COMPUTER SCIENCE E-1

Understanding Computers & the Internet

PROBLEM SET 1

Due Monday, Feburary 4 at 5:30pm

Out of 51 points

Academic Honesty

All work that you do toward fulfillment of this course's expectations must be your own unless collaboration is explicitly allowed by the staff. Viewing, requesting, or copying another individual's work or lifting material from a book, magazine, website, or other source—even in part—and presenting it as your own constitutes academic dishonesty, as does showing or giving your work, even in part, to another student.

Similarly is dual submission academic dishonesty: you may not submit the same or similar work to this course that you have submitted or will submit to another. Nor may you provide or make available solutions to homework or exams to individuals who take or may take this course in the future. Moreover, submission of any work that you intend to use outside of the course (e.g., for a job) must be approved by the staff.

If in doubt as to the appropriateness of some act, contact the staff. All forms of academic dishonesty are dealt with harshly.

Submission Instructions

To submit this problem set, head to E-1 Submit (http://cse1.net/submit), where you can upload a PDF, Word Document, or Rich Text Files. PDF files are preferred. Don't forget to also complete this problem set's form, whose URL is given at the bottom of the problem set!

Mother, I'm bored.

1. (2 points each) Below is a motherboard with 7 unlabeled parts (lettered A–G, to be clear). For each of these letters, tell us:

i. What the component is called

ii. What the component is used for (e.g., what devices plug into it)
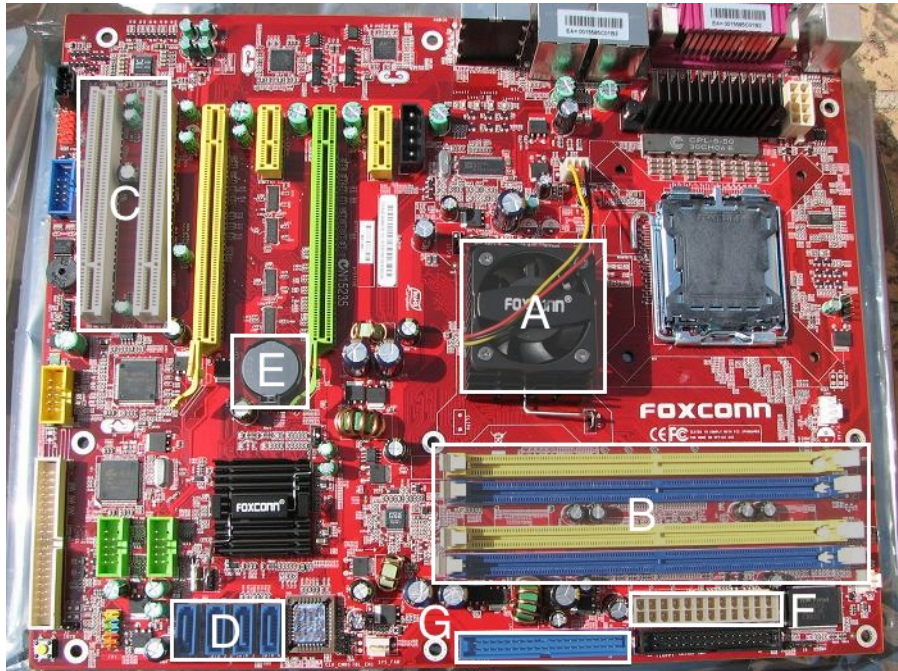
2. (5 points) In a succinct but technically detailed paragraph, what happens when you turn on your computer?

Windows Explorer

3. (3 points) Time for some exploring! Let's get to know your computer a little better. Tell us the following about the computer you have at home or at work:

i. Brand and model

ii. Hard drive capacity

iii. Amount of RAM

iv. Model and speed of CPU

v. Display resolution and size

vi. Operating system

4. (3 points) More exploring! Dora would be proud. Now, take a look at the various ports on your computer. If on a laptop, your ports are probably located around the perimeter of the bottom half of your computer. If on a desktop, ports are probably located in the back of the tower, and

perhaps a few can be found on the front. For each of your computer's ports, give us a picture or sketch as well as a description of what the port is called and what can plug into it.

Power Shopping

5. (3 points) Your dad just came home with a brand new printer from Better Buy, but unfortunately, it looks like it came only with a power cable! From what you can see, there's no way of connecting the printer to his computer. How exactly would you figure out what he needs to purchase in order to use his new printer? Suggest what you think he needs to buy, explaining your thought process. Be specific!

6. (3 points) I just purchased a new computer monitor with only a DVI port. Sadly, my laptop only has a slot for an HDMI cable. Am I out of luck? Why or why not? My sister's laptop, on the other hand, has a slot for a VGA cable, should I just give the monitor to her? Why or why not?

7. (2 points) So, should you spend $250 on an HDMI cable? Why or why not?

A Bit of Binary

8. (2 points each) Convert the following numbers from decimal to binary, showing each step.
i. 50
ii. 164

9. (2 points each) Convert the following numbers from binary to decimal, showing each step.
i. 0101010
ii. 010101111

10. (2 points) What do all binary numbers ending in 1 have in common?

11. (2 points) What's the largest (positive) number we can represent with 16 bits? How about 32 bits? Give your answers as decimal numbers, and don't worry about taking negative numbers into account!

12. (5 points) We've seen that decimal uses ten different digits and binary uses two different digits. The octal system instead uses eight different digits, but works in exactly the same way. What is the decimal value of the octal number 0644? How about 0755?

13. (0 points) Log in to CSCI E-1 Discuss (http://cse1.net/discuss) and introduce yourself!

14. (1 point) Head over to Problem Set 1's form (http://cse1.net/forms/pset1) and tell us a bit about yourself! Congratulations on completing the course's first problem set!