Problem Set for 2/21/2024

Engineering 104 - Fundamentals of Engineering Computing

Formatting, Organization & Code Comments - Complete the following problems in `Python` and include as part of the submission of the appropriate assignment. Your assignment file should include a proper heading, comments and show clear organizational structure with each problem clearly printed, separated and with each result variable clearly displayed. All problems worked should have a formatted/structured print-out. Print a string denoting each problem, with the solution to the problem clearly printed as a formatted string below the denoted problem. Separate each problem using a blank line in both the code and the printed results. Code comments should be completed throughout the file on every line of code by default. If this assignment requires you to write and submit additional auxiliary script, or any other files in the submission, please append your initials capitalized to the end of the file name.

Python Lecture #15 Problems - Functions II (14 Points)

Problem 15.1 (7 Points) - A ball is thrown up vertically up in the air from a height h_0 (m) above the ground at the initial velocity v_0 (m/s). Its subsequent height h and velocity v are given by the equations

$$h = h_0 + v_0 t - \frac{1}{2} g t^2, \tag{1}$$

$$v = v_0 - g t. \tag{2}$$

Define a function that calculates and returns the height h and velocity v after time t with all three variables as inputs to the function. Test your function for the following conditions: $h_0 = 1.5\ m$, $v_0 = 15\ m/s$, $t = 1.5\ s$ & $h_0 = 15\ m$, $v_0 = 35\ m/s$, $t = 3\ s$. Specify the input to the function in two different ways, using values input into the function directly as well as specifying variables that get passed into the function.

Problem 15.2 (7 Points) - Define a function called `threesFunction` that creates a and array of threes defined by inputting the number of rows and columns into the function. Call, and print out the results of you function called for two rows and 4 columns.