CS 105 – Homework #2 – Due April 22, 2022

It would be a good idea for you to explore how computer problem solving can be applied to some problem in another academic field. Select a discipline other than computer science, and find a quantitative problem in that discipline. It should be a problem that you can solve using what you have learned about the Pascal language. The problem should answer a useful question in the discipline. The complexity of the computational task should be sufficient to warrant the need to write a program. In other words, the program should feature several calculations or a significant amount of I/O.

You may choose to work alone, or in a group of two or three people. However, more work will be expected from groups of three. I recommend that you clear your project idea with me to make sure it is a viable and suitable problem.

On or before the due date, please send me via e-mail your Pascal program. It should begin with a detailed comment containing your name(s), and a description of how to run your program and what problem it's trying to solve. Also, cite sources if you found formulas or an algorithm in published document such as a book, article or Web site.

Starting on the due date, we will have oral presentations during class. You will have 15-20 minutes to explain your project to the class and show us your working program.

Examples of recent projects are:

1. Randomly create 32 measures of music based on the style of Mozart minuets.
2. Implement a multiple choice quiz to help someone study for an exam in psychology.
3. Calculate a linear regression given a set of points
4. Perform calculus on a polynomial function
5. Given how much of a radioactive substance remains in a rock, determine its geologic age.
6. Give the user a color-blindness test
7. Look up a stock price repeatedly during the day
8. Enhance an MRI image to more clearly see features of the brain
9. Look up the election results of a county
10. Interactively fill out a budget
11. Mass fraction analysis: For a given molecular mass, enumerate some possible compounds involving carbon, oxygen, nitrogen and/or hydrogen.
12. Read some Old English text, and print out the words containing obsolete letters.
13. Ask the user for the name of a director, and print out all movies directed by this person (using file input)
14. Solve an anagram. In other words, given a sequence of letters, see if they can be rearranged to spell an actual word.

Please feel free to ask me for assistance. For example, your project might require one feature of Pascal we did not cover in this class.