTT_{New} = (1 - \alpha)\, EstimatedRTT_{Prev} + \alpha \times SampleRTT_{Recent}}$

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

$$EstimatedRTT_{New} = \alpha \times EstimatedRTT_{Prev} + \alpha \times SampleRTT_{Recent}$$

Question 17

2 / 2 pts

Match the event with the TCP receiver action:

Event	TCP Receiver Action
Arrival of in-order segment with expected sequence number. One other in-order segment waiting for ACK transmission.	Immediately send single cumulative ACK, ACKing both in-order segments.

Answer 1:

Correct!

Immediately send single cumulative ACK, ACKing both in-order segments.

Question 18

2 / 2 pts

Which of the following are fields in the UDP header? (Select all that apply)

Correct! ☑ Checksum

Correct! ☑ Source Port

☐ Window Size

☐ Header Length/Data Offset

Correct! ☑ Destination Port

☐ Sequence Number

☐ Options

Correct! ☑ Length

Question 19

2 / 2 pts

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

Correct!

- (•) fast retransmission
- ( ) retransmission avoidance
- ( ) duplicate transmission
- ( ) early retransmission

Question 20

2 / 2 pts

What is the maximum UDP header size?

- ( ) 20 bytes
- ( ) 4 bytes

Correct!

- (•) 8 bytes
- ( ) 12 bytes

Question 21

2 / 2 pts

The TCP protocol provides reliable, connectionless service.

- ( ) True

Correct!

- (•) False

Question 22

2 / 2 pts

When it comes to reliable data transmission, TCP is a more effective protocol.

Answer 1:

Correct!

TCP

Question 23

2 / 2 pts

The TCP protocol provides reliable, connection-oriented service.

Correct!

- (•) True
- ( ) False

Question 24

2 / 2 pts

The UDP protocol provides error detection and correction.

- ( ) True

Correct!

- (•) False

Question 25

1 / 1 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!

11111111.0000

orrect Answers

11111111.0 (with margin: 0)

Question 26

1 / 1 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).

```
00010110
10011100
```

Correct!

10110010.0000

orrect Answers

10110010.0 (with margin: 0)

Question 27

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 #2118. HostA now sends segments of the same application data stream in order:

P: 411 bytes
Q: 492 bytes
R: 191 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!

3022.0000

Correct Answer

3022.0

Question 28

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 #3567. HostA now sends segments of the same application data stream in order:

P: 177 bytes
Q: 159 bytes
R: 239 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 Q?

Correct!

3904.0000

Correct Answer

3904.0

Question 29

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 #1899. HostA now sends segments of the same application data stream in order:

P: 485 bytes
Q: 158 bytes
R: 395 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!

2385.0000

Correct Answer

2385.0

Question 30

0 / 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 #1034. HostA now sends segments of the same application data stream in order:

P: 475 bytes
Q: 330 bytes
R: 376 bytes

Suppose that packet P is lost, but packets Q and R are received. What is the acknowledgement number in the ACK for packet R.

You Answered

1741.0000

Correct Answer

1035.0

Question 31

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 #3638. HostA now sends segments of the same application data stream in order:

P: 328 bytes
Q: 475 bytes
R: 403 bytes

What is the sequence number on segment P?

Correct!

3639.0000

Correct Answer

3639.0

Question 32

0 / 8 pts

Assume a TCP sender is continuously sending 1026-byte segment. If a TCP receiver advertises a window size of 5365 bytes, and with a link transmission rate 22 Mbps an end-to-end propagation delay of 28 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).

You Answered

0.6000

Correct Answer

3.3 margin of error +/- 0.1

Quiz Score: **59.33** out of 78