Test 2

Due Jul 27 at 9:15am **Points** 100 **Questions** 40
Available Jul 27 at 8am - Jul 27 at 9:15am about 1 hour **Time Limit** 105 Minutes

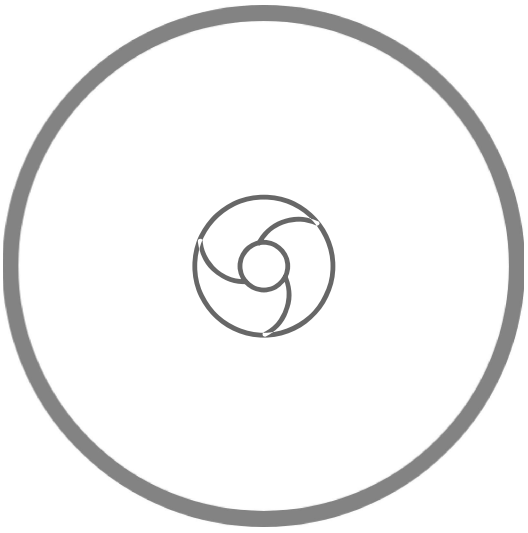
Instructions

There are 40 questions in this test.
This is a CLOSED note exam. Using your e-book, notes or textbook is NOT ALLOWED. You may use two sheets of scratch paper. You are also allowed to use a scientific calculator. You must remain in front of your computer for the duration of the exam. NO BATHROOM BREAKS. Cell phones, tablets, laptops, smart watches, and any other electronic devices are NOT PERMITTED. Failing to follow these instructions could result in a violation.

onorlock Chrome Extension

s exam requires Google Chrome and the Honorlock Chrome Extension.

ne back to this page using Google Chrome to continue.



Google Chrome

Google Chrome is required to use Honorlock

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This quiz was locked Jul 27 at 9:15am.

Score for this quiz: **51** out of 100
Submitted Jul 27 at 8:42am
This attempt took 30 minutes.

Question 1

2 / 2 pts

Domain Name Servers (DNS) translate internet domains and host names to IP addresses.

Correct!

- (●) True
- ( ) False

Question 2

2 / 2 pts

Round trip time (RTT) is the time taken by a packet to travel from a client to a server.

- ○ True
- ◉ False

Correct!

Question 3

2 / 2 pts

Web caches contain copies of recently requested objects.

- ◉ True
- ○ False

Correct!

Question 4

2 / 2 pts

File Transfer Protocol (FTP) is able to send two files at the same time over the data connection.

- ○ True
- ◉ False

Correct!

Question 5

2 / 2 pts

In UDP sockets, no handshaking is required before transmitting data.

Correct!

- (selected) True
- False

Question 6

0 / 2 pts

The Transport layer aggregates data from different applications into a single stream before passing it to the data link layer.

ou Answered

- (selected) True

orrect Answer

- False

Question 7

2 / 2 pts

A synchronize packet (SYN) is a 1-bit control packet for establishing a TCP connection.

Correct!

- (selected) True
- False

Question 8

2 / 2 pts

The size of the TCP *rwnd* never changes throughout the duration of the connection.

- True
- Correct! False

Question 9

2 / 2 pts

Consider congestion control in TCP. When the timer expires at the sender, the value of *ssthresh* is set to one half of its previous value.

- True
- Correct! False

Question 10

0 / 2 pts

Suppose that the UDP receiver computes the Internet checksum for the received UDP segment and finds that it matches the value carried in the checksum field. This does not guarantee that there is no bit errors.

- orrect Answer True
- ou Answered False

Question 11

2 / 2 pts

In the rdt protocols, sequence numbers are used for a receiver to determine whether an arriving packet contains new data or is a retransmission.

Correct!

- (●) True
- ( ) False

Question 12

2 / 2 pts

In the Selective Repeat protocol, the sender window size and the receiver window size must be the same.

- ( ) True

Correct!

- (●) False

Question 13

2 / 2 pts

In the Go Back N protocol, the receiver does not buffer out-of-order segments.

Correct!

- (●) True
- ( ) False

Question 14

0 / 2 pts

Two-way handshakes can be used to establish TCP connections.

ou Answered

- (selected) True

orrect Answer

- False

Question 15

0 / 2 pts

Which transport protocol is used underlying FTP?

- HTTP

ou Answered

- (selected) IMAP

orrect Answer

- TCP
- UDP

Answer Questions 16 to 19 using the following information.

Consider Figure 1 that shows the transmission of data segments and ACKs in TCP.

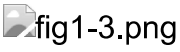

Figure 1

Question 16

2 / 2 pts

What is the value of the ACK x1?

- 92
- 164
- 116

Correct!

- 140

Question 17

2 / 2 pts

What is the value of the ACK x2?

Correct!

- (●) 140
- ( ) 116
- ( ) 92
- ( ) 164

Question 18

0 / 3 pts

What is the value of the Sequence Number x3?

- ( ) 164

orrect Answer

- ( ) 92
- ( ) 116

ou Answered

- (●) 140

Question 19

0 / 3 pts

What is the value of the ACK x4?

- ( ) 92

orrect Answer

- ( ) 140
- ( ) 116

ou Answered

164

Answer Questions 20 to 22 using the following information.

Consider Figure 2 that shows the transmission of data segments and ACKs in TCP.

Figure 2

Question 20

3 / 3 pts

What is the value of the ACK x5?

56

40

Correct!

32

64

Question 21

0 / 3 pts

What is the value of the Sequence Number x6?

orrect Answer

32

56

40

ou Answered

64

Question 22

0 / 3 pts

What is the value of the ACK x7?

ou Answered

40

56

orrect Answer

64

32

Answer Questions 23 to 25 using the following information.

Figure 3 shows a behavior of TCP Reno congestion control.

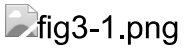

Figure 3

Question 23

0 / 3 pts

Identify an interval of time when TCP slow start is operating.

- [17,22]
- [1,6] — orrect Answer
- [6,16]
- [1,4] — ou Answered

Question 24

0 / 3 pts

What is the most possible event that happens at the 16^{th} transmission?

- The threshold is maxed out. — ou Answered
- There is a timeout.
- The connection is broken.
- Triple duplicate ACKs received. — orrect Answer

Question 25

3 / 3 pts

What is the most possible event that happens at the 22^{th} transmission?

Correct!

- (●) There is a timeout.
- ( ) Triple duplicate ACKs received.
- ( ) The connection is broken.
- ( ) The threshold is maxed out.

Question 26

0 / 2 pts

Beyond IP, UDP provides additional services such as ...

orrect Answer

- ( ) Multiplexing, demultiplexing and error checking
- ( ) Sending and receiving of packets
- ( ) Routing and switching

ou Answered

- (●) None of these listed.

Question 27

2 / 2 pts

Which header field is used to detect errors over the entire user datagram?

- ( ) UDP header

source port

error message

Correct! checksum

Question 28

2 / 2 pts

Consider a TCP connection between Host A and Host B. Suppose that the TCP segments traveling from Host A to Host B have source port number x and destination port number y. What are the source and destination port numbers for the segments traveling from Host B to Host A?

source port number x + 1, destination port number y + 1.

Correct! source port number y, destination port number x.

source port number x, destination port number y.

source port number y + 1, destination port number x + 1.

Answer Questions 29 to 31 using the following information.

Host A and B are communicating over a TCP connection and Host B has already received from A all bytes up through byte 126. Suppose Host A then sends two segments to Host B back-to-back. The first and second segments contain 60 and 80 bytes of data, respectively. In the first segment, the sequence number is 127, the source port number is 302, and the destination port number is 235. Host B sends an acknowledgment whenever it receives a segment from Host A.

Question 29

3 / 3 pts

In the second segment sent from Host A to B, what are the sequence number, source port number, and destination port number?

- Sequence number 267, source port number 235, destination port number 302

Correct!

- Sequence number 187, source port number 302, destination port number 235

- Sequence number 187, source port number 235, destination port number 302

- Sequence number 267, source port number 302, destination port number 235

Question 30

3 / 3 pts

If the first segment arrives before the second segment, in the acknowledgment of the first arriving segment, what is the acknowledgment number, the source port number, and the destination port number?

- Acknowledgement number 187, source port number 302, destination port number 235

Correct!

Acknowledgement number 187, source port number 235, destination port number 302

Acknowledgement number 267, source port number 302, destination port number 235

Acknowledgement number 267, source port number 235, destination port number 302

Question 31

0 / 3 pts

If the second segment arrives before the first segment, in the acknowledgment of the first arriving segment, what is the acknowledgment number?

ou Answered

267

187

orrect Answer

127

none of these listed

Answer Questions 32 to 34 using the following information.

Consider the following institutional network that is connected to the Internet as shown in Figure 4.

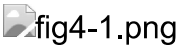

Figure 4

Suppose that the average object size is 450,000 bits and that the average request rate from the institution's browsers to the origin servers is 32 requests per second. Also suppose that the amount of time it takes from when the router on the Internet side of the access link forwards an HTTP request until it receives the response is 3 seconds on average. Model the total average response time as the sum of the average access delay (that is, the delay from Internet router to institution router) and the average Internet delay. Assume that if the utilization at the access link is less than 60%, then the queuing delay is 0. (Ignore the propagation delay and processing delay at the access link.) Answer the following three questions.

Question 32

0 / 3 pts

What is the access link utilization?

- 60%

orrect Answer

- 96%

ou Answered

- 99%
- 30%

Question 33

0 / 3 pts

What is the total average response time?

ou Answered

- 3 sec
- 1.8 sec

orrect Answer

- minutes
- 3.75 sec

Question 34

3 / 3 pts

Now suppose a cache is installed in the institutional LAN. Suppose the cache hit rate is 0.4. Find the total average response time.

- minutes
- 3 sec
- 3.75 sec

Correct!

- 1.8 sec

Question 35

0 / 3 pts

TCP uses a variation of the following reliable data transfer protocol.

- Stop and Wait protocol
- Go Back N protocol — orrect Answer
- Selective repeat protocol — ou Answered
- Alternating Bit protocol

Question 36

0 / 3 pts

Why does TCP use the variation of the protocol in Question 35 above?

- Because it recovers quickly after triple duplicate ACKs.
- Because it requires fewest retransmission after a timeout. — ou Answered
- Because each unacked segment has a separate timeout timer.
- Because the implementation is simpler and most networks are reliable. — orrect Answer

Question 37

3 / 3 pts

In the Selective Repeat protocol, what is the relationship between the sequence number size S and the sender window size W?

LaTeX: S\:\ge\:W

Correct!

LaTeX: S\:\ge\:2W

LaTeX: S\:\ge\:W+1

LaTeX: S\:\ge\:2W+1

Question 38

0 / 3 pts

In the Go Back N protocol, what is the relationship between the sequence number size S and the sender window size W?

ou Answered

$S \geq 2W$

$S \geq W$

$S \geq 2W + 1$

orrect Answer

$S \geq W + 1$

Question 39

0 / 3 pts

To determine the appropriate timeout value to use for TCP, a sender X must estimate the round trip time (RTT) by sampling the RTT. Suppose, to compute this sample RTT, X sends a segment S at time t0 to Y but X did not receive the ACK before it times out and retransmits S at time t1. It then receives an ACK from Y at time t2. Suppose, X then computes the sample RTT as t2 - t1. Why is the sample RTT as computed incorrect?

Because the sample RTT may have some variation.

Because the ACK may be for a different segment transmission.

orrect Answer

Because the ACK may be for the first S transmission.

ou Answered

Because the sample RTT should computed as t2 – t0.

Question 40

3 / 3 pts

How does TCP handle the above scenario in Question 39?

It will add the safety margin for the variation in RTT.

It will determine if the ACK is for the correct S transmission.

Correct!

It will ignore the sample RTT for this segment.

It will calculate the average estimated RTT to correct any problem.

Quiz Score: **51** out of 100