

Assignment #1 for Computer Networks (CNT 4004) for Fall 2018

Due August 30, 2018 at the start of class

This assignment primarily covers material from chapter 1 of the textbook and from the first three class lectures. Each problem is worth 20 points.

Problem #1

The lead author (Jim Kurose) for the textbook is the Assistant Director of NSF for CISE. Answer the following questions. Be sure to cite your sources and correctly quote any words that are not your own words. The answers are not in your textbook.

- a) What is NSF in Jim Kurose's words?
- b) What is the FY 2017 budget request for CISE? Roughly, what percentage of this budget could be for research in networks?
- c) Where does this money go?
- d) Name a government agency (hint: it is not NSF) that has played a major role in the creation of the Internet.
- e) How might NSF funding benefit you directly as a student?

Problem #2

- a) What is the largest engineered system ever created?
- b) What are the fundamental measures of a communication system as described in the class lecture?
- c) What are the open challenges in communication systems as described in the class lecture?
- d) One of the open challenges is "more robust". Explain this... robust against what?
- e) What are the basic communications tasks that define networking (and what we will study this semester) as described in the class lecture?

Problem #3

Why are open standards important for protocols?

Problem #4

Answer the following short answer question (each answer is a simple figure or one or two sentences).

- a) Sketch the five-layer internet protocol stack as the book defines it. Show the location of the key interface (that we will be covering in this class). Given the name of the interface.

- b) What layer would information theory and coding theory apply to?
- c) What is an “adapter” (and why the name “adapter”)? Give an example of an adapter.
- d) How many adapters would an intermediate node have in it?
- e) What is a protocol as defined by the textbook?
- f) Fill in the blanks in the following, “... the source break long messages into smaller _____ of data knows as _____. Between _____ and _____, each _____ travels through communications _____ and _____ (for which there are two predominant types, _____ and _____ switches).” (from the textbook)
- g) Why have packet switching (that is, what is the primary benefit of packet switching over circuit switching)
- h) Name three standards groups that have a focus on networking standards
- i) When was the first web browser made available to the general public and what was it called?
- j) There are four factors to delay. Which factor do you think would be dominant when communicating from Earth to Mars.

Problem #5

For this course it is very important that you have a C development environment that you are comfortable with. Now is the time to verify that your development environment is in working order. For this problem you are to download weblite.c from the class source code page, build it, and execute it. Take a screenshot (<Alt-PrtSc> in Windows) of your execution and submit it for this problem. There is a big hint on the source code page for how to build and execute that you should be able to easily/quickly find.

Note:

I am here to help you (I have office hours, I am very reachable/responsive by email)! Make use of help if you need it.