**MANAV RACHNA UNIVERSITY, FARIDABAD**

**Department of Computer Science and Technology**

# Course: B.Tech. CSE Semester: III

**Subject: Object Oriented Programming using Java (CSH201B-T&P)**

***Lab: 06*** *Use of static and this keyword in Java*

***Objective:*** *Programs on static and this keyword in Java.*

***Course Outcomes:***

**CSH201B.1:** To impart **understanding** of basic programming concepts in Java language.

**CSH201B.2:** To enable the student to articulate given program scenario and **apply** different programming constructs.

***Blooms Taxonomy Level****: BT1, BT2, BT3*

Q1. WAP in java to define a class MyNumber having one private int data member. Write a default constructor to initialize it to 0 and another constructor to initialize it to a value (Use this for initialization). Write methods isNegative(), isPositive(), isZero(), isOdd(), isEven(). Create an object in main(). Use Scanner class to pass a value to the object.\

import java.util.Scanner;

public class MyNumber {

private int num;

public MyNumber() {

this.num = 0;

}

public MyNumber(int num) {

this.num = num;

}

public boolean isNegative() {

return num < 0;

}

public boolean isPositive() {

return num > 0;

}

public boolean isZero() {

return num == 0;

}

public boolean isOdd() {

return num % 2 != 0;

}

public boolean isEven() {

return num % 2 == 0;

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a number: ");

int n = sc.nextInt();

MyNumber myNum = new MyNumber(n);

System.out.println("Is negative? " + myNum.isNegative());

System.out.println("Is positive? " + myNum.isPositive());

System.out.println("Is zero? " + myNum.isZero());

System.out.println("Is odd? " + myNum.isOdd());

System.out.println("Is even? " + myNum.isEven());

}

}

Q2. Define a Student class (roll number, name, percentage). Define a default and parameterized constructor. Override the toString method. Keep a count of objects created.

Create objects using parameterized constructor and display the object count after each object is created. (Use static member and method). Also display the contents of each object.

public class Student {

private int rollNo;

private String name;

private double percentage;

private static int count = 0;

public Student() {

this.rollNo = 0;

this.name = "";

this.percentage = 0.0;

count++;

}

public Student(int rollNo, String name, double percentage) {

this.rollNo = rollNo;

this.name = name;

this.percentage = percentage;

count++;

}

public static int getCount() {

return count;

}

@Override

public String toString() {

return "Roll Number: " + rollNo + "\nName: " + name + "\nPercentage: " + percentage + "%";

}

public static void main(String[] args) {

Student s1 = new Student(1, "John", 80.0);

System.out.println(s1);

System.out.println("Number of objects created: " + Student.getCount());

Student s2 = new Student(2, "Jane", 90.0);

System.out.println(s2);

System.out.println("Number of objects created: " + Student.getCount());

}

}

Q3. Implement the following Box

-Width: double

-Height: double

-Depth: double

+Box(double,double,double)

+Volume():double

Q3.Write a class TestBox that will contain main method. Create two objects of Box namely box1 and box2 having values 10,20,30 and 5,8,9 respectively for width height and depth. Calculate the volume and print on console.

class Box {

private double width;

private double height;

private double depth;

public Box(double width, double height, double depth) {

this.width = width;

this.height = height;

this.depth = depth;

}

public double volume() {

return width \* height \* depth;

}

}

public class TestBox {

public static void main(String[] args) {

Box box1 = new Box(10, 20, 30);

Box box2 = new Box(5, 8, 9);

double volume1 = box1.volume();

double volume2 = box2.volume();

System.out.println("Volume of box1: " + volume1);

System.out.println("Volume of box2: " + volume2);

}

}