Programming Example

- **Name of the Program: Body Mass Index**
- **Level : Easy**

Body Mass Index

- Body mass index (BMI) or Quetelet Index is a statistical measure of the weight of a person scaled according to height.

- Body Mass Index is defined as the individual's body weight (in KGs) divided by the square of their height (in meters).

- You have to write a program to calculate the BMI and return the persons category as defined in the constraints.

The Prototype of the Function is :

- public String getCategory(float height, float weight)
  - Where the function takes **height** and **weight** as the input and returns category of that BMI Value.
- Constraints
  - The **height** is greater than zero, otherwise return string "invalid"
  - The **weight** is greater than zero, otherwise return string "invalid"
  - bmi range < 15 then category is "starvation"
  - bmi range >=15 && bmi range < 18.5 then category is "underweight"
  - bmi range >=18.5 && bmi range < 25 then category is "normal"

- bmi range >= 25 && bmi range < 30 then category is "overweight"
- bmi range >=30 && bmi range < 40 then category is "obese"
- bmi range >=40 then category is "morbidly obese"

- Example 1
  - Input float height = 200 (CM);
    float weight = 67.8 (KG);
  - Output Function getCategory() Returns "underweight"
  - **Explanation**
    The BMI is ((Weight in KG/ (Height in meter)^2) which will be 67.8/4 = 16.950001. Since this falls in the second category, the function returns the "underweight" as Output.
- Example 2
  - Input float height = 168 (CM);
    float weight = 70.2 (KG);
  - Output Function getCategory() Returns "normal"
- Example 3
  - Input float height = 0 (CM);
    float weight = 70.2 (KG);
  - Output Function getCategory() Returns "invalid"

- For Java solutions
  - Package Name : test.bodymassindex
  - File Name : BMI.java
  - Class Name : BMI
  - Function Name : public String getCategory(float height, float weight)
- **General Instructions** The package names, class names, method signatures to be used are mentioned in the problem statement.
  - Do not use your own names or change the method signatures and fields. You can add any number of additional methods.

Pseudo Code

Body Mass Index

1. Check for the constraint, The **height** is greater than zero, otherwise return string "invalid"
2. Check for the constraint, The **weight** is greater than zero, otherwise return string "invalid"
3. Calculate the body mass index(BMI).
4. Check the category of that BMI value.
5. Return the category from the method.

Program Solution

```
package test.bodymassindex;

public class BMI
{
    public String getCategory(float height, float weight) {
        ///Write your Code Here
        if(height <= 0 || weight <= 0 )
            return “invalid";
        double bmiValue = weight / Math.pow((height/100),2);

        if(bmiValue<15)
                        return "starvation";
          else if(bmiValue >=15 && bmiValue < 18.5)
              return "underweight";
          else if( bmiValue >=18.5 && bmiValue < 25)
              return "normal";
          else if(bmiValue >= 25 && bmiValue <30)
              return "overweight";
          else if(bmiValue >=30 && bmiValue < 40)
              return "obese";
          else if(bmiValue >=40)
              return "morbidly obese";
        return "";
    }
```

```
    public static void main(String[] args)
      {
         //TestCase 1
         try
         {
            float height = 200f;
            float weight = 67.8f;
            String catagory = new BMI().getCategory(height, weight);
            System.out.println(catagory);
         }
         catch(Exception e)
         {
            System.out.println(e);
         }
    }
}
```