Midterm

Due No due date   **Points** 28   **Questions** 24   **Time Limit** 75 Minutes
Allowed Attempts 2

Take the Quiz Again

Attempt History

	Attempt	**Time**	**Score**
LATEST	**Attempt 1**	66 minutes	13.93 out of 28

Score for this attempt: **13.93** out of 28
Submitted Oct 16 at 4:38pm
This attempt took 66 minutes.

Question 1   0.5 / 0.5 pts

In rdt2.0 (the one that assumes that packets can only corrupt but not lost or out of order), what does a sender do when it receives a negative acknowledgement (NAK) from the receiver?

Correct!

- ⦿ Resends the previous sent packet and waits for ACK

- ◯ Ignores the NAK and waits for ACK

- ◯ Asks the receiver the meaning of the NAK

- ◯ Send the next packet to the receiver

Question 2   0.5 / 0.5 pts

Which of the following application is an example of "Client/Server model"?

○ Skype

○ KazaA

Correct!   ◉ Web Browsing

○ Voice over IP

Question 3   0.5 / 0.5 pts

Which of the following identify a TCP socket?

○ Destination IP address

○ Destination IP address and Port number

○ Source IP address and Port number

Correct!   ◉
Destination IP address, destination Port number, Source IP address, and
source Port number

Question 4   0.5 / 0.5 pts

Which of the following is FALSE about "centralized" DNS services?

○ Maintenance is not easy

○ Single point of failure

○ Copyright infringements may occur

Correct!   ⊙ Most widely adopted so far

Question 5   **0.5 / 0.5 pts**

Which of the following is FALSE regarding the waiting time of the "timer" in rtd3.0 (the one that assumes packets can corrupt and/or get lost)?

○ If the waiting period is too long, then utilization will be reduced

○ If the waiting period is too short, then unnecessary retransmission will occur

○ The waiting time should be larger than the round trip time to identify a packet loss

Correct!   ⊙ The waiting time has minimum effect on the performance of the protocol.

Question 6   **0 / 0.5 pts**

Which of the following is INCORRECT regarding Circuit Switching and Packet Switching?

○ Circuit Switching requires call setup while Packet Switching does not.

orrect Answer

○

Packet transmission in Circuit Switching utilizes the whole link bandwidth.

○

Circuit Switching provides guaranteed performance while Packet Switching does not.

ou Answered

⊙

Packet Switching may cause congestion while Circuit Switching does not.

Question 7   0.5 / 0.5 pts

Which of the following is TRUE regarding Gnutella?

○ It allows parallel downloading

○

It encourages users to upload files if they want to download a lot other files

Correct!

⊙

It may not be able to yield a successful query even though the file owner exists in the network

○ It is a centralized approach

Question 8   0.5 / 0.5 pts

Which of the following is an authoritative DNS server?

○ com DNS server

○ edu DNS server

Correct!

◉ dns.amazon.com DNS server

○ ca DNS server

Question 9   0.5 / 0.5 pts

Which of the following protocol yields the lowest utilization?

Correct!

◉ rdt3.0

○ Go-Back-N

○ Selective Repeat

○ TCP

Question 10   0.5 / 0.5 pts

Which of the following typically DOES NOT use "UDP" for data transmission?

○ Internet Telephony

○ Video streaming

○ Online gaming

Correct!   ⦿ File transfer

Question 11   0 / 0.5 pts

Layering architecture makes it easy for non-adjacent layers to share
information for appropriate decision making.

ou Answered   ⦿ True

orrect Answer   ○ False

Question 12   0.5 / 0.5 pts

Receiving three duplicate ACK indicates that the network is in severe congestion.

                            ○ True

Correct!   ⦿ False

Question 13   0 / 0.5 pts

Socket API has been implemented in all modern operating systems.

orrect Answer   ○ True

ou Answered

☉ False

Question 14

0 / 0.5 pts

TCP uses packet ID as the sequence number for sending ACKs.

ou Answered

☉ True

orrect Answer

○ False

Question 15

0.5 / 0.5 pts

The actual throughput for a network path is constrained by the bottleneck bandwidth of all links.

Correct!

☉ True

○ False

Question 16

0 / 0.5 pts

UDP and TCP are the only available transport layer protocols.

You Answered   ◉ True

Correct Answer   ○ False

Question 17   0 / 2 pts

A user wants to browse a webpage. Suppose the webpage contains 10 objects. Suppose the objects are so small that its transmission time is negligible. Also, let the round trip time between the sender and receiver is *RTT*. The "response time" is defined as the time from the user sends requests to obtain the page until all objects in the page are displayed at the user side. Please complete the following:

- With non-persistent HTTP without pipelining, the response time is

  3   times RTT.

- With non-persistent HTTP with parallel downloading, the response time is

  2   times RTT.

- With persistent HTTP without pipelining, the response time is

  3   times RTT.

- With persistent HTTP with pipelining, the response time is

  2   times RTT.

Answer 1:

You Answered   3

orrect Answer   22

Answer 2:

'ou Answered

> 2

orrect Answer   4

Answer 3:

'ou Answered

> 3

orrect Answer   12

Answer 4:

'ou Answered

> 2

orrect Answer   3

Question 18   0 / 1.5 pts

Given the channel bit error rate BER and packet size of L bytes, the probability that a bit is "not" flipped is [BER/L] ; the probability that no bit in the packet is "not" flipped is [BER/L] , and therefore, the probability that a packet has "at least" one bit flipped is [(BER*L)^n] .

Note: (i) leaves no space in the answer; (ii) use * for multiplication; (iii) use ^ for power.

Answer 1:

ou Answered

> BER/L

orrect Answer

> 1-BER

Answer 2:

ou Answered

> BER/L

orrect Answer

> $(1-BER)^{(8*L)}$

Answer 3:

ou Answered

> $(BER*L)^n$

orrect Answer

> $1-(1-BER)^{(8*L)}$

Question 19   **0.42 / 2.5 pts**

Sender A wants to send a big file to a receiver B. The packet size L is of 1000 bytes and the bandwidth of the link R is 2mbps (1mbps = 1,000,000 bits per second). Also, suppose the round trip time (RTT) between A and B is 30 milliseconds. Note that we can assume that the network channel is perfect, i.e., no corruption, no loss, and no further delay than the RTT.

The utilization is defined as the percentage of the time the sender is busy sending/generating packets relative to total time used for each packet transmission.

Without pipelining, the utilization of the sender, in terms of L, R, RTT, is

| L/R | / | (RTT+L/R) |

, and final numerical vale

calculated as | 1.67 | . In this case, a new packet will only be transmitted after the ACK of the previous packet is received by the sender.

With pipelining of 10 packets, the utilization of the sender, in terms of L, R,

RTT, is [10*L/R] / [(RTT+L/R)] , and in terms of final

numerical results, is [0] .

Note: (i) please use * for multiplications and / for division; (ii) put no space in your answers; (iii) all numerical values should use up to 2 digits after decimal points, e.g., 0.12.

Answer 1:

Correct!

L/R

Answer 2:

'ou Answered

(RTT+L/R)

orrect Answer

L/R+RTT

orrect Answer

RTT+L/R

orrect Answer

RTT+(L/R)

orrect Answer

(L/R)+RTT

Answer 3:

'ou Answered

1.67

orrect Answer

0.11

orrect Answer

0.12

Answer 4:

'ou Answered

10*L/R

orrect Answer

N*L/R

orrect Answer

N*(L/R)

Answer 5:

ou Answered

(RTT+L/R)

orrect Answer

RTT+L/R

orrect Answer

L/R+RTT

orrect Answer

RTT+(L/R)

orrect Answer

(L/R)+RTT

Answer 6:

ou Answered

0

orrect Answer

1.1

orrect Answer

1.2

orrect Answer

1

orrect Answer

1.0

Question 20

0 / 0.5 pts

The DNS query that put high load on the root DNS server is [iterated] query.

Answer 1:

ou Answered

iterated

orrect Answer

recursive

Question 21   0.88 / 3.5 pts

 A source node wants to transfer a file to a destination. Of course, in this case, TCP protocol is used. With the TCP Reno congestion control, the congestion window of the source node changes dynamically and several events occur during the data transmission period and are described as follows.

Initially (**time round 1**), the congestion window is set to 1 MSS and the threshold for entering congestion avoidance phase has been preset as 32 MSS; Then, at time round 18, a timeout event occurs; At time round 36, the node receives 3 duplicative ACKs.

- At time 7, the CongWin is [1] and at time 19, the

    CongWin is [0] .

- At time 10, the CongWin is [1] .

- At time round [1] the TCP enters **congestion avoidance**

    period after the timeout event at round 18.
- Suppose the round trip time (RTT) is 200 msecs and MSS is 500 bytes. Throughput of the system, in terms of RTT, CongWin, MSS, is

    [CongWin*MSS] / [RTT] , with the final number being

    [40] *bits per second* at the time round 10.

- the 80th segment is transmitted during the [0] th round.

Answer 1:

> 1

orrect Answer   33

Answer 2:

ou Answered

> 0

orrect Answer   1

Answer 3:

ou Answered

> 1

orrect Answer   36

Answer 4:

ou Answered

> 1

orrect Answer   24

Answer 5:

Correct!   CongWin*MSS

orrect Answer   CongWin * MSS

orrect Answer   CongWin.MSS

orrect Answer   MSS * CongWin

Answer 6:

Correct!   RTT

Answer 7:

ou Answered

> 40

orrect Answer   720000

Answer 8:

0

orrect Answer   7

Question 22   **2 / 4 pts**

TCP inherits some implementation from Go-Back-N (GBN) and Selective Repeat (SR), and also adopts some new features. Please specify for each of the following components where it comes from (GBN, SR, or New) and the details of the components:

- Use [Select] ▲▼ as the segment sequence number: from

  [Select] ▲▼

- Use [Select] ▲▼ for out of order segments: from

  [Select] ▲▼

- Receivers send [Select] ▲▼ ACKs: from

  [Select] ▲▼

- Use N timer(s) for N pending packets: from [Select] ▲▼

- Retransmit [Select] ▲▼ if timeout occurs: from

  [Select] ▲▼

Answer 1:

packet ID

orrect Answer   byte number of the first byte in the segment

Answer 2:

Correct!   New

Answer 3:

Correct!   receiver buffer

Answer 4:

Correct!   SR

Answer 5:

orrect Answer   individual

ou Answered   cumulative

Answer 6:

ou Answered   GBN

orrect Answer   SR

Answer 7:

orrect Answer   one

ou Answered   N

Answer 8:

orrect Answer   GBN

ou Answered   New

Answer 9:

Correct!   timed-out packet only

Answer 10:

Correct!   SR

Question 23   **2 / 2 pts**

- Email requires No loss on reliability, Elastic on bandwidth sensitivity, and Elastic on time sensitivity.
- Video conferencing requires Loss-tolerant on reliability,

  [Select]   on bandwidth sensitivity, and

  [Select]   on time sensitivity.

- Interactive gaming requires [Select]   on reliability,

  [Select]   on bandwidth sensitivity, and Minimum

  delay on time sensitivity.

For reliability, please enter "No loss" or "Loss-tolerant".

For bandwidth sensitivity, please enter "Elastic" or "Minimum bandwidth".

For time sensitivity, please enter "Elastic" or "Minimum delay".

Answer 1:

Correct!   No loss

Answer 2:

Correct!   Elastic

Answer 3:

Correct!   Elastic

Answer 4:

Correct!   Loss-tolerant

Answer 5:

Correct!   Minimum bandwidth

Answer 6:

Correct!   Minimum delay

Answer 7:

Correct!   Loss-tolerant

Answer 8:

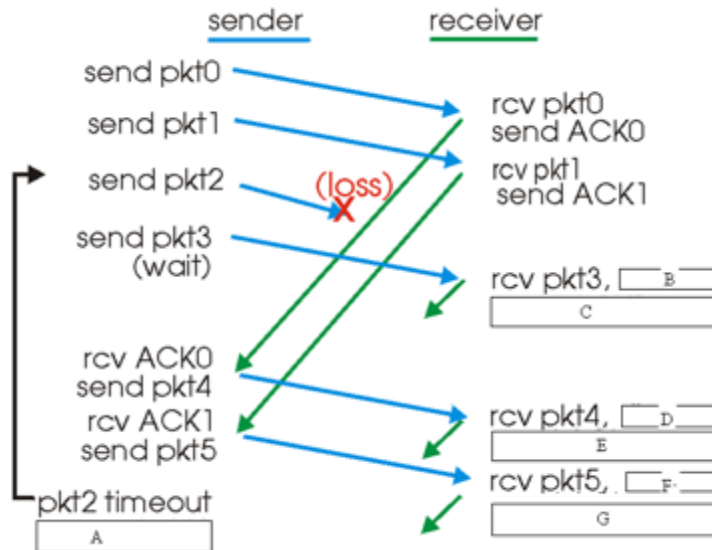Correct!   Minimum bandwidth

Answer 9:

Correct!   Minimum delay

Question 24   **3.14 / 4 pts**

Compare the two pipelining reliable data transfer protocols: Go-Back-N (GBN) and Selective Repeat (SR). For the scenario below, choose from the following list for the appropriate action upon the occurrence of a certain event.

For GBN:

- A is resends pkt2, pkt3, pkt4, pkt5
- B is sends ACK3 and C is discards the packet
- D is sends ACK4 and E is discards the packet
- F is sends ACK5 and G is discards the packet

For SR:

- A is resends pkt2
- B is sends ACK3 and C is buffers the packet
- D is sends ACK4 and E is buffers the packet
- F is sends ACK5 and G is buffers the packet

Note: assumes that the receiver sends ACK first and then buffer/discard packets.

Answer 1:

resends pkt2, pkt3, pkt4, pkt5

Answer 2:

sends ACK1

sends ACK3

Answer 3:

Correct!

    discards the packet

Answer 4:

orrect Answer

    sends ACK1

ou Answered

    sends ACK4

Answer 5:

Correct!

    discards the packet

Answer 6:

orrect Answer

    sends ACK1

ou Answered

    sends ACK5

Answer 7:

Correct!

    discards the packet

Answer 8:

Correct!

    resends pkt2

Answer 9:

Correct!

    sends ACK3

Answer 10:

Correct!

    buffers the packet

Answer 11:

Correct!

    sends ACK4

Answer 12:

Correct!

    buffers the packet

Answer 13:

Correct!

sends ACK5

Answer 14:

Correct!

buffers the packet

Quiz Score: **13.93** out of 28