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Object Oriented Programming I

Lab Sheet 5 Encapsulation

1. Create a class called **Customer** that includes three instance variables: id (int), name (String) and gender (char). The class contains:

    - A constructor that creates a **Customer** with the specified id, name and gender.
    - Provide get methods for each instance variable.
    - Provide a method **toString** takes no arguments.
    - Write a test program called **TestCustomer** to test the Customer class

2. Create a class called **Students** that include instance variables: id, name, gender, subjectName, and marks.

    - A constructor that creates a **Student** with the specified : id, name, gender, subjectName, and marks.
    - Implement Getter and Setter methods.
    - Create a class called **MarkDeatils** (Main Class)
    - Inside the Main class, you need to get user input values for all the above variables. If the user enters an invalid mark that mark is not to be set.
    - Implement the display method to display above values

3. Create a class **Employee** that include Name, EmpNo, and Salary.
    - A constructor that creates Employee with the Name, EmpNo, and Salary.
    - Implement the Getter and Setter method.
    - Create a class called **EmpDetails** (Main Class)
    - Inside the Main class, you need to get user input values for all the above variables.
    - Method to print above data.
    - You need to validate the following facts inside setter methods
        - The name should not be null or empty

- Salary should be positive

(You need to check with valid user input and invalid user input values and attached the relevant output)

4. Create a class called **Person** that include instance variables: age, weight, height.
   - A constructor that creates Person with the age, weight, height
   - Implement the Getter and Setter method.
   - Create a class called **BMICalculate** (Main Class)
   - Inside the Main class, you need to get user input values for all the above variables and display those values using getter methods.
   - Method to calculate BMI value.
   - Method to getYourStatus by using following facts
   - You need to validate the following facts.
     - The age, weight, height should not be null or empty

   Formula:

   weight (kg) / [height (m)]^2 Or [weight (kg) / height (cm) / height (cm)] x 10,000

WHO Adult BMI Categories

BMI	Category
< 16.0	Severely Underweight
16.0 - 18.4	Underweight
18.5 - 24.9	Normal
25.0 - 29.9	Overweight
30.0 - 34.9	Moderately Obese
35.0 - 39.9	Severely Obese
≥ 40.0	Morbidly Obese

5. Create a class called **SportDetails** that includes playerName and playerAge and sport.
   - A constructor that creates SportDetails with the playerName and playerAge and sport.
   - Implement the Getter and Setter method.
   - Create a class called **PlayerDetails** (Main Class)
   - Inside the Main class you need get user input values and setting to the variables.
   - You need to validate following facts.
     - Age should be 10 – 50 years
     - Player Name and sport should be not null

(You need to check with valid user input and invalid user input values and attached the relevant output)