SLIIT UNI
THE KNOWLEDGE UNIVERSITY

Faculty of Computing

Module: Programming Paradigm (SE2052)

OOC Lab Sheet

Question 01)

A university wants to build a system to manage student details. Each student has a **student ID, name**, and **GPA**. The **GPA should be between 0.0 and 4.0**. Ensure that these details are properly secured and only accessible through appropriate methods.

a) Create a class named **Student** with studentId (int), name (String), and gpa (double) as attributes.

b) Implement **getters and setters** for each attribute with the following **validations**:

- **GPA** must be **between 0.0 and 4.0**. If an invalid GPA is entered, display an error message.

c) Create a method named **displayStudentDetails()** to display the student's details.

d) Create another class called **StudentApp** with the main method and;

- Create a **Student object**.
- Accept **user input** for the student's ID, name, and GPA using **setters**.
- **Display the student's details** using **displayStudentDetails()**.

Question 02)

A car showroom wants a system to manage car details. Each car has a **registration number, model name**, and **price**.

a) Create a class named **Car** with regNumber (String), modelName (String), and price (double) as attributes

b) Implement the following a **default constructor** and a **parameterized constructor**.

c) Create g**etters and setters** for all attributes.

d) Implement **displayCarDetails()** method to display car information.

e) Implement another class called **CarApp** with the **main method** and:

- Create a **Car object using the default constructor** and **display details**.
- Create **another Car object using the parameterized constructor** and **display details**.

Question 03)

An electricity company wants a system to calculate the monthly **electricity bill** of customers. Each customer has a **customer ID, name**, and **units consumed**. The bill is calculated based on the **units consumed**:

a) Create a class named **Customer** with customerId (int), name (String), and unitsConsumed (int) as attributes.

b) Implement a **Parameterized constructor**.

c) **Getters and setters** for each attribute.

d) Implement a method called **calculateBill()** which returns the bill amount based on the units consumed:

- Up to 100 units → Rs. 20 per unit
- 101 to 300 units → Rs. 30 per unit
- Above 300 units → Rs. 40 per unit

e) Implement a method called **displayCustomerDetails()** to display the **Customer ID, Name, Units Consumed, and Bill Amount**.

f) Create a class called **CustomerApp with the main method** and;

a. **Accept user input** for the **customer's details**.

b. **Display the customer's details**, including the **calculated bill amount**.

```
Enter Customer ID: 1001
Enter Customer Name: Kasun De Silva
Enter Units Consumed: 295

Customer Details:
Customer ID: 1001
Name: Kasun De Silva
Units Consumed: 295
Bill Amount: Rs. 8850.0
```