LAB -1

Sample Programe

1.
```
class Hello
{
    public static void main (String arg[])
    {
        System.out.println ("Hello World");
    }
}
```

- Output
Hello World

2. Sum, difference, product and quotient

```
class Calc
{
    public static void main (String arg[])
    {
        int a = 2; int b = 4;
        System.out.println ("Sum" + (a+b));
        System.out.println ("Difference" + (b-a));
        System.out.println ("Product" + (a*b));
        System.out.println ("Quotient" + (b/a));
    }
}
```

Output
Sum 6
Difference 2
Product 8
Quotient 2

3. Fibonacci Series

```
class Fib
{
    public static void main (String arg[])
    {
        int a=0; int b=1; int i=0, c;
        System.out.println ("a +"\n" +b);
        while (i<7)
        {
            System.out.println (a+b);
            c=a+b;
            a=b;
            b=c;
            i++;
        }
    }
}
```

Output

0
1
1
2
3
5
8
13
21

4. Prime Number

```
class Number
{
    public static void main ( String arg[])
    {
        int a = 9; int b= 11;
        int c=0;
        for(int i= 2; i<a; i++)
          { if ( a%i ==0)
                c++;
          }
        if (c>0)
        else System.out.println("9 is not Prime");
        c=0;
        for (int i =2; i<b; i++)
        {
            if ( b%i ==0 )
                i++;
        }
        if(c>0)
            System.out.println("11 is not Prime");
        else
            System.out.println("11 is prime");
    }
}
```

Output

9 is not a Prime Number

11 is a Prime Number

LAB-2

P1.
```
import java.util.*;
class Grocery
{
    double g_dal;
    double g_pulses;
    double
```

P1: Write a java program to create class Student with members USN, name, marks (6 subjects). Include methods to accept student details and marks. Also include a method to calculate percentage and display appropriate details. (Array of Student object to be created.)

```
import java.util.*;
class Student
{
    private String usn;
    private String name;
    private String int[] marks;

    public Student (String usn, String name
    {
        this.usn = usn;
        this.name = name;
        this.marks = new int [6];
    }
```

```
public void acceptDetails () {
  Scanner sc = new Scanner (System.in);
  System.out.println (" Enter USN:");
  this.usn = sc.nextLine();
  System.out.println ("Name:");
  this.name = sc.nextLine();

  for(int i=0; i<marks.length; i++)
  {
     System.out.println("Enter marks
     for subject " + (i+1) + ":");
      this.usn marks[i] = sc.nextInt();
  }
}
public double calculate()
  {
     int totalmarks = 0;
     for (int i=0 ; i<6; i++)
     {
          totalmarks += marks[i];
     }
     return (double) totalmarks / marks.
            length;
  }
public void display()
  {
     sopln("USN:", this.usn);
     sopln("Name:", this.name);
     sopln ("Marks:");
     for (int i=0 ;i<6; i++)
        sopln(marks[i]);
     sopln (calculate());
```

```
public class ArrayStud {
public static void main (String
    args[])
{
    Scanner sc= new Scanner(System.in);
    System.out.println("Enter number of students");
    int num= sc.nextInt();
    Student students[] = new Student[num];
    for (i=0; i < num; i++)
    {
        System.out.println("Enter details");
        students[i] = new Student();
        students[i] = acceptDetails();
    }
    System.out.println("Details");
    for (Student student : students)
        student.display();
}
```

Output

```
No of Students: 2
Name: Ganesh
Marks1: 90
Marks2: 90
  "  3: 90
  "  4: 90
  "  5: 90
  "  6: 90
```

10 digits

USN: 1BM21CS009
Name: Gangi
Marks: 90
90
90
90
90
90
Percentage: 90%.

Q2: Quadratic

```
import java.util.*;
import lang java.lang*;

class Quadratic
{
    public static void main(String args[]);
    {
        int a,b,c;
        sopln("Enter values of a,b and
          c");
        Scanner sc= new Scanner(System.in);
        a = sc.nextInt();
        b = sc.nextInt();
        c = sc.nextInt();
        double d = b*b - 4*a*c;
        if (a==0)
            sopln("Not a Q eq");
        else
            if (d>0)
        Equation eq = new Equation(a,b,c);
        eq.quad();
}
```

P3: Create a class Book that contains 4 members name, author, price and num_pages... ... to create n book objects

```
import java.util.*;
class Books
{
    String name, author;
    int price, nop;
    Books() {}
    Books(String name, String author,
          int price, int nop)
    {   this.name=name;
        this.author=author;
        this.price=price;
        this.nop=nop;
    }

    public String toString()
    {
        String name, author;
        int price, nop;
        name= "Book name: " +
              this.name, + "\n");
        author= "Author: " + this.author + "\n");
        price= "Price" + this.price + "\n");
        nop = "Nop" + this.nop + "\n";
        return name+author+price+nop;
    }
}
class Main
```

```
public static void main (String args[])
{
    Scanner s = new Scanner (System.in);
    int n;
    String name, author;
    int price, nop;
    System.out.println ("Enter no of books");
    n = s.nextInt();
    Books b E];
    b = new Books [n];
    for (int i=0; i<n; i++)
    {
        System.out.println("Book" + (i+1) + ":");
        Sop ln("Enter name:");
        name = s.next();
        Sop ln("Enter author");
        author = S.next();
        Sop ln ("Enter price");
        price = s.nextInt();
        Sop ln ("Enter nop"); nop = s.nextInt();
        b[i] = Books (name, author, price, nop);
    }
    for (int i=0; i<n; i++)
        Sop ln ("Book" + (i+1) + "\n" + b[i]);
}
```

Output

```
Enter no of books : 1
Book1:
Name : Jungle Book
Author : Rudyard Kipling
Price: 300
Nop : 300
```

```
Book1:
Name : Jungle Book
Author: Rudyard Kipling
Price : 300
Nop : 300
```

```
class Equation
{
    int a, b, c;
    Equation (int x, int y, int z);
    {
        a = x;
        b = y;
        c = z;
    }
    quad ()
    {
        if (a==0)
            Sopln ("Not a eq");
        else if (d>0)
        {
            sopln ("Two real and
                different soln");
            double r1 = -b+Math.
                sqrt(d)/(2*a));
            "      r2 =      ";
            Sopln (r1);
            sopln (r2);
        }
    else if (d==0)
        {
        sopln ("Real and same
            roots");
        r1 = -b + Math.sqrt(d/2*
        r2 =  "  "
        Sopln (r1);
        Sopln (r2);
    }
```

```
else if (d<0)
    {
    {
    Sopln("Unreal Solutions");
    }
}
```

Output

Enter the values of a, b, c

2

3

2

Unreal Solutions

8/1/2024

LAB

P1: Develop a java program to create an abstract ..... prints the area of the given shape.

```
import java.lang;
import java.util.*;

abstract class Shape
{
    protected int d1;
    protected int d2;

    public Shape(int d1, int d2)
    { this.d1 = d1;
      this.d2 = d2;
    }
    public abstract void printArea();
}

class Rectangle extends Shape {
{
    public Rectangle(int l, int w)
    {
        super(l, w);
    }
    public void printArea()
    {
        double area = d1*d1;
```

```
        System.out.println ("Area of
        Rectangle :" + area);
    }
}

class Triangle extends shape
{
    public Triangle (int base,
        int height)
    {
        super (base, height);
    }
    public void printArea()
    {
        int area = 0.5 * d1 * d2;
        Sopln ("Area of Triangle" + area);
    }
}

class circle extends shape
{
    public circle (int radius)
    {
        super (radius, 0);
    }
    public void printArea()
    {
        double area = 3.14 * d1 * d2;
        Sopln ("Area of circle :" area);
    }
}
```

```
public class main
{
    public static void main (String ag)
    {
        Rectangle r = new Rectangle(4,5);
        r.printArea();
        Triangle t = new Triangle(3,6);
        t.printArea();
        Circle c = new Circle(7);
        c.printArea();
    }
}
```

Output

Area of rectangle : 20.

Area of Triangle : 9.0

Area of circle : 153.938...

P2: Bank

```
import java.util.*;

public class Bank
{
    public static void main(String
      args[])
    {
        Scanner sc = new Scanner(
          System.in);

        System.out.println("Welcome!");
        sopln("Enter current/ Savings");
        String saccname= sc.nextline();
        String caccname = saccname;
        System.out.print("Enter account
        number");
        String saccno = sc.nextline();
        String caccno = sc.nextline();
        Savings s = new Savings(Sacc
        saccno);
        Current c = new Current(cac
        caccno);
        sopln("Enter amount to ente
        double dep = c.nextDou
        s.deposit(dep);      ();
        s.display();
        sopln("Enter amount to
        withdraw");
        double with = sc.nextDouble(
        c.withdraw(with);
        c.display();
```

```
    }
}
class Account
{
protected   String username;
protected   String accno;
            protected double balance;
            public Account(String custname,
            String accountno);
            {
                username = custname;
                accno = accountno;
                this.balance=0;
            }
            public void deposit(double
                amount);
            {balance += amount;
             System.out.println("Deposited");
            }
            public void display()
            {
                System.out.println("Accountno"+accno+
                    "..");
            }
}
class Savings extends Account
{
            public Savings (String custname,
                String accno);
            {super(custname, accno);
            }
```

```
public void withdraw (double
    amt);
{
    if (balance >= amt)
        {  balance -= amt;
    else
        System.out.println("Insufficient balance");
    }
}
class current extends Account
{
    double minbal = 1000;
    public Current ( String custname,
      String accno);{
      super ( custname , accno);
    }
    public void withdraw (double
      amt)|
    {
        if ( and (balance- amt) >= minbal)
            balance -= amt;
        else
            { System.out.println("Insufficient funds");
              service( );
            }
    }
private service( )
    { balance -= 20;
      System.out.println(" Service charge of
          Rs20 imposed");
    }
}
```

Output

Welcome!
Enter name for Account (savings/ current): savings
Enter account number for Savings : 123REW
Enter account number for Current : 123REX
Enter amount to enter: 34
Account number: 123REW
Balance : 34
Enter amount to withdraw: 21
Balance : 13
Enter amount to enter current : 2
Account number : 123REX
Balance: 2
Enter amount to withdraw: 32
Insufficient fund. Service = 20
Balance : -50.

22/11/23

LAB : 4

P1: Package program

CIE / Student.java

```
package CIE;
public class Student{
        public String name;
        public String usn;
        public String sem;
        public Student (String usn,
            String name, int sem)
        {
            this.name = name;
            this.usn = usn;
            this.sem = sem
        }
}
```

CIE / Internals.java

```
package CIE;

public class Internals extends Student{
        public int[] internalMarks = new
            int[5];
        public Interals(String usn, String
            name, int sem, int[] internalMark
            {
                super (name, usn, sem);
                this.internalMarks = internalMarks;
            }
}
```

SEE / External.java

```
package SEE;

import CIE.Student;

public class External extends
    Student {
        public int[] seeMarks;
        public External(String usn,
         String name, int sem,
         int [] seeMarks)
        {
            super(name, usn, sem);
            this.seeMarks = seeMarks;
        }
}
```

Main.java

```
import CIE.Internals;
import SEE.External;

public class main {
        public static void main(Stri
          ng[] ) {
        int [] internalMarks1 = { 80, 75,
        90, 95, 88 };
        Internal s1 = new Internals ("4/ABC17
        "John", 3, internalMarks);
        int [] seeMarks1 = { 70, 85, 78, 94
                             88 };
```

```
int[] finalMarks = new int[5];
for(int i=0; i<5; i++)
        finalMarks[i] = s1.internalMarks[i]
                + s2.seeMarks[i];
}
System.out.println("Final marks for
+s1.name + " (USN :" + s1.usn+")");
    for(int i=0; i<5; i++)
            System.out.println("Course" + (i+1) +
            finalMarks[i]);
    }
}
}
```

Output

Final marks for John (USN: 1ABC123)

Course1 = 150

Course2 = 160

Course3 = 168

Course4 = 177

Course5 = 176.

880

29/1/2024.

LAB - EXCEPTION HANDLING.

P1. WAP that demonstrates handling of excep... in inheritance tree. create a base class called "Father" and derived class "Son" wh... extends the base class. - - - -
--- if son's age >= Father's age.

```
class WrongAgeException extends Excep...
{
    public WrongAgeException (String
        message)
    {
        super(message)
    }
}

class Father
{
    int a;
    public Father (int a) throws Wrong...
        Exception {
        if ( a <0)
        { throw new WrongAgeException
            ("Age cannot be negative");
        }
        this.a = a;
    } }
}

class Son extends Father
{   int a;
```

```
public Son(int fa, int a)
    throws WrongAgeException
{
        super(fa);
        if(a >= fa)
        {
            throw new WrongAgeExceptio
            n("Son's age cannot be
              greater than or equal
              to Father's age");
        }
        this.a = a;
    }
}
class Main {
    public static void main(String
      arg[])
    {
        try{
            int fa = 40;
            int a = 20;
            Son son = new son(fa, a);
            System.out.println("Father's
              Age" + fa);
            Sop1n("Son's age" + son.a);
        } catch (WrongAgeException e)
        {
            System.out.println("Exception
              caught" + e.getMessage());
    }
}
```

16/2

P: AWT

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

public class AWT extends WindowAdapter
    Frame f;
    AWT a
    f = new Frame();
    f.addWindowListener(this
    Label label = new Label("
    TextField t = new TextField(
    label.setBounds(x:20, y:80,
    h=8);
    t.setBounds(x:20, y=100,
    f.add(b);
    f.add(t);
    f.setSize(width: 600, height
    f.setTitle("Employee");
    f.setVisible(b:true);
}
public void WindowClosing(
    WindowEvent e){
        System.exit(0);
}
public static void main(St
{
    AWT a = new AWT();
}
}
```

SURYA Gold
Date Page

without error O/P	with error O/P
Father is Age: 40	Exception Caught: son's Age cannot be greater than or equal to Father's age.
son's Age: 20.	

Write a program which creates two threads, one thread displaying "BMSCE" every 10 seconds and "CSE" every 2 seconds.

```
class DispThread extends Thread {
    private String message;
    private String internal;

    public DispThread(String message, int internal)
    {
        this.message = message;
        this.internal = internal;
    }

    public void run()
    {
        while (true)
        {
            try {
                System.out.println(message);
                Thread.sleep(internal);
            } catch(InterruptedException e)
            {
                e.printStackTrace();
            }
        }
    }
}

public class Thr {
```

```
public static void main(String
{
    DispThread dt1 = new DispThread(
        10000);
    DispThread dt2 = new DispThread(
        2000);
    dt1.start();
    dt2.start();
}
```

Output

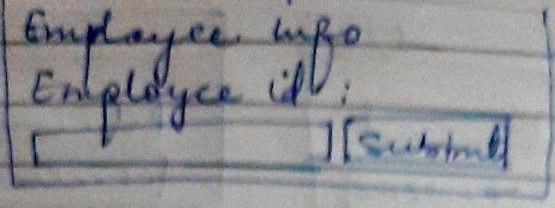
```
BMSCE
CSE
CSE
CSE
CSE
CSE
BMSCE
CSE
CSE
CSE
CSE
CSE
BMSCE.
```

19/2/24

AWT

```
import java.awt.*;
import java.awt.event.*;
public class AWT extends WindowAdapter{
    Frame f;
    AWT(){
        f=new Frame();
        f.addWindowListener(this);
        Label label = new Label("Employee");
        TextField t= new TextField();
        label.setBounds(x:20, y:80, width:80,
        h=8);
        t.setBounds(x:20, y:100, width=80);
        f.add(b);
        f.add(t);
        f.setSize(width:400, height:300);
        f.setTitle("Employee");
        f.setVisible(b:true);
    }
    public void windowClosing(WindowEvent e){
        System.exit(0);
    }
public static void main(String args[])
    {
        AWT a=new AWT();
    }
```

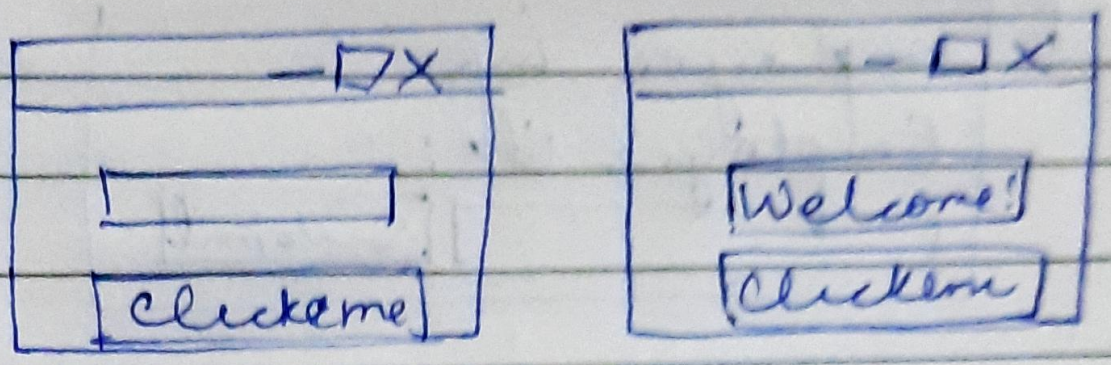
Output



Q. Event Handling

```
public class Event extends WindowAdapter
implements ActionListener {
    Frame f;
    TextField tf;
    Event(){
        f = new Frame();
        f.addWindowListener(this);
        tf = new TextField();
        tf.setBounds(60,50,170,30);
        Button b = new Button("Click me");
        b.addActionListener(this);
        f.add(b);
        f.add(tf);
        f.setSize(300,300);
        f.setTitle("Employee Info");
        f.setLayout(null);
        f.setVisible(true);
    }
    public void WindowClosing(WindowEvent e){
        System.exit(0);
    }
    public static void main(String args[]){
        new Event();
    }
}
```

Output



SSB

4/3/24