

Homework 2

Warning: You have already made the maximum number of submissions. Additional submissions will not count for credit. You are welcome to try it as a learning exercise.

This quiz covers material from the third week of lectures. It has a soft deadline of Feb 3rd (so you remain on a weekly schedule) and a hard deadline of Feb 17th (so you have a bit of flexibility in when you complete the course work).

☐ I, Matthew Kramer, certify that my answers here are my own work, and that I completed this in accordance with the Coursera Honor Code.

Question 1

An upper-layer packet is split into two frames, each of which has a 50% chance of arriving undamaged. Assume that no error correction is done by the data link protocol and that the protocol drops both received frames associated with a packet if any one of them has errors. How many times must the message be sent on average to get the entire packet through?

- ☐ 2
- ☐ 4
- ☐ 1
- ☐ 8

Question 2

While designing a link layer protocol, one has the option of either implementing error detection – which has some overhead in terms of packet size and hardware complexity –

or providing no guarantees, leaving error detection to higher layers. Which of the two following statements do you think is more accurate?

- ☐ Retransmissions are more useful when transmission error rates are **high** (such as on wifi), since retransmitting packets on a higher protocol layer is more expensive.
- ☐ Retransmissions are more useful when transmission error rates are **low** (such as on ethernet).

Question 3

Consider five wireless stations, A, B, C, D and E. Station A can communicate with all other stations. B can communicate with A, C and E. C can communicate with A, B and D. D can communicate with A, C and E. E can communicate with A, D and B.

(Multiple options may be correct)

- ☐ When B is sending to C, A can send to D
- ☐ When B is sending to A, no other communication is possible.
- ☐ When A is sending to B, no other communication is possible.
- ☐ When B is sending to C, E can send to D

Question 4

Statistical multiplexing is used to allocate a channel to three users A, B and C, each of whom demand the entire channel when they are active.

If A, B and C are each active 50% of the time, what percentage of time is the channel overloaded?

- ☐ 20%
- ☐ 50%
- ☐ 80%
- ☐ 25%

Question 5

What does a switch do when a frame is received on an interface and the destination hardware address is not in the filter table?

- ☐ Drops the frame
- ☐ Floods the network with the frame
- ☐ Forwards the frame through a random port
- ☐ Sends back a message to the originating station to retry it later

Question 6

What is the major difference between a switch and a router?

- ☐ A switch is a link-layer device, whereas a router is a network layer device.
- ☐ A switch is more complex than a router.
- ☐ A switch is a physical-layer device, whereas a router is a link layer device.
- ☐ A switch can look at the contents of a packet passing through it, while a router can not.

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