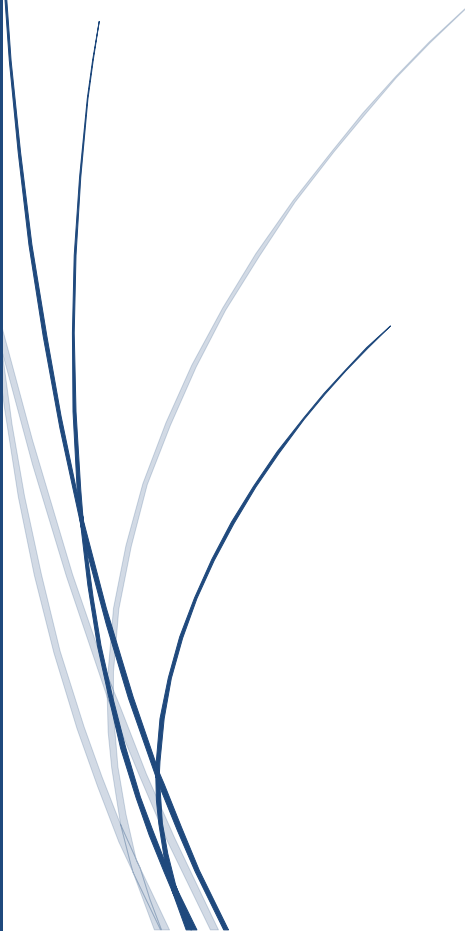




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SUBJECT : JAVA PROGRAMMING
LAB
SUBJECT CODE : MCAPCL206
ACADEMIC YEAR : 2025



1. Write a Java program to print the following triangle of numbers

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

Program

```
class Program1 {  
    public static void main(String[] args) {  
        int n = 5;  
        for (int i = 1; i <= n; i++) {  
            for (int j = 1; j <= i; j++)  
                System.out.print(j + " ");  
            System.out.println();  
        }  
    }  
}
```

Output

```
1  
1 2  
1 2 3  
1 2 3 4  
1 2 3 4 5
```

2. Write a Java program to list the factorial of the numbers 1 to 10. To calculate the factorial value, use while loop. (Hint Fact of 4 = 4*3*2*1)

Program

```
class Program2 {  
    public static void main(String[] args) {  
        int fact = 1, i = 1;  
        while( i <= 10 )  
            System.out.println(i + "! = " + (fact = fact * i++));  
    }  
}
```

Output

```
1! = 1  
2! = 2  
3! = 6  
4! = 24  
5! = 120  
6! = 720  
7! = 5040  
8! = 40320  
9! = 362880  
10! = 3628800
```

3. Write a Java program

- To find the area and circumference of the circle by accepting the radius from the user.
- To accept a number and find whether the number is Prime or not

3.1 To find the area and circumference of the circle by accepting the radius from the user.

Program

```
import java.util.Scanner;

public class Program3a {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter Circle Radius: ");
        double radius = sc.nextDouble();
        System.out.println("Area of Circle: " + (Math.PI * radius * radius));
        System.out.println("Circumference of Circle: " + (2 * Math.PI * radius));
    }
}
```

Output

```
Enter Circle Radius: 5
Area of Circle: 78.53981633974483
Circumference of Circle: 31.41592653589793
```

3.2 To accept a number and find whether the number is Prime or not

Program

```
import java.util.Scanner;

public class Program3b {
    public static void main(String[] args) {
        System.out.print("Enter a number to check prime or not: ");
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int flag = 0, m = n/2;
        if(n!=0 && n!=1)
        {
            for (int i = 2; i <= m; i++){
                if(n%i==0)
                    flag = 1;
            }
        }
        else
            flag = 1;
        if(flag == 0)
            System.out.println(n + " is a prime number");
        else
            System.out.println(n + " is not a prime number");
    }
}
```

Output 1

Enter a number to check prime or not: 5
5 is a prime number

Output 2

Enter a number to check prime or not: 0
0 is not a prime number

Output 3

Enter a number to check prime or not: 10
10 is not a prime number

4. Write a Java program to demonstrate a division by zero exception

Program

```
public class Program4 {  
    public static void main(String[] args) {  
        try  
        {  
            int a = 5, b = 0;  
            System.out.println("Quotient: "+ (a/b));  
        }  
        catch (ArithmeticException e)  
        {  
            System.out.println("Number cant be divided by zero ");  
        }  
    }  
}
```

Output

```
Number cant be divided by zero
```

5. Write a Java program to implement Inner class and demonstrate its Access protection.**Program**

```
class Outer {
    private int outdata = 10;

    void display() {
        Inner in = new Inner();
        System.out.println("Accessing from outer class");
        System.out.println("The value of outdata is " + outdata);
        System.out.println("The value of indata is " + in.indata);
        System.out.println();
    }

    class Inner {
        private int indata = 20;

        void inmethod() {
            System.out.println("Accessing from inner class");
            System.out.println("The sum of indata & outdata is " + (outdata + indata));
        }
    }
}

class Program5 {
    public static void main(String args[]) {
        Outer out = new Outer();
        out.display();
        Outer.Inner in = out.new Inner();
        in.inmethod();
    }
}
```

Output

Accessing from outer class

The value of outdata is 10

The value of indata is 20

Accessing from inner class

The sum of indata & outdata is 30

6. Write a Java program to demonstrate Constructor Overloading and Method Overloading

Program

```
public class Program6 {  
    //Constructor Overloading  
    Program6()  
    {  
        System.out.println("Welcome");  
    }  
  
    Program6(String name)  
    {  
        System.out.println("Welcome " + name);  
    }  
    //Method Overloading  
    public void add(int a, int b)  
    {  
        System.out.println("Sum of " + a + " + " + b + " = " + a+b);  
    }  
  
    public void add(double a, double b)  
    {  
        System.out.println("Sum of " + a + " + " + b + " = " + (a+b));  
    }  
    public static void main(String[] args) {  
        Program6 p1 = new Program6();  
        Program6 p2 = new Program6("Yogeesh S");  
        p1.add(5, 6);  
        p1.add(5.2, 6.4);  
    }  
}
```

Output

```
Welcome  
Welcome XYZ  
  
Sum of 5 + 6 = 56  
Sum of 5.2 + 6.4 = 11.600000000000001
```

7. Write a JAVA program to demonstrate Inheritance. Simple Program on Java for the implementation of Multiple inheritance using interfaces to calculate the area of a rectangle and triangle.

Program

```
interface Rectangle {  
    void drawRect();  
}  
  
interface Circle {  
    void drawCircle();  
}  
  
class Shapes implements Rectangle, Circle {  
    public void drawRect() {  
        System.out.println("Circle Drawn");  
    }  
    public void drawCircle() {  
        System.out.println("Rectangle Drawn");  
    }  
}  
  
public class Program7 {  
    public static void main(String args[]) {  
        Shapes s = new Shapes();  
        s.drawRect();  
        s.drawCircle();  
    }  
}
```

Output

```
Circle Drawn  
Rectangle Drawn
```

8. Write a Java applet program, which handles keyboard event.**Program**

```
import java.applet.*;
import java.awt.*;
import java.awt.event.*;

//<applet code="Program8.java" width=600 height=200></applet>

public class Program8 extends Applet implements KeyListener {
    String msg = "", key;

    public void init() {
        addKeyListener(this);
    }

    public void paint(Graphics g) {
        g.drawString(msg, 150, 100);
    }

    public void keyReleased(KeyEvent ke) {
        showStatus(key + " Key Released");
    }

    public void keyPressed(KeyEvent ke) {
        int keycode = ke.getKeyCode();
        key = ke.getKeyText(keycode);
        repaint();
        showStatus(key + " Key Pressed");
    }

    public void keyTyped(KeyEvent ke) {
        char c = ke.getKeyChar();
        msg += c;
        key = String.valueOf(c);
        repaint();
    }
}
```

Output

