Java Coding Activity – Fuel Station Billing System

Question Statement:

You are required to design and implement a simple **fuel station billing system** using Java interfaces and classes.
The objective is to demonstrate the use of **interfaces, constants, and polymorphism** in calculating fuel bills for different types of vehicles.

What is Given to the You:

You are provided with a FuelStation interface. This interface contains:

1. **Constants** for fuel price per litre for different vehicle types:

   double PETROL_PRICE = 105.5;

   double DIESEL_PRICE = 92.3;

   double CNG_PRICE = 78.9;

2. **Abstract Methods**:

   1. void fillFuel(String vehicleNumber, double litres);

   2. double calcBill(double litres);

What to Implement:

1. Create **three classes** — PetrolVehicle, DieselVehicle, and CNGVehicle — that implement the FuelStation interface.

2. In each class:

   o Implement the fillFuel method to display a **message confirming the fuel type and quantity filled** for that vehicle.

   o Implement the calcBill method to calculate the **total bill** using the relevant fuel price constant from the interface.

3. Create a BillingCounter class that contains a method generateBill.

4. The generateBill method should accept:

   o A FuelStation object (any vehicle type)

   o The **vehicle number**

   o The **litres of fuel filled**

5. Inside generateBill:

   o Call fillFuel to display the fuel filling message.

o   Call calcBill to display the **calculated bill amount**.

Method Signature in BillingCounter Class:

public void generateBill(FuelStation f, String vehicleNumber, double litres)

Sample Output Example:

Filling 20.0 litres of Petrol for vehicle HP12AB1234.

Total Bill: ₹2110.0

Filling 15.0 litres of Diesel for vehicle PB10CD5678.

Total Bill: ₹1384.5

Filling 10.0 litres of CNG for vehicle CH01EF4321.

Total Bill: ₹789.0