Java lab

**Practical 1**

1. **write a java program which does the creation of class and objects.**

public class Person {

// Fields (member variables) to store data about a person

private String name;

private int age;

// Constructor - Initializes the object's state

public Person(String name, int age) {

this.name = name;

this.age = age;

}

// Methods (member functions) to define behavior

public void introduce() {

System.out.println("Hello, my name is " + name + " and I am " + age + " years old.");

}

// Getter method to access private field (optional)

public String getName() {

return name;

}

// Setter method to modify private field (optional)

public void setName(String name) {

this.name = name;

}

}

public class Main {

public static void main(String[] args) {

// Create objects of the Person class

Person person1 = new Person("Alice", 30);

Person person2 = new Person("Bob", 25);

// Call methods on the objects

person1.introduce();

person2.introduce();

// Access and modify data using getter and setter (optional)

String name = person1.getName();

System.out.println("Person 1's name: " + name);

person1.setName("Alice Smith");

person1.introduce();

}

}

**Practical 2**

**usage of import statement and package declaration in java program**

// Package declaration (optional)

package com.example.shapes; // This is an example package name

// Import statements

import java.util.Scanner; // Import the Scanner class from the java.util package

public class Circle {

// Fields

private double radius;

// Constructor

public Circle(double radius) {

this.radius = radius;

}

// Method to calculate area

public double calculateArea() {

return Math.PI \* radius \* radius;

}

public static void main(String[] args) {

// Scanner object from imported java.util package

Scanner scanner = new Scanner(System.in);

System.out.println("Enter the radius of the circle: ");

double radius = scanner.nextDouble();

// Create a Circle object

Circle circle = new Circle(radius);

// Calculate and print area

double area = circle.calculateArea();

System.out.println("Area of the circle: " + area);

scanner.close(); // Good practice to close the scanner

}

}

**Practical 3**

**Declaring variables of various data types and their effects by changing the access modifiers like private, public, protected, default**

1. **Private**: The access level of a private modifier is only within the class. It cannot be accessed from outside the class.
2. **Default**: The access level of a default modifier is only within the package. It cannot be accessed from outside the package. If you do not specify any access level, it will be the default.
3. **Protected**: The access level of a protected modifier is within the package and outside the package through child class. If you do not make the child class, it cannot be accessed from outside the package.
4. **Public**: The access level of a public modifier is everywhere. It can be accessed from within the class, outside the class, within the package and outside the package.

**Practical 4**

**Usage of java keywords final, static, transient, volatile, synchronized at appropriate places in java program**

**Practical 5**

**Writing programs which make use of Arithmetic Operators, comparison Operators, Logical Operators, Bitwise Operators.**

**Practical 6**

**Writing programs which make use of && and || operators**

**Practical 7**

**Write java programs, which make use of control statement like if, while do, do while, try, catch, finally, throw, throws**

**Practical 8**

**Write code snippets which make usage of Method overloading, method overriding, recursion**

**Practical 9**

**Using super, this, super(), this() in java program**

**Practical 10**

**Write java program, which make usage of exception handling**

**Practical 11**

**Write java program that make usage of java lang.awt package and design GUI**

**Practical 12**

**Usage of event handling in java GUI (graphical user interface) programs.**