

## CSCI 1301 – Lab #4

### Exercise

The purpose of this exercise is to apply your knowledge about variables, arithmetic expressions, output statements, type casting and the Scanner class, which was discussed during the lectures.

Write a java program that contains a class called *BodyMassIndex* with a *main* method that computes the body mass index. The **body mass index (BMI)** is a measurement of body fat which compares a person's weight and height.

$$BMI = \frac{weight(kgs.)}{height^2(meters)}$$

In this lab, you will write a java program that computes the body mass index of a user. The user will enter his/her weight in kilograms and his/her height in meters (both are double), then the program will compute and display the person's BMI. Additionally, your program should display the user's weight in both kilograms and pounds and the user's height in meters as well as in feet and inches.

Finally, the output of your program should look similar to this:

```
Height in meters:1.89
Weight in kgs:92

User's Information:
  Weight: 92.0 kgs. (202.4lbs.)
  Height: 1.89 m. (6' 2")
  BMI: 25.755158030290307
```

You should apply the following equivalence between kilograms and pounds to calculate the equivalent weight in pounds:

$$1 \text{ kilogram} = 2.2 \text{ pounds}$$

Additionally, your program will compute the user's height in feet and inches. The following example illustrates how to convert a height in meters to the equivalent height expressed in feet and inches:

Assume that the user's height is 1.89 meters.

- 1) Multiply the height in meters by the equivalence between meters and feet:

$$1 \text{ meter} = 3.2808399 \text{ feet}$$

In our example, the result is 6.200787 ( $1.89 * 3.2808399 = 6.200787$ ).

- 2) The number of feet is the integral part of the result obtained in 1. In our example, the number of feet is 6.

- 3) Multiply the decimal part of the result obtained in 1 by 12 ( $0.200787 * 12 = 2.409449$ ). The number of inches is the integral part of this result. In our example, the number of inches is 2.

Therefore, our user's height is 6 feet 2 inches.

Compile and run your program. After you have completed this exercise, demonstrate it to your lab instructor.

**Hints:**

- Define a constant to store the equivalence between kilograms and pounds.
- Define a constant to store the equivalence between meters and feet.
- Define a constant to store the number of inches in a foot.
- Use type casting to obtain the integral part of a float or a double.
- You should format the output text using the '\t' escape sequence as discussed during class to indent the user's information in the output.

**WebCT Submission**

After you have completed both exercises in this lab, upload the file BodyMassIndex.java in WebCT and submit it to receive credit.