1. Please list one or two examples of problems you have worked on where you would have liked to have a computer program to help solve the problem. For each problem, describe the input data, the problem, and how a computer program might have helped solve the problem.

   There is no correct answer… here are a few from previous semesters…

   - There is a cannon on top of a cliff. What cannon angle results in the furthest horizontal displacement from the base of the cliff? The input data would be THETA, ranging from 0-90 degrees. After programming the equations needed to solve the problem, the computer program could crank out the calculations for the variable THETA, solving for the horizontal displacement from the cliff.
   - Finding out how much car fuel is used at each different speed. The input data would be the speed in MPH, where the problem would be finding out how much fuel is consumed per second at that speed. A computer program could be helpful in organizing the data in a meaningful fashion as well as having the data displayed in smaller increments which are beyond human senses.
   - Calculate the trajectory of a rocket whose role is to hit a wall which is the target. Given data for this problem would be the gravity of Earth (9.8 m/s^2), the approximate time the rocket to hit the wall or ground, velocity in the x-direction, as well as velocity in the y-direction. The individual can utilize the computer to create a function where it graphs and displays the trajectory of the rocket to see whether or not the rocket hits the target. If the rocket misses, the function should display the exact distance it missed the target

2. Name two attributes associated with UNIX files:
   File name and type.
   Date and Time of last update.
   Permission information that defines who can read or write the file.
   Date and Time of Creation.

3. True or False:
   ___ A directory may contain a sub-directory, but the sub-directory may contain only files – not sub-directories. False – a directory may contain sub-directories
   ___ You may create whatever sub-directories you want to in your home directory. True
   ___ You can list only those files in your home directory. False… you can list files anywhere you can read.
   ___ The current directory may be a sub-directory of your home directory. True.
   ___ The current directory may be a sub-directory of the /usr/include directory. True.

4. When writing C code, coders often put prototypes of functions at the top of the file, even though this prototype information is repeated when the function is defined lower in the file. Explain in one or two sentences why a programmer would repeat the function prototype information.
   In C since a function must be declared before it is used, if we declare a function by including its entire definition, that would lead to upside-down code. One alternative is to declare the function with a function prototype at the top of the file, and then include the entire definition at the bottom of the file to enable right-side up code.
5. It is possible to generate an executable file from a C program even though the compiler has issued warning messages. Is this a good feature of the C compiler, or a bad feature? Why?
   This is a good feature because warning messages are cases where the compiler is not completely sure about what you meant, but can still produce an executable based on a pretty good guess that it knows what you meant. In these cases, the compiler almost always guesses correctly, and the executable will work as expected. However, this is also a bad feature because if you have hundreds of warning messages, sometimes the 58th message is the one where the compiler made the wrong choice and introduced a bug in your program, and that 58th message is hard to see among the hundreds of messages.