Study Guide for Midterm Exam
Fall 2018

Most of this will be on the exam, but some will be dropped for time. Bring a double-sided cheat sheet, this guide with any notes on it, a calculator and a writing instrument. No blue books, no scantrons.

Important! Reference diagrams and tables and equations that are included in this study guide will probably not be duplicated again in the exam, so if you need them, you must print and bring this guide to the exam or bring it on an iPad as a PDF, etc.

1. Remember the five layers of the TCP/IP protocol stack and which layers each device covers: routers to layer 3, switches to layer 2, when they are routing and switching. Assume programs run at the application layer unless you know otherwise. When you connect to a device to exchange data from an application on some host to the companion application on that device, you're connecting at the application layer, regardless of the device's usual job.

   Review question 5 on HW 1.

2. You will have another question like #6 on HW 1.

   Know how to calculate end-to-end delay as we did in the problem. Bring the equations with you.

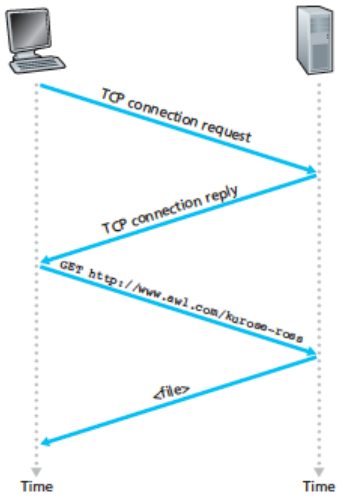
3. Remember the four types of delay – propagation, transmission, queueing, and processing and where they occur. Be able to spot them on a diagram.

   Processing and Queueing delays happen inside of routers.
   Transmission delays happen inside of every device as it is sending a packet.
   Propagation delays happen outside of devices – between them, actually, on the networks.

   Reviewing #8 on HW 1 will also give you the equations you need to calculate a

specific delay if asked.

4. We saw lots of time diagrams in the book and in our lectures. On them, time goes down the page. No exceptions. So when you are drawing a diagram, and need to indicate or recognize delay, think about how a very large delay versus a small delay of each type will appear in a time diagram. How can you spot large vs small? Here's an example of a timing diagram, a very simple one. The only type of delay that's significant on this diagram is propagation delay.



5. We may have a caravan question like #7 in HW 1. It would be just a simple variation, so if you review the problem you'll be set.
6. Review question 12 on HW 1 – I am likely to have a queueing question, perhaps with packets of different sizes. The equation we used for queueing delay on that problem was:

$$\frac{Ln + (L - x)\ bits}{R\ bits/sec}$$

7. Recognize the four types of choices from the book's HTTP Delay estimator here: https://media.pearsoncmg.com/aw/ecs_kurose_compnetwork_7/cw/content/interactiveanimations/http-delay-estimation/index.html
   Remember, parallel and pipelining in this simulator are considered the be the same thing, and they will be on the exam as well.
8. You'll likely see a Wireshark dump like problem 3 in HW 2. Be able to answer similar questions in a different trace file.
9. I'll try to ask some meaningful questions about what we learned from the long exercise on HW 3.

