Assignment Instructions

Below are the questions for the assignment. Write your answers in the separate Answer document. Optional challenge questions are just for your own learning; they do not count toward grading.

For ALL Word processing documents, you must submit your documents in one of the following formats: MS-Word (.doc/.docx) or PDF (common read only format). They will be returned ungraded if submitted in any other format.

Submit assignments all assignments via elearn - attach your word document or PDF to your submission. Do NOT copy and paste your document into the submission text box.

Binary And Bits:

Q1: What does the picture below show? Make sure to specify what the red line, gray line and dotted line represent, how they are related, and why the red/gray line are different.

![Diagram of Voltage and Time]

Q2: Bits do not always have to be physically implemented as electricity on a wire. What is another physical method computers use to store or manipulate a bit?

Q3: How many bits (not bytes!!) are in 3 megabytes?

Binary Number Representation:

Q4:
  a) What is the smallest number of bits that can be used to represent the decimal value 40 in binary?
  b) What is the largest numeric value (in decimal) that you can represent with 15 bits?

Q5: Convert the decimal number 18 to its binary equivalent using the division by two method from Chapter 4.3 of CS160 Reader. SHOW YOUR WORK THAT DOES THE CONVERSION!
Page Rank Algorithm:

**Q6:** In figure 1 below, imagine the "random surfer" starts on page 5. Will it ever reach page 2? Why?

![Figure 1](image1)

**Q7:** In Figure 2, explain the following:

a) Page 3 and page 7 both have one inbound link with authority of .022 leading to them. Why does page 7 get less visits than page 3?

b) Why are page 2 and 4 so popular?

![Figure 2](image2)

Continues...
Programming:
Complete Code.org programming lessons for this week.

This will go into your “participation grade”. There is nothing to submit for this – I will check your progress through Code.org. Partial credit is possible if you only finish some of the parts.

You will get NO CREDIT FOR THIS if your display name in Code.org is not set to your Chemeketa user name.
(for bsmith12@my.chemeketa.edu the display name should be bsmith)

Assignment Problems:
These are a graded part of this assignment. You will paste a screenshot of your drawing into the answer document along with the text for your code (NOT a screenshot of the code).

Q8: From Lesson 3.1.5.9, paste in the text version of your drawSide function. Do NOT provide the rest of the code, just that one function.

You will need to hit the Show Text button to get the text version of your code that you can copy and paste.

Q9: From Lesson 3.1.6.3 (3x3 grid problem), paste in a screenshot of your drawing and the complete text version of your code. Your score depends not only on making the correct shape, but on using multiple functions that call each other with descriptive names.

- Level 1: Has at least one function
- Level 2: Has at least two functions that have meaningful names
- Level 3: Has at least two well named functions, layered so that at least one function calls other function(s)
- Level 4: Has well-named, layered functions. Each function is a reasonable length and does one clear job.

A function probably shouldn’t be much more than 10 lines of code. Anything much longer should be broken into sub-tasks handled by other functions.

To find out how to take a screenshot of just a part of your screen, google “Windows region screenshot” or “Mac region screenshot”. I do NOT want screenshot of your entire screen.

Q10: From Lesson 3.1.7.10 paste in the screenshot of the picture your program drew and the text version code you used to do it.