>>> Assignment #1 for Computer Networks (CNT 4004) <<<

Due September 19, 2017 at the start of class

This assignment covers material from chapter 1 of the textbook and from roughly the first two weeks of class lecture. Each problem is worth 10 points.

**Problem #1**

If is very important that you know what the class website contains. So, for this first “fun” problem you are to go on a frog hunt. There are images of frogs hidden on one or more pages or other content (only on pages or content that I have created) on the class website (or linked to from the class website). Find all the frogs. Give the URLs of the page(s) with the frogs. Explain what the page with a frog contains (that is, describe the page contents). Start clicking (on links)!

**Problem #2**

The lead author (Jim Kurose) for the textbook is the Assistant Director of NSF for CISE. Answer the following questions (and cite the source of your answer as appropriate):

a) What is NSF?

b) What is the yearly budget of CISE?

c) Where does this money largely go?

d) What role has government funding overall played in the development of computer networks? One sentence – even one word (!) should be sufficient to answer this question

e) How might NSF funding benefit you directly as a student?

**Problem #3**

Give the URL of the where the solutions manual for the textbook can be found (for any edition).

**Problem #4**

a) What are the fundamental measures of a communication system as described in the class lecture?

b) What are the open challenges in communication systems as described in the class lecture?

c) What are the basic communications tasks that define networking (and what we will study) as described in the class lecture?

d) Back to history… when and how did the Internet go commercial (that is, allow non-government, non-education traffic from commercial entities)?

**Problem #5**

a) A working definition of “protocol” is “A protocol is a complete set of rules regarding information exchange between same level layers between sites.” Another definition (Kurose and Ross, page 9) “A protocol defines the format and the order of messages exchanged between two or more communicating entities, as well as the actions taken on the transmission and/or receipt of a message or other event.” From our working definition, what is the hard part in designing a protocol (hint: one word!)? Explain.

b) Give the definition of interface. Give an example of an interface (relevant to networking).
c) Define in your own words, not formula, what is propagation delay. Define in your own words, not formula, what is transmission delay? Describe what determines (that is, what factors control) propagation delay and transmission delay.

**Problem #6**

a) Sketch the five layer Internet protocol stack model used in our textbook. For each layer, describe its function in one sentence.

b) Sketch a packet (i.e., show the headers and trailers) that would result from this five-layer model. Be sure to show all header and trailers that could be present (even if you know that they are not present in a “real” Internet packet).

c) Give one standard from each (ITU and IETF) that you, very likely, use daily.

**Problem #7**

Do Problem P6 (page 71) from the text book

**Problem #8**

Do Problem P12 (page 72) from the text book.

**Problem #9**

Do Problem P18(a),(b),(c) (page 73) from the text book. You can slip the standard deviation calculation for (a).

**Problem #10**

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.