CIS355A Week 1 Lab—Developing an OOP Console Application

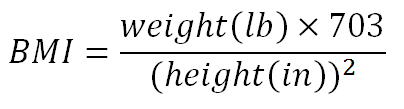
**Objectives**

* Create a class in Java with appropriate methods.
* Process user input with the class using the scanner for keyboard input and console output.

**Problem: Health Profile Console Program**

GymsRUs has a need to provide fitness information to their clients, including BMI and maximum heart rate. Your task is to write a console program to do this.

Body mass index (BMI) is a measure of body fat based on a person’s height and weight. BMI can be used to indicate if you are overweight, obese, underweight, or normal. The formula to calculate BMI is



The following BMI categories are based on this calculation.

Category BMI Range

Underweight less than 18.5

Normal between 18.5 and 24.9

Overweight between 25 and 29.9

Obese 30 or more

Max heart rate is calculated as 220 minus a person’s age.

**Functional Requirements**

Design and code a class called HealthProfile to store information about clients and their fitness data. The attributes (name, age, weight, and height) are private instance variables. The class must include the following methods.

|  |  |
| --- | --- |
| **method** | **description** |
| setName | Receives a value to assign to private instance variable |
| setAge | Receives a value to assign to private instance variable |
| setWeight | Receives a value to assign to private instance variable |
| setHeight | Receives two inputs (height in feet, inches) and converts and stores the total inches in private instance variable |
| getName | Returns private instance variable |
| getAge | Returns private instance variable |
| getWeight | Returns private instance variable |
| getHeight | Returns private instance variable (inches) |
| getBMI | Calculates and returns BMI |
| getCategory | Returns category based on BMI |
| getMaxHR | Calculates and returns maximum heart rate |

Create a separate test class, Lab1Main, to prompt for user input and display output using the HealthProfile class. Process multiple inputs using a loop. You can assume all user input is valid.

**Sample Output**

Enter name or X to quit: John Smith

Your age: 35

Your weight: 200

Your height - feet: 6

Your height - inches: 0

Health Profile for John Smith

BMI: 27.1

BMI Category: overweight

Max heart rate: 185

Enter name or X to quit: Ann Jones

Your age: 50

Your weight: 120

Your height - feet: 5

Your height - inches: 2

Health Profile for Ann Jones

BMI: 21.9

BMI Category: normal

Max heart rate: 170

Enter name or X to quit: X

**Grading Rubric**

|  |  |
| --- | --- |
| HealthProfile class   * All methods created with proper functionality | 20 |
| Week1Lab class   * Receives user input using scanner * Process input using a HealthProfile object * Correct output displayed in console * BMI displayed with 1 decimal place * Loop to process multiple clients | 15 |
| Code style | 5 |
| Total | 40 |

**Code Style Requirements**

* Include meaningful comments throughout your code.
* Use meaningful names for variables.
* Code must be properly indented.
* Include a comment header at beginning of each file. See the example below.

**/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
Program Name: ProgramName.java   
Programmer's Name: Student Name   
Program Description: Describe here what this program will do   
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**DELIVERABLES**

Submit the following as a single zip folder.

* All Java files (Zip up the entire project folder.)

Follow the assignment specification regarding class and method names.

Note that your Java file name must match class name (do not rename).