**1. Create a class called Employee that includes three pieces of information as instance variables: first name, last name, and monthly salary. Your class should have a constructor that initializes the three instance variables. Provide a setter and getter method for each instance variable. If the monthly salary is not positive, set it to 0.0. Write a test application named EmployeeTest that demonstrates the Employee class's capabilities. Create two Employee objects and display each object's yearly salary. Then give each Employee a 10% raise and display each Employee's yearly salary again**

public class Employee {

private String firstName;

private String lastName;

private double monthlySalary;

public Employee(String firstName, String lastName, double monthlySalary) {

this.firstName = firstName;

this.lastName = lastName;

setMonthlySalary(monthlySalary);

}

public String getFirstName() {

return firstName;

}

public void setFirstName(String firstName) {

this.firstName = firstName;

}

public String getLastName() {

return lastName;

}

public void setLastName(String lastName) {

this.lastName = lastName;

}

public double getMonthlySalary() {

return monthlySalary;

}

public void setMonthlySalary(double monthlySalary) {

if (monthlySalary > 0) {

this.monthlySalary = monthlySalary;

} else {

this.monthlySalary = 0.0; // Salary should be positive

}

}

public double getYearlySalary() {

return monthlySalary \* 12;

}

public void giveRaise() {

this.monthlySalary \*= 1.10;

}

}

public class EmployeeTest {

public static void main(String[] args) {

Employee emp1 = new Employee("John", "Doe", 3000);

Employee emp2 = new Employee("Jane", "Smith", 4000);

System.out.println(emp1.getFirstName() + " " + emp1.getLastName() + "'s yearly salary: $" + emp1.getYearlySalary());

System.out.println(emp2.getFirstName() + " " + emp2.getLastName() + "'s yearly salary: $" + emp2.getYearlySalary()); emp1.giveRaise(); emp2.giveRaise();

System.out.println("\nAfter 10% raise:");

System.out.println(emp1.getFirstName() + " " + emp1.getLastName() + "'s yearly salary: $" + emp1.getYearlySalary());

System.out.println(emp2.getFirstName() + " " + emp2.getLastName() + "'s yearly salary: $" + emp2.getYearlySalary());

}

}

**Output:** John Doe's yearly salary: 36000.0

Jane Smith's yearly salary: 48000.0

After 10% raise:

John Doe's yearly salary: 39600.0

Jane Smith's yearly salary: 52800.0

**2.Implement a Java program to print the area of a rectangle by creating a class named 'Area' that has two methods. The** **first method, named 'setDim', takes the length and breadth of the rectangle as parameters. The second method, named 'getArea', returns the area of the rectangle. The length and breadth of the rectangle are entered through the keyboard.**

import java.io.\*;

class Area{

double length;

double breadth;

void setDim(double l,double b){

length=l;

breadth=b;

}

double getArea(){

System.out.println("length="+length);

System.out.println("breadth="+breadth);

return length\*breadth;

}

public static void main(String args[])

{

 Area a=new Area();

 a.setDim(2.3,4);

 a.getArea();

System.out.println("Area="+ a.getArea());

}

}

**Output:**

length=2.3

breadth=4.0

Area=9.2

**3. Write a Java program to demonstrate the use of static variables, static blocks, and static methods.**

public class StaticDemo {

static int count = 0;

static {

System.out.println("Static block executed. Initializing static variable...");

count = 100;

}

public static void displayCount() {

System.out.println("Current count value: " + count);

}

public StaticDemo() {

count++;

}

public static void main(String[] args) {

StaticDemo.displayCount();

StaticDemo obj1 = new StaticDemo();

StaticDemo obj2 = new StaticDemo();

StaticDemo.displayCount();

}

}

**Output:**

Static block executed. Initializing static variable...

Current count value: 100

Current count value: 102

**4. Write a Java program to implement a stack**

import java.util.Scanner;

class Stack {

int size = 5;

    int Stk[] = new int[size];

    int i, ele, top;

Stack() {

        top = -1;

    }

void push() {

        if (top == size - 1) {

            System.out.println("Stack is full");

        } else {

            Scanner sc = new Scanner(System.in);

            System.out.print("Enter element to push: ");

            ele = sc.nextInt();

            top++;

            Stk[top] = ele;

        }

    }

  void pop() {

        if (top == -1) {

            System.out.println("Stack is empty");

        } else {

            ele = Stk[top];

            top--;

            System.out.println("Popped element: " + ele);

        }

    }

void display() {

        if (top == -1) {

            System.out.println("Stack is empty");

        } else {

            System.out.println("Stack elements are:");

            for (int i = top; i >= 0; i--) {

                System.out.println(Stk[i]);

            }

        }

    } public static void main(String[] args) {

        Stack s = new Stack();

        Scanner sc = new Scanner(System.in);

        int select;

  do {

            System.out.println("\n1. Push\n2. Pop\n3. Display");

            System.out.print(": Select from following: ");

            select = sc.nextInt();

switch (select) {

                case 1: s.push(); break;

                case 2: s.pop(); break;

                case 3: s.display(); break;

                default: System.out.println("Invalid choice! Please try again.");

            }

        } while (select != 3);

    }

}

**Output:**

1. Push

2. Pop

3. Display

: Select from following: 1

Enter element to push: 2

1. Push

2. Pop

3. Display

: Select from following: 3

Stack elements are:

2

**5. Write a Java program to arrange 10 names in alphabetical order.**

import java.util.Arrays;

import java.util.Scanner;

public class NameSorter {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        String[] names = new String[10];

        System.out.println("Enter 10 names:");

        for (int i = 0; i < 10; i++) {

            names[i] = scanner.nextLine();

        }

  Arrays.sort(names);

System.out.println("\nNames in alphabetical order:");

        for (String name : names) {

            System.out.println(name);

        }

scanner.close();

    }

**Output:**

Enter 10 names:

Saniya

Bharat

Shubhangi

shubham

Virat

shruti

Shravani

Aaditi

Vedika

Sanvi

Names in alphabetical order:

Aaditi

Bharat

Saniya

Sanvi

Shravani

Shubhangi

Vedika

Virat

shruti

shubham