List of Review Questions for Midterm Exam 1 (Closed-book exam. A calculator without any communication function is allowed. No cheat sheet)

1. What is a protocol? What is the layering principle of network protocol stacks?

2. What are connection-oriented services? What are connectionless services? What are reliable services? What are unreliable services?

3. Understand and remember the sequence of system calls on the TCP client and on the TCP server. You only need to remember the names of system calls instead of the detailed syntax.

4. Understand and remember the sequence of system calls on the UDP client and on the UDP server. You only need to remember the names of system calls instead of the detailed syntax.

5. Understand and remember the structure of TCP header.

6. Understand how TCP establishes a connection. Understand the reason why 3-way handshake is required in TCP establish connection.

7. Understand and remember how TCP estimates RTT and deviation of RTT, and adjusts TimeOutInterval accordingly. Know how to calculate.

Note that the textbook is not very clear on the notation. They should be read like this:

EstimatedRTT(n)= (1-α) EstimatedRTT (n-1) + α* SampleRTT (n)

DevRTT(n) = (1-β) DevRTT(n-1) + β* |SampleRTT(n)-EstimatedRTT(n)|

TimoutInterval(n) = EstimatedRTT(n) + 4 * DevRTT(n),

where (n) and (n-1) represent the n-th round and $n-1$th round, respectively.

8. Understand the mechanisms of TCP congestion control in TCP Reno and TCP Tahoe. Know how to read a figure showing the dynamics of TCP congestion control.