CPE 464 - Selective-Reject Program Design

Thursday Nov 17, 2011 at the beginning of Lecture

You may work on this in groups (up to 3 people). You only need to turn in one assignment for the group. All group members must be present for all work (except the final write-up). If you work in a group, you must provide a picture of your group with some flow diagrams in the picture… and you MUST be smiling since its network related!

Once the design work (e.g packet flows and state diagrams) is done you MUST stop working as a group. You should not discuss how to code the assignment. Your program needs to be your own.

PART I – Design questions

1) Give a packet flow diagram of the following scenarios (use a diagram similar to the ones done in class – labeled arrows between rcopy and server.) and discuss what implications this has on your server/client:
    a. No packets lost
    b. One packet lost
    c. Multiple packets lost in a window (look at both sequential packets being lost and non-sequential e.g packets 6 and 9 being lost with window size of 10)
    d. RR lost
    e. Multiple RR's lost
    f. SREJ lost
    g. Entire window of data being lost
    h. Entire window of RR's being lost

2) Looking back at question 1, which of those scenarios may cause your window to close? (Explain each case also explain what will need to be retransmitted… I know the window will close if the window size is to small… so don't just say that. Which of the above situations will cause the window to close for other reasons.)

3) List the possible packet scenario(s) that will cause you to enter a blocking (timed) select and then the select returns without finding any data (in other words select times out).

4) Regarding the following possible scenarios for receiving data. Explain **how** this scenario can happen and list **what action** you will take with the data and how you will reply to the sender (it is possible that one or more of these scenarios cannot happen):

    a. Data frame is the one you expect
    b. Data frame number is a duplicate of one you have already received
    c. Data frame number is greater than the one you expected but is still in your window size.
    d. Data frame number is the one you are expecting but you have already received frames with higher numbers.

5) Assume you have received frames 1,2,3,4,5 and then you receive frame 7 and 8 and then frames 10, 11 and 12. Discuss how your implementation will handle this situation. How are RR's and SREJ's sent? What packets are sent/resent? Does your window close? Draw a packet flow diagram of your solution.

6) Draw a packet flow diagram for the following scenarios for the **filename** exchange or connection establishment exchange (end the diagram with the first data packet being successfully received).

    a. No packets lost
    b. First packet (filename or establishment packet) is lost from rcopy
    c. Second packet sent by rcopy is lost.
    d. First packet sent by the server is lost.
    e. First two packets sent by the server are lost.
    f. After filename exchange and you start to send data, what happens if an entire window of data is lost from server.
    g. After filename exchange and you start to send data what happens if an entire window of RRs are lost from rcopy.

7) Give a packet flow diagram on how you will handle the last packet of the file.
    a. Last data packet is lost
    b. ACK from rcopy for last data packet is lost.

8) **Make a copy of your answers to this assignment** … you will not get this back in time to write the program.

Part II – State diagrams

Turn in a state diagram for Rcopy and another for server (so two diagrams). These diagrams should start with the filename exchange and cover the sending/acking of the last packet.

Make a copy of your packet flows and state diagrams before you turn them in… you will not get them back in time to write the program.