

# >>> Assignment #3 for Computer Networks (EEL 4781) <<<

## Due on 10/06/09 at the beginning of class

This assignment covers material in chapter 3 of the textbook and as covered in class lecture.

### **Problem #1**

Sketch the packet structure of a protocol that has the following fields in a packet, destination address (32 bits), source address (32 bits), sequence number (16 bits), flags (16 bits), and payload (variable number of bytes)

### **Problem #2**

Design the FSM for the following system behavior for a receiver. Assume a receiver that receives data packets; each data packet contains a sequence number. The receiver should send an ACK packet only for a received data packet that has a sequence number one greater than the sequence number in the previously received packet. Assume that when reset the FSM should expect the sequence number in the first received packet to be a "1".

### **Problem #3**

Design the FSM for the following system behavior. The "system" could be a network-connected PC, or some other networked device. If a fully powered-up system has been inactive for a period of time  $T_{sleep}$  it goes to sleep. "Inactive" could be a lack of user input (so, no keyboard or mouse activity). When asleep, if the system receives two specially defined wake-up packet no more than  $T_{wake}$  seconds apart it wakes-up and resumes fully powered-on operation. Note that the system is able to receive packets and do some elementary processing when asleep.

### **Problem #4**

Do problem P9 (page 300) from the text book. Note that "trace" mean timing diagram. Also note that you should give two timing diagrams, one for the case of a corrupted data packet and the second for the case of a corrupted ACK.

### **Problem #5**

Do problem P13 (page 301) from the text book.

### **Problem #6**

Do problem P14 (page 301) from the text book.

### **Extra Credit**

Earn some extra credit by working on a design for the class project and presenting it at the class standards meeting! This assignment was made shorter than usual to give you time to do this.

### **Note:**

The TA and I are here to help you! Make use of help if you need it.