

>>> Assignment #1 for Computer Networks (EEL 4781) <<< Due on 09/08/09 at the beginning of class

This assignment covers material in chapter 1 of the textbook and as covered in the first two weeks of class lecture.

Problem #1

It 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 (only on pages that I have created) on the class website. Find all the frogs. Give the URLs of the page(s) with the frogs.

Problem #2

- a) What are the fundamental measures of a communication system?
- b) What are the open challenges in communication systems?
- c) What are the factors that affect the cost of communications?

Problem #3

Precisely define protocol, interface, and the open concept (the definitions in the class lecture are more concise and precise than what you will find in the text book).

Problem #4

- 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).

Problem #5

What are the factors that cause delay in a computer network? What are the causes of packet loss? How can packet loss be minimized (consider each of the factors that cause packet loss)?

Problem #6

Do Problem P2 (page 73) from the text book

Problem #7

Do Problem P5 (page 73) from the text book

Problem #8

Do Problem P6 (page 74) from the text book

Problem #9

Use ping to determine the approximate round trip time for sending a packet back-and-forth within the campus (so, to a host on the USF campus), across the country (so, to a host in California), and across the Atlantic (so, to a host in Europe). You should repeat your tests more than once and for more than one host. Be sure to include your raw data (ping results) and draw a summary from the results. The purpose of this problem is to give you perspective on packet delays in the Internet.

Problem #10

For this course it is **very important** that you have a C development environment that you are comfortable with. Options (all are free!) for Microsoft Windows include Microsoft Visual Studio (free to USF students) or Express Edition (free for everyone), Borland command line tools, gcc, and Bloodshed DevC++. 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. For hints on how to do this, see <http://www.csee.usf.edu/~christen/class2/webliteScreenShot.jpg>. Your execution should look just like the screen shot in the above URL (however, your build need not be done using `bcc32` as I show in my example). Take a screenshot (`<Alt-PrtSc>` in Windows) of your execution and submit it for this problem. The source code page for this class is here: <http://www.csee.usf.edu/~christen/class2/source2.html>.

Note:

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