

## BMI Calculator

### ICT1002 Programming Fundamentals

**Task Description:** In this task, we develop a Body Mass Index (BMI) Calculator that can be used to calculate your BMI value and weight status while taking your age into consideration. Use the "metric units" tab if you are more comfortable with the international standard metric units. The referenced weight range and calculation formula is listed below. The program requirement is as follows:

1. Allow users to run your program with three input arguments by passing three values to the program: the choice of units, height and weight.
2. Your program will read the three arguments and calculate BMI using the following two formulas:  
$$\text{BMI} = \text{weight}(\text{kg}) / \text{height}^2(\text{m}^2) \quad (\text{Metric Units})$$
$$\text{BMI} = 703 \cdot \text{weight}(\text{lb}) / \text{height}^2(\text{in}^2) \quad (\text{U.S. Units})$$

NOTE: The formulas to calculate BMI are based on two of the most commonly used unit systems.

3. After user inputs all the numbers, if the input numbers are invalid, you need to present an error message "Your input is invalid!". Otherwise, you need to print out BMI and category. The output payment requires to have 2 precisions. For instance, if BMI is 23.456, it should print 23.45. If BMI is 23, it should print 23.00.

### Reference

Your BMI is a measurement of your body weight based on your height and weight. Although your BMI does not actually "measure" your percentage of body fat, it is a useful tool to estimate a healthy body weight based on your height. Due to its ease of measurement and calculation, it is the most widely used diagnostic indicator to identify a person's optimal weight depending on his height. Your BMI "number" will inform you if you are underweight, of normal weight, overweight, or obese. However, due to the wide variety of body types, the distribution of muscle and bone mass, etc., it is not appropriate to use this as the only or final indication for diagnosis.

### BMI Table for Adults

This is the World Health Organization's (WHO) recommended body weight based on BMI values for adults. It is used for both men and women, age 18 or older.

Category	BMI range - $\text{kg/m}^2$
Severe Thinness	< 16
Moderate Thinness	16 - 17
Mild Thinness	17 - 18.5
Normal	18.5 - 25
Overweight	25 - 30

Obese Class I	30 - 35
Obese Class II	35 - 40
Obese Class III	> 40

Example output is as follows. Note that '%0.2f\tSevere Thinness' should be used.

```

BMI Calculator
Do you wish to enter metric units or imperial units: metric
Please enter your height input meters (decimals): 1.80
Please enter your weight input kg: 78
24.07 Normal

BMI Calculator
Do you wish to enter metric units or imperial units: metric
Please enter your height input meters (decimals): 1.78
Please enter your weight input kg: 48
15.15 Severe Thinness

BMI Calculator
Do you wish to enter metric units or imperial units: imperial
Please enter your height input inputches (whole number): 68.90
Please enter your weight input pounds (whole number): 154.32
23.00 Normal

BMI Calculator
Do you wish to enter metric units or imperial units: imperial
Please enter your height input inputches (whole number): 85.63
Please enter your weight input pounds (whole number): 135.68
13.00 Severe Thinness

BMI Calculator
Do you wish to enter metric units or imperial units: abc
Your input is invalid!

BMI Calculator
Do you wish to enter metric units or imperial units: metric
Please enter your height input meters (decimals): 1.60
Please enter your weight input kg: 126
49.22 Obese Class III

```

NOTE: You have to strictly follow the input and output format.