JAVA LAB – PRACTICE QUESTIONS

1. Write a Student class with:

   String name
   int rollNo
   double marks

   Add methods:
   displayDetails() – to print the student's details.
   acceptDetails() – to enter marks and other details
   checkPass() – returns true if marks > 40, else false.
   Create 3 Student objects, and test these methods.

2. Create a BankAccount class with three constructors:

   - ✓ A constructor that takes only the account number.
   - ✓ A constructor that takes the account number and the initial balance.
   - ✓ A constructor that takes the account number, balance, and the account holder's name.

   Write methods to deposit and withdraw amounts from the account and display the balance. Test all the constructors by creating objects.

3. Create an **array of Employee objects** where each of the objects should have members such as Emp_ID, Emp_name, Designation and Salary. Get the details from the user. There should be methods for getting the values from the user as well as to display the marks.

4. Create a class AreaCalculator with overloaded methods:
   calculateArea(int radius) to calculate the area of a circle.
   calculateArea(int length, int breadth) to calculate the area of a rectangle.
   calculateArea(double side) to calculate the area of a square.

   Write a program that calculates the area of a circle, rectangle, and square using overloaded methods.

5. Create a class Calculator with overloaded max() methods:
   max(int a, int b) to find the maximum of two integers.
   max(double a, double b) to find the maximum of two doubles.
   max(int a, int b, int c) to find the maximum of three integers.
   Write a program to test the max() method.

6. Create a HotelRoom class with overloaded constructors for:

   - ✓ Booking a room with just room number.
   - ✓ Booking a room with room number and customer name.
   - ✓ Booking a room with room number, customer name, and number of days for stay.

   Write methods calcPrice() to calculate the total price based on the number of days and displayDetails() to display room details.

7. Create a base class Shape with:
   A method area() that prints "Area not defined".
   Create a derived class Rectangle that extends Shape and overrides the area() method to calculate and print the area of a rectangle.
   Create another class Square that extends Rectangle and overrides the area() method to calculate and print the area of a square.

   Create objects of both Rectangle and Square and test the area() method.

8. Write a Person class with attributes:
   String name
   Method display() to print the person's name.
   Create a Employee class that inherits from Person and has:
   int salary
   Override the display() method to print the employee's name and salary.
   Use the super keyword to call the parent class display() method.
   Create an Employee object and test the display() method.

9. Create an abstract class Employee with:
   Abstract method calculateSalary().
   Create two concrete subclasses:
   FullTimeEmployee: Has a fixed salary and overrides calculateSalary().
   PartTimeEmployee: Has an hourly rate and hours worked, overrides calculateSalary().

   Write a program to create objects of both types of employees, calculate their salaries, and print the result.

10. Create two interfaces:
    Person: with a method void eat().
    Worker: with a method void work().
    Create another interface Employee that extends both Person and Worker, adding a method void salary().
    Create a class Engineer that implements Employee and provides definitions for all methods.

    Write a program to create an Engineer object and call the methods.