CS100M/CIS121/EAS121 Spring 2004 Assignment 2: Attack of The Code

Due Wednesday, February 18, 11:59:00 PM

0. Introduction

0.1 Objectives

This assignment will help you to develop the following skills:

- Using MATLAB in "calculator-mode" for basic statements.
- Writing scripts with statements.
- Writing scripts that involve selection and repetition control structures.

We require that you begin to develop good habits for programming. You should read Section 4.5.1 of Chapman (page 178). Good programming practice will pay off in the long run!

0.2 Instructions

Be sure to read the *entire* assignment before answering the questions! Do the tasks in the following sections. You may work with one partner of by yourself for this assignment. Review the <u>Section 8.2 of the Syllabus</u> for an explanation

0.3 Submission

Follow the **Submission Format Requirements** at the <u>CMS Info</u> link on the course website. The last section describes what to submit on CMS.

0.4 Grading

We will not accept CS100J's project grades for this and the remaining assignments in CS100M. Refer to the <u>Syllabus</u> for an explanation of assignment grading. All code that you submit must run without warnings and errors.

0.5 Academic Integrity

You must abide by the Code of Academic Integrity, which is provided for CS100M, the Department of Computer Science, and Cornell University on our course website. Refer to the link called <u>Academic Integrity</u>.

1. Problems

We are using nine of Chapman's textbook exercises, which are listed below. Refer to problem sets at the end of each chapter to find the problems. We have provided additional hints and specifications. Each solution must be a program that we can run at the MATLAB prompt. In general, suppress output for all information other than pertinent results. Do not supply output files and plots, because we will be running your MATLAB code directly in MATLAB.

1.1 Chapman 1.4

Put your answers in a file called **probl.m**. In two separate assignment statements, assign u and v. For parts a, b, c, and d, write only one expression statement for each and do not suppress the output. Take heed of MATLAB's operator precedence, so be careful with placement of parentheses!

1.2 Chapman 2.8

 $\cos^{-1}x$ refers to the inverse cosine, or arc cosine, of x. Use only one expression statement for each part and do not suppress the output. Put both solutions in a file called prob2.m.

1.3 Chapman 2.10

Call your program prob3.m.

1.4 Chapman 3.1

Don't worry about rounding errors when you convert from degrees to radians. Due to the rounding errors, you may not get an error with tan(90), but try tan(270). Call your program prob4.m.

1.5 Chapman 3.3

Make sure your output is in the right format. For example, your output should look like \$10.00, not 10 or 10.000. You don't have to check for negative package weights, but you can output an error if you like. Call your program prob5.m.

1.6 Chapman 3.5

If you check the MATLAB Help files (<u>http://www.mathworks.com/access/helpdesk/help/helpdesk.shtml</u>), you'll find that **log** (without the quotes) is used for the natural logarithm, **log2** is used for base 2, and **log10** is used for base 10. Call your program **prob6.m**.

1.7 Chapman 4.1

This problem will require the use of a selection statement and a repetition statement. Call your program prob7.m.

1.8 Chapman 4.12

This problem refers to Example 4.8, not Question 4.8. The code you need is found on pages 174–176. Write your answers to the questions regarding gravitational attraction as *comments* in your code. Call your program **prob8.m**.

1.9 Chapman 4.21

To find the point at which the tension on the cable is minimized, we suggest that you keep track of the minimum tension, and the distance at which this minimum tension is found, within a loop. Call your program **prob9.m**.

2. Submission

Zip all nine M-Files in a file called **a2sol.zip**. As a reminder, we do not accept late work, as discussed in the syllabus. Note that CIS/EAS students also submit their work, which is identical, on the CIS/EAS121 site on CMS.