Lab 1: Body Mass Index – From Planning to Program

Lab Assignment for PROG1205 – Intro to Programming

Prior to attempting this problem, you should have done the following:

1. Read the assigned textbook readings for weeks 1, 2 and 3.
2. Viewed the Planning an Application videos from week 2 and completed the associated Pre-Class Activity.
3. Viewed the Working with Numeric and String Data playlist from week 3 and completed the associated Pre-Class Activity.

General Requirements

1. This lab assignment is to be completed **individually**. Group submissions will not be considered.
2. Analyze the problem, design a documented plan (i.e. flowchart or pseudo-code), code and test a solution **following the step-by-step approach** presented in this course.
3. Submit your solution and plan to the appropriate assignment folder on DC Connect **by the due date provided**.
4. Your instructor will assign a grade and post feedback on your submission to DC Connect.

Program Requirements

For this lab you will create a simple Python application that will calculate the Body Mass Index (BMI)[1] of a person based on the height and weight that the user inputs. In your solution you will utilize variables and constant(s), accept input from the user, implement formulae, and display results to the user. Below is an example of what the program output should look like:

```
Please enter the person's height in inches: 67.5
Please enter the person's weight in pounds: 173

The BMI for a 67.5" tall person who weighs 173.0 lb. is 26.7

Press Enter to end this application...
```

Detailed requirements:

1. Prompt the user to enter the person's height in inches and weight in pounds and store each of these values in appropriate variables. Note that both inches and pounds may be entered as real numbers.
2. For this purpose of this lab, assume the user will input valid and reasonable numeric data. In subsequent labs, you will validate the user input before processing occurs. Crashes caused by invalid input will not be considered an issue on this lab.
3. BMI is the ratio of mass in kilograms over the height in meters squared. Since our program is using imperial units, a conversion factor of 703, which will be treated as a constant, should be applied. Calculate the BMI using the following formula:

$$BMI = \frac{mass(kg)}{height^2(m)} = \frac{mass(lb)}{height^2(in)} \; x \; 703$$

4. Display the final result as a formatted string message including the original user input and the calculated BMI showing one decimal place.
5. Prompt the user to press any key to end the application and end the application on any key press.

[1] See: https://en.wikipedia.org/wiki/Body_mass_index

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Style Guide

To be eligible for full marks on this or any lab in this course your application must conform to the requirements as outlined above as well as our prescribed style guide, in this case making sure to observe the PEP8 naming conventions for Python as well as appropriate and complete program documentation.

Development Hint:

For this lab you will have to spend some time planning the code and required variables/constant(s). There is much to be discovered (by you) so you should not start writing any code until you have a set plan. The plan is part of the evaluation anyway, so rushing won't be helpful.