Core Java Assignment 2.1

1. BMI Calculator

You have been asked to write a Java program to implement a BMI (Body Mass Index) calculator. The program should have the following functionality:

The BMI calculator class should have the following fields:

a. height: A double field to store the height of the person in meters.
b. weight: A double field to store the weight of the person in kilograms.

The BMI calculator class should have the following methods:

a. A constructor to initialize the height and weight fields of the BMI calculator object.
b. Void calculateBMI(): A method to calculate the BMI of the person using the following formula:

BMI = weight / (height * height).

Write a Java program that creates an object of the BMI calculator class, sets the height and weight fields of the BMI calculator object using the Reference Variable, calculates the BMI using the calculateBMI() method, and prints the calculated BMI to the console.

2. Book Inventory Management System

You are required to write a Java program to implement a Book class that can be used to manage a book inventory system.

The Book class should have the following fields:

a. title: A string field to store the title of the book.
b. author: A string field to store the name of the author of the book.
c. publisher: A string field to store the name of the publisher of the book.
d. isbn: A string field to store the ISBN number of the book.
e. year: An integer field to store the year in which the book was published.
f. price: A double field to store the price of the book.
g. quantity: An integer field to store the quantity of the book in the inventory.

The Book class should have following methods

a. Constructor (Default User Defined with some pre Data)
b. Display(); //To Display the instance field

3. Electricity Bill Calculation

Create a class named "ElectricityBill" that has the following instance variables:

a. customerName (String)
b. unitsConsumed (double)
c. billAmount (double)

Define a method named "calculateBillAmount" that calculates the bill amount based on the number of units consumed. The formula for calculating the bill amount is:

a. For the first 100 units: Rs. 5 per unit
b. For the next 200 units: Rs. 7 per unit
c. For the remaining units: Rs. 10 per unit

This method should print billAmount for the particular instance.
Create an instance of the class and assigned it to reference variable of the class.

Define a main method that creates an object of the "ElectricityBill" class and sets the customerName and unitsConsumed instance variables. Then, call the "calculateBillAmount" method to calculate the bill amount and display the customerName, unitsConsumed, and billAmount.

4. Telephone Bill Calculation

You are required to write a Java program to calculate the telephone bill for a given customer based on their usage. The program should take the following inputs from the user:

a. Customer name
b. Phone number
c. Number of calls made
d. Duration of calls (in minutes)

The program should then calculate the bill for the customer based on the following criteria:

a. The first 100 calls are charged at a rate of 50 cents per call.
b. Calls beyond the first 100 are charged at a rate of 25 cents per call.
c. All calls are subject to a minimum duration of 1 minute.
d. Calls with a duration less than 1 minute are rounded up to 1 minute.
e. There is a flat rate of $10 per month for all customers.