

Fitchburg State University
CSC 7014 Practice Computer Programming
Instructor: Nguyen Thai
Due: 10/28/2017 at 11:00 PM
Student: Lina Mi

Assignment 6: Body Mass Index

The purpose of this assignment is to learn how to program classes and objects. Your program is to be written in the Python language. You will be graded for output correctness, code comments, code indentation, descriptive variables and source code file header completeness.

As you work through the assignment be sure to answer all questions (type your answers into this document) and take all screenshots as requested (copy them into the document). For the screenshots, you can use the Snipping Tool that is built-in to Windows to capture the important parts of the lab as highlighted in the document below. **Do not delete the contents of this file.** When finished, you will submit the document source code file and associated data files to the instructor via Blackboard. **DO NOT SUBMIT ZIP FILES OR INDIVIDUAL IMAGES.** If you have any questions or need any clarification, email the instructor *before* the deadline.

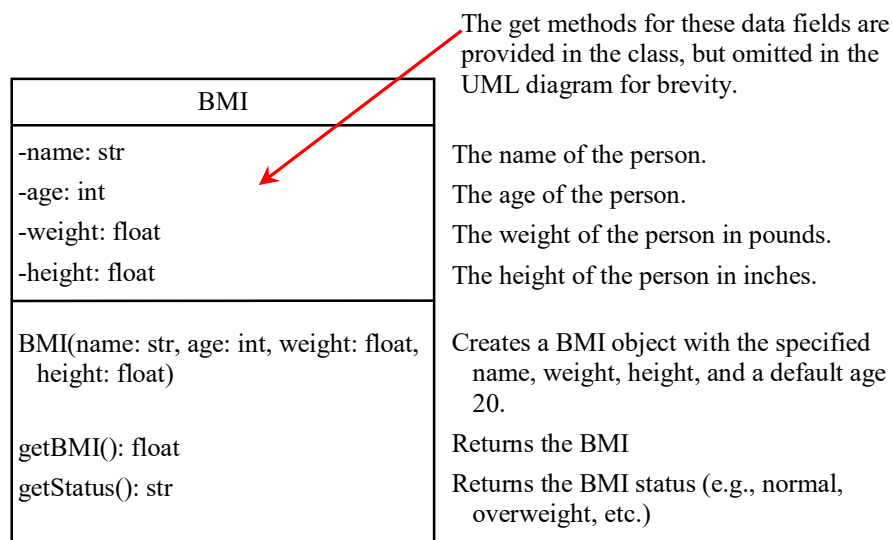
1. In this assignment, you are to write a program in Python called *bmi.py* to implement the body mass index (BMI) class.
2. You are also to write another program in Python called *testBmi.py* to test the bmi class.
3. The body mass index (BMI) is a measure of a person's health status based on weight. It is calculated by taking a person's weight in kilograms and dividing it by the square of person's height in meters:

$$BMI = \frac{weight\ (Kg)}{[height\ (m)]^2}$$

4. The interpretation of the BMI for people 16 years and older is as following:

BMI	INTERPRETATION
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
Above 30.0	Obese

5. The UML of the BMI class is defined as following:



6. You need to convert the units from English to Metric measurements.
7. In the testBmi.py, write a function called healthStatus() to take in appropriate parameters (name, age, weight, height) and return the health status of the person, i.e., Normal, Obese, etc.
8. In the testBmi.py, write test cases to test your BMI class, using the following numbers:
- A. Test case 1:
- Name: John
 - Age: 18
 - Weight: 165 lbs
 - Height: 5.9 ft

B. Test case 2:

- Name: Mary
- Age: 25
- Weight: 115 lbs
- Height: 5.2 ft

C. Test case 3:

- Name: Mark
- Age: 60
- Weight: 135 lbs
- Height: 5.6 ft

Print the test results to a console.

9. Before coding, think how you are going to tackle this problem, and write a short description of the logic of your program. **INSERT YOUR DESCRIPTION HERE.**

In file *bmi.py*, First, define a class named *bodyMassIndex*, in this class, first create a function *setArguments* to set the class variables, such as *weight* and *height* ; then create a function *getBMI* to calculate the body mass index using the parameter *weight* and *height*; last create a function *getStatus* to give the status of person's health, such as overweight, obese or normal, based on the value of BMI obtained from function *getBMI*.

In file *testBmi.py*, first import the class *bodyMassIndex* from file *bmi.py*, then define a function *healthStatus* with arguments of *name, age, weight, height*. In this function, create a instance object of class *bodyMassIndex*, then using the arguments of *weight* and *height* of function *healthStatus* to initiate the *weight* and *height* attributes of object, using the object method *object.setArguments*; then using method *object.getBMI* to obtain the object's attribute BMI value; last using method *object.getStatus* to give and print out the health status of the object.

Then provide the prompt to ask user to enter the parameters of test case, *name, age, weight, height*, and test the validation of parameter *age*, since the BMI calculation and corresponding health status based on BMI are only applicable to the person who is more than 16 years old. After taking the input parameters, call function *healthStatus* with entered parameters *name, age, weight, height* as arguments, therefore passing the input parameters to the function. The function will perform the calculation of BMI and give the health status using entered parameters.

10. **TAKE A SCREENSHOT** of your input and output, and paste them here. **Do not paste your source code in this document.**

```
>>>
RESTART: C:/Users/milin/Registered_Courses_2017_Summer&Fall/Registered_Courses_
2017_Fall/Practice of Computer Program/testBmi.py
Please input the test person's name:John
Please input the test person's age:18
Please input the test person's weight in pounds:165
Please input the test person's height in feet:5.9
the BMI is: 23.2
John 's health status is Normal
>>>
RESTART: C:/Users/milin/Registered_Courses_2017_Summer&Fall/Registered_Courses_
2017_Fall/Practice of Computer Program/testBmi.py
Please input the test person's name:Mary
Please input the test person's age:25
Please input the test person's weight in pounds:115
Please input the test person's height in feet:5.2
the BMI is: 20.8
Mary 's health status is Normal
>>>
RESTART: C:/Users/milin/Registered_Courses_2017_Summer&Fall/Registered_Courses_
2017_Fall/Practice of Computer Program/testBmi.py
Please input the test person's name: Mark
Please input the test person's age:60
Please input the test person's weight in pounds:135
Please input the test person's height in feet:5.6
the BMI is: 21.0
Mark 's health status is Normal
```

11. Submit your source code and this document to Blackboard for grading.