

OOPs with JAVA LAB MANUAL [21ECI62]



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAGARJUNA COLLEGE OF ENGINEERING & TECHNOLOGY

(A unit of Nagarjuna Education Society)

Mudugurki (V), Venkatagirikote (P), Devanahalli (T), Bangalore(R) – 562164

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OOPs with JAVA LAB MANUAL [20CSI71]

By,

Ms. BHOOMIKA K S

Assistant Professor

Department of Computer Science and Engineering

NAGARJUNA COLLEGE OF ENGINEERING & TECHNOLOGY

1. A) Develop a Java program for an advanced arithmetic calculator that takes two integer operands and an operator from the user. The program should be capable of performing addition, subtraction, multiplication, and division.

```
package p1;
import java.util.Scanner;
public class lab1 {
    public static void main(String[] args) {
        int a,b;
        String ch;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the operand 1:");
        a=sc.nextInt();
        System.out.println("Enter the operator:");
        ch=sc.next();
        System.out.println("Enter the operand 2:");
        b=sc.nextInt();
        switch(ch) {
            case "+":
                System.out.println("the value is:");
                System.out.println(a+b);
                break;
            case "-":
                System.out.println("the value is:");
                System.out.println(a-b);
                break;
            case "*":
                System.out.println("the value is:");
                System.out.println(a*b);
                break;
            case "/":
                System.out.println("the value is:");
                System.out.println((float)a/(float)b);
                break;
            case "%":
                System.out.println(a%b);
                break;
            default:
                System.out.println("Invalid Operator!!! Enter the valid operator");
        }
    }
}
```

Output:

OUTPUT 1:- Enter the operand 1: 6 Enter the operator: + Enter the operand 2: 7 the value is: 13	OUTPUT 2:- Enter the operand 1: 6 Enter the operator: - Enter the operand 2: 7 the value is: -1	OUTPUT 3:- Enter the operand 1: 6 Enter the operator: * Enter the operand 2: 7 the value is: 42
OUTPUT 4:- Enter the operand 1: 6 Enter the operator: / Enter the operand 2: 7 the value is: 0.85714287	OUTPUT 5:- Enter the operand 1: 6 Enter the operator: % Enter the operand 2: 7 the value is: 6	OUTPUT 6:- Enter the operand 1: 4 Enter the operator: 4 Enter the operand 2: 7 Invalid Operator!!! Enter the valid operator

1. B) Write a Java program to generate the first 'n' terms of the Fibonacci series

```
package p1;
import java.util.Scanner;
public class Lab_Program_1b {

    public static void main(String[] args)
    {
        int n, i, first, second, next;
        System.out.println("Enter the value of n");
        Scanner sc = new Scanner(System.in);
        n=sc.nextInt();

        first=0;
        second=1;

        System.out.println("Fibonacci series are:\n");
        System.out.print(first+"\t"+second);

        for(i=2;i<=n-1;i++)
        {
            next=first+second;
            System.out.print("\t"+next);
            first=second;
            second=next;
        }
    }
}
```

OUTPUT:-

Enter the value of n

9

Fibonacci series are:

0 1 1 2 3 5 8 13 21

2. A) Develop a Java program showcasing method overloading with a base class "Phone" containing the dial() method, and two subclasses "CameraPhone" and "SmartPhone" that inherit from the base class and enhance its features. The program should demonstrate and print the results of these enhancements.

```
package p1;
class phone
{
    void dial() {
        System.out.println("Calling friend using this number through a regular phone");
    }
}
class camera_phone extends phone {
    void dial(String n) {
        System.out.println("calling "+n+"using camera phone");
    }
    void take_photo() {
        System.out.println("Take photo using camera phone");
    }
}
class smart_phone extends camera_phone{
    void dial(String n , boolean b) {
        if(b) {
            System.out.println("calling "+n+"through video call");
        }
        else {
            System.out.println("calling "+n+"through normal voice call");
        }
    }
    void acces_internet() {
        System.out.println("Accessing internet for WWW");
    }
}
public class Lab_Program2a {

    public static void main(String[] args) {
        phone p=new phone();
        p.dial();
        camera_phone c=new camera_phone();
        c.dial();
        c.dial("Priya ");
    }
}
```

```

        c.take_photo();

        smart_phone s=new smart_phone();
        s.dial("Priya ",true);
        s .acces_internet();
    }
}

```

OUTPUT:-

Calling friend using this number through a regular phone
 Calling friend using this number through a regular phone
 calling Priya using camera phone
 Take photo using camera phone
 calling Priya through video call
 Accessing internet for WWW

2.B) Develop a Java program illustrating constructor overloading for calculating the area of a rectangle and a circle using appropriate constructors.

```

package p1;
import java.math.*;
class Shape_A_C{
    Shape_A_C(int r){
        System.out.println("A circle is created");
        System.out.println("Area of circle which was created is
" +(Math.PI*r*r)+" cm2");
    }
    Shape_A_C(int l,int b){
        System.out.println("A rectangle is created");
        System.out.println("Area of rectangle which was created is
" +(l*b)+"cm2");
    }
}
public class Lab_Program2b {

    public static void main(String[] args) {
        new Shape_A_C(4);
        new Shape_A_C(3,4);
    }
}

```

OUTPUT:-

A circle is created
 Area of circle which was created is 50.26548245743669 cm2
 A rectangle is created
 Area of rectangle which was created is 12cm2