LAB-01

Date : 08-12-23
Page No :

1 WAP to perform mathematical operations (Addition, Subtraction, Multiplication & Division)

Program

```
class Operation{
    public static void main (String args[]){
        int a=10;
        int b=5;

        System.out.println (a+b);
        System.out.println (a-b);
        System.out.println (a*b);
        System.out.println(a/b);
    }
}
```

Output:

15
5
50
2

2. WAP to print fibonacci series

```
class Fibonacci{
    public static void main (String args[]){
        int n1=0, n2=1;
        int n3;

        System.out.println(n1);
        System.out.println (n2);
```

```
Syst
for(int i=0; i<=6; i++){
        n3 = n1+n2;
        n1 = n2;
        n2 = n3;
        System.out.println(n3);
}
}
}
```

Output

0
1
1
2
3
5
8
13
21

3. WAP to check if a number is Prime or not

```
class Prime{
    public static void main(String args[]){
        int a=7, f=0;
        for(int i= 2; i<=a/2; i++){
            if(a % i==0){
                f=1;
            }
        }
```

Date :
Page No :

```
if (f==1){
    System.out.println("The number is not
                a prime number");
  }
  else{
    System.out.println("The number is a
                prime number");
  }
}
}
```

Output
The number is a prime number

4. WAP to check if Pallindrome.

```
class Pallindrome{
  public static void main(String args[]){
    int a=121121, ans=0, rem;
    int b=a;

    while(a!=0){
      rem=a%10;
      ans=ans*10+rem;
      a=a/10;
      }
    if(ans==b){
      System.out.println("The number is
                pallindrome");
    }
```

```
        else {
            System.out.println("The number is not a
                                pallindrome");
        }
    }
}
```

Output:

The number is pallindrome.

LAB 02

Date : 23-12-23
Page No :

1) Quadratic Equation.

```
import java.util.Scanner;

class Quad
{
    int a, b, c;
    double r1, r2, d;
    Scanner s = new Scanner(System.in);

    void input()
    {
        System.out.println("Quadratic equation
                is in the form: ax^2 + bx + c");
        System.out.println("enter a: ");
        a = s.nextInt();

        System.out.println("enter b");
        b = s.nextInt();

        System.out.println("enter c");
        c = s.nextInt();
    }

    void discriminant() {
            d = (b*b) - (4*a*c);
    }

    void calculateRoot() { if (a==0 || a==0 && b==0
                                && c==0)
                                { sop("wrong inputs!")
                                }
        if (d>0)
        {
            System.out.println("Roots are real
                and unequal");
```

Date :
Page No :

```
r1 = (-b+Math.sqrt(d)/(2*a));
r2 = (-b-Math.sqrt(d)/(2*a));
System.out.println("First root is:"+r1);
System.out.println("Second root is:"+r2)
}
else if(d==0)
{
System.out.println("Roots are real and
                    equal");
r1 = (-b+Math.sqrt(d)/(2*a));
System.out.println("root is:"+r1);
}

else
{
System.out.println("No real solutions. Roots
                    are imaginary");
double real = -b/(2*a);
double imaginary = Math.sqrt(-d)/(2*a)
System.out.println("The equation has
    two complex roots:"+real+"+"+
    imaginary+"i and"+real+"-"+
    imaginary+"i");
}
}
}

class Main {
public static void main(String[] args){
Quad q = new Quad();
q.input()
q.discriminant();
```

```
        q.calculateRoot();
    }
}
```

//output:

Quadratic equation is in the form: ax^2+bx+c
enter a: 4
enter b: 6
enter c: 8

NO real solutions. Roots are imaginary
The equation has two complex roots:
0.0+1.19895788082817981 and 0.0-1.19895788082817981

Quadratic equation is in the form: ax^2+bx+c
enter a: 1
enter b: 2
enter c: 1

Roots are real and equal
root is: -2.0

2) Write a program to overload the method prints sum of n natural numbers when one variable is passed, and prints the prime numbers in a given range when 2 parameters are passed.

```
class Overload {
    void print(int n){
        int sum=0;
        for (int i=1; i<=n; i++){
            sum= sum+i;
        }
        System.out.println(" Sum of "+n+
            " natural numbers is "+sum);
    }
    void print(int m, int n){
        System.out.println(" Prime numbers
            in the range are ");
        for(int i=m; i<=n; i++){
            int flag=0;
            for (int j=2; j<=i/2; j++){
                if(i%j==0){
                    flag=1;
                    break;
                }
            }
            if(flag==0)
                System.out.println(i);
        }
    }
}

class OverloadDemo {
    public static void main(String[] args){
        Overload o=new Overload();
        o.print(5);
        o.print(7,13);
    }
}
```

Date :
Page No :

//output
sum of 5 natural nubers is 15
Prime nubers in the range are
7
11
13

3. class Grocery {
    string c-name;
    String c-ph;
    double total;

    Grocery (string c-name, String c-ph){
        this. c-name = c-name;
        this. c-ph = c-ph;
    }
    void calc (double q-dal, double q-pulses,
        double q-sugar){
        total = q-dal * 100 + q-pulses * 80 +
            q-sugar * 50;
    }
    void display ()
    {
        System.out.println("Name " + " "
            + "Phone number " + " "
            + "Total");
        ~~System.out.print(c-name+" "+c-ph+" "+total);~~
        System.out.println();
    }
}

```
class GDemo {
    public static void main(String[] args){

        Grocery g1 = new Grocery("Rama", "8060302010");
        Grocery g2 = new Grocery("Sharma", "7689632510");
        Grocery g3 = new Grocery("Bhama", "9632587412");

        g1.calc(2,2,1);
        g1.display();

        g2.calc(3,5,2);
        g2.display()

        g3.calc(1,1,0.5);
        g3.display()
    }
}
```

// output.

```
Name   Phonenumber   Total
Rama   8060302010    410.0

Name   Phonenumber   Total
Sharma 7689632510    800

Name   Phonenumber   Total
Bhama  9632587412    205.0
```

22-11-23

LAB-03

Date : 12-01-24
Page No :

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

1. Program to print book details, price, pages etc.

1 A3
```
import java.util.Scanner;

class Book{
    String name;
    String author;
    int price;
    int numPages;

    Book(String name, String author, int price,
        int numPages)
    {
        this.name = name;
        this.author = author;
        this.price = price;
        this.numPages = numPages;
    }

public String toString()
    {
        String name, author, price, numPages;
        name = "Book name:" + this.name + "\n";
        author = "author name:" + this.author + "\n";
        price = "price:" + this.price + "\n";
```

```
        numPages:"number of pages" + this.numPages;

        return name + author + price + numPages;
    }
}

class main{
    public static void main(String args[])
    {
        Scanner s = new Scanner(System.in);
        int n;
        String name;
        String author;
        int price;
        int numPages;

        System.out.println("enter the no of books");

        n=s.nextInt();
        Book b[];
        b=new Book[n];

        for(int i=0; i<n; i++)
        {
            System.out.println("book"+(i+1));
            System.out.println("enter the name of the book:");
            name=s.next();
            System.out.println("enter author:");
            author=s.next();
```

```
        System.out.println("enter price:");
        price = s.nextInt();

        System.out.println("enter no of pages:");
        price numPages = s.nextInt();

        b[i] = new Book(name, author, price,
                        numPages);
      }
    for(int i=0; i<n; i++)
      {
        System.out.println("book"+(i+1)+"\n"+
                           b[i]);
      }
    }
}
// output
enter the no of books: 2
book1
enter the name of the book:
MOV
enter author:
William Shakespeare
enter price: 250
enter no. of pages:
300

book 2
enter the name of the book:
Kanara Haggadati
enter author:
K.V Puttappa
```

enter price: 200
enter no. of pages : 150

book1
Book name : MOV
author name : William shakespeare
price : 250
no. of pages : 300

book2
Book name : Kanuru Heggadati
author name : K.V Puttappa
price : 200
no. of pages : 150

Date :
Page No :

2. import java.util.scanner;
class student
{
String usn;
String name;
int marks[] = new int[6];

void Details()
{
Scanner s = new Scanner(System.in);
System.out.println("Enter USN:");
usn = s.next();
System.out.println("Enter Name:");
name = s.next();

System.out.println("Enter marks for 6subj
.ects:");

for (int i=0; i<6; i++)
{
System.out.println("Subject"+(i+1)
+ ":");
marks[i] = s.nextInt();
}
}

double percentage()
{
int total = 0;
for (int i=0; i<6; i++)
{
total += marks[i];
}

```
        double p = total/6
        return p;
    }
    void display()
    {
        System.out.println("\nStudent Details:
        System.out.println("USN: " + usn);
        System.out.println("Marks: ");

        for(int i=0; i<6; i++)
        {
            System.out.println("Subject" + (i+1)
                                + ": " + marks[i]);
        }
        System.out.println("Percentage:" +
                            percentage() + "%");
    }
}

class lab1student
{
    public static void main(String args[])
    {
        Scanner s = new Scanner(System.in);

        System.out.println("Enter the number
                            of students:");
        int n = s.nextInt();
        Student[] students = new Student[n];
```

```
for (int i=0; i<n; i++)
  {
    students[i]= new Student();
    System.out.println("\nEnter details for
                students" +(i+1)+ ":");
    students[i].Details();
  }
for (Student students : students)
  {
    students.display();
  }
}
}
```

//output

Enter the number of students : 2

Enter details for Student 1 :

Enter USN

22CS291

Enter Name: Sudarshan

Enter marks for 6 subjects:

Subject 1 : 90

Subject 2 : 92

Subject 3 : 94

Subject 4 : 96

Subject 5 : 91

Subject 6 : 90

Enter details for students 2 :

Enter USN

22CS314

Enter Name: Vachan
Enter marks for 6 subjects:
Subject 1: 88
Subject 2: 90
Subject 3: 92
Subject 4: 86
Subject 5: 84
Subject 6: 98

Student Details:
USN: 22CS291
Name: Sudarshan
Marks:
Subject 1: 90
Subject 2: 92
Subject 3: 94
Subject 4: 96
Subject 5: 91
Subject 6: 90

Percentage: 92.0%

Student Details:
USN: 22CS314
Name: Vachan
Marks:
Subject 1: 88
Subject 2: 90
Subject 3: 92
Subject 4: 86
Subject 5: 84
Subject 6: 98

Percentage: 89.0%

12/1/24

LAB 4

Date : 19-01-24
Page No :

1 Develop a Java program to create an abstract class named shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and circle such that each one of the classes extends the class shape. Each one of the classes contain the method printArea() that prints the area of the given shape.

=> pseudocode (template).

```
abstract class Shape
{
    int a;
    int b;

  abstract void printArea(int a, int b);
    {
        this.a = a;
        this.b = b;

    }
}

class Rectangle extends shape
{
    void printArea(int a, int b)
    { double area = a*b;
      System.out.println("Area of
            rectangle is:" + area);
    }
}
```

```
class Triangle extends Shape
{
    double area = 1/2 * a * b ;

    void printArea (int a , int b)
     { double area = 1/2 * a * b ;
       System.out.println("The area of triangle
            is : " + area) ;
     }
}


class Circle extends Shape
 { void printArea ( int a , int b)
   { double area = 3.14 x a * a ;

     ~~void~~ System.out.println("The area of
          circle is : " + area) ;
   }
}


class Run
{
   public static void main (String args[])
    {
      Rectangle r = new Rectangle() (14, 8);
      Triangle t = new Triangle() (20, 10);
      Circle c = new Circle() (5, 2);

      r.printArea() (14, 8) ;
      t.printArea() (20, 10) ;
      c.printArea() (5, 2) ;
    }
}
```

//output.
area of rectangle is : 112.0
area of triangle is : 100.0
area of circle is : 78.5

19/1/24

2. Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no check book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance, and if the balance falls below this level, a service charge is imposed.

create a class Account that stores customer name, account number and type of account. From this derive the classes Cur-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks:

a) Accept deposit from customer and update the balance.
b) Display the balance.
c) Compute and deposit interest
d) Permit withdrawal and update the balance.

check for the minm balance, impose penalty if necessary and update the balance.

```
import java.util.Scanner;
class Account
  { string name;
    int acc no;
    string type;
    double balance;

    Account(string name, int acc no, string type,
            double balance)
    { this.name = name;
      this.accno = acc no;
      this.type = type;
      this.balance = balance;
    }

    void deposit(double amount)
      { balance += amount;
      }

    void withdraw(double amount)
      {
        if ((balance - amount) >= 0)
          {
            balance -= amount;
          }
        else
          { System.out.println("Insufficient
                balance, can't withdraw");
          }
      }
```

```
void display()
{ System.out.println("name:" + name + "accno:"
    + accno + "type:" + type + "balance:" +
    balance);
}
}

class SavAcct extends Account
{ private static double rate = 5;

  SavAcct (string name, int accno, double balance)
  { super (name, accno, "saving", balance);
  }
  void interest ()
  { balance += balance * (rate)/100;
    System.out.println("balance:" + balance);
  }
}

class curAcct extends Account
{ private double minBal = 500;
  private double servicecharges = 50;

  curAcct (string name, int accno, double balance)
  {
    super (name, acc.no "current", balance);
  }
  void checkMin()
  { if (balance < minBal)
    {
      System.out.println("balance is lesser than
                min balance, services
                charges imposed:" + service charges);
```

```
        System.out.println("balance is:" + balance);
      }
    }
  }

class accountMain
{
  public static void main(String a[])
  {
    Scanner s = new Scanner(System.in);
    System.out.println("enter the name:");
    String name = s.next();
    System.out.println("enter the account type:");
    String type = s.next();
    System.out.println("enter acc number");
    int accno = s.nextInt();
    System.out.println("enter the initial balance:");
    double balance = s.nextDouble();
    int ch;
    double amount1, amount2;
    Account acc = new Account(name, accno, type,
                              balance);
    SavAcct sa = new SavAcct(name, accno, balance);
    curAcct ca = new curAcct(name, accno, balance);
    while(true)
    { if(acc.type.equals("savings"))
      {
        System.out.println("\n\nMenu\n1.deposit 2.withdraw
                           3.compute interest 4.display
        System.out.println("enter the choice:");
        ch = s.nextInt()
```

```
switch(ch)
{ case 1 : System.out.println("enter the amount:");
  amount1 = s.nextInt();
  sa.deposit(amount1);
  break;

  case 2 : System.out.println("enter the amount:");
  amount2 = s.nextint();
  sa.withdraw(amount2);
  break;

  case 3: sa.interest()
  break;

  case 4 : sa.display();
  break;

  case 5 : System.exit(0);
  default : System.out.println("invalid input");
  break;
 }
}
else
{ System.out.println("\n menu\n 1.deposit 2.withdraw
                        3.display");
 System.out.println("enter the choice:");
 ch = s.nextint();
 switch(ch)
 {
  case 1 : System.out.println("enter the amount:")
  amount1 = s.nextint();
  ca.deposit(amount1);
  break;
```

```
        case 2 : System.out.println("enter the amount");
        amount2 = s.nextInt();
        ca.withdraw(amount2);
        ca.checkmin();
        break;

        case 3 : ca.display();
        break;
        case 4 : system.exit(0);
        default : System.out.println("invalid input");
        break;
      }
    }
  }
}
}
```

//output:

Enter the name : sohan

Enter the type : current

Enter the accountnumber :

12104525

Enter the initial balance :

15000

Menu

1. deposit 2. withdraw 3. display

enter the choice

3

name : sohan acno : 12104525 type : current

balance : 14800

Exception handling

Q1. Write a program that demonstrates handling of exceptions in inheritance. Create a basic ~~cath~~ class called 'father' and derived class called 'son' which extends the base class. In father class implement a constructor which takes the age and throws the exception using Age() when the given age<0. In son class, implement an constructor that takes both father's & son's age and throws an exception if son's age >= father.

Program

```
import java.util.Scanner;
public class ExceptionInheritance
{
  static class Father
  { int fage;

    Father(int fage) throws WrongAge{
        if (age < 0)
        { throw new WrongAge("Father's
            age cannot be negative.");
        }
        this.fage = fage;
    }
  }
  static class Son extends Father
  { int sage;

    Son(int fage, int sage) throws WrongAge
```

```
{ super(fage);
    if (sage >= fage)
    {
        throw new WrongAge("Son's age
        cannot be equal or greater than
        father's age.");
    }
    ~~this.fage = fage;~~
    this.sage = sage;
  }
}

static class WrongAge extends Exception
{
  WrongAge(String message)
  {
      super(message);
  }
}

public static void main(String args[])
{
  Scanner s = new Scanner(System.in);
  System.out.println("Enter father's age:")
  int fatherAge = s.nextInt();

  System.out.println("Enter son's age:");
  int sonAge = s.nextInt();

  try { Father f = new Father(fatherAge);
        Son son = new Son(fatherAge, sonA
        System.out.println("Father's Age:",
                                fatherAge)
```

Date :
Page No :

```
        System.out.println("Son's age: " + sonAge);
    }
    catch(WrongAge e)
    {
        System.out.println(e.getMessage());
    }
  }
}
//output
fathers age: 50
sons age : 25
```

2. Package

Create a package CIE which has two classes student and internals. The class student has members like usn, name, sem. The class internals derived from student has an array that stores the internal marks scored in five courses of the current semester of the student. Create another package SEE which has the class External which is a derived class of student. This class has an array that stores the SEE marks scored in five courses of the current semester of the student. Import two packages in a file that declares the final marks of n students in all five courses.

~~1) Internals.java~~

1) Student.java

```
package CIE;

import java.util.Scanner;

public class student {
    protected String usn = new String();
    protected String name = new String();
    protected int sem;

    public void inputStudentDetails()
    { Scanner scanner = new Scanner(System.in);
      System.out.println("Enter USN: ");
```

```
        usn = scanner.next();
        System.out.println("Enter Name:");
        name = scanner.next();
        System.out.println("Enter Semester:");
        sem = scanner.nextInt();
    }

    public void displayStudentDetails()
    {
        System.out.println("USN: " + usn);
        System.out.println("Name: " + name);
        System.out.println("Semester: " + sem);
    }
}
```

Internals.java

```
package CIE;

import java.util.Scanner;

public class Internals extends Student
{
    protected int marks[] = new int[5];

    public Internals() {  }

    public void inputCIEmarks()
    {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter Internal marks
                                for " + name);
```

```
        for (int i = 0; i < 5; i++)
        {
            System.out.print("Subject " + (i+1) +
                                "marks: ");
            marks[i] = scanner.nextInt();
        }
    }
}

// Externals.java
package SEE;

import CIE.Internals;
import java.util.Scanner;

public class Externals extends Internals
{   protected int marks[];
    protected int finalMarks[];

    public Externals()
    {   marks = new int[];
        finalMarks = new int[5];
    }

    public void InputSEEmarks(){
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter SEE marks for " +
                                name);

        for(int i=0; i<5; i++){
            System.out.print("Subject " + (i+1) +
                                "marks: ");
            marks[i] = scanner.nextInt();
        }
}
```

```
public void calculateFinalMarks()
    { for (int i = 0; i < 5; i++)
        finalMarks[i] = marks[i]/2 + superMarks[i];

    }

    public void displayFinalMarks()
     { displayStudentDetails();

        for (int i = 0; i < 5; i++)
            System.out.println("subject" + (i+1) +
                                " : " + finalMarks[i]);

        }
}
```

Main.java

```
import SEE.Externals;

public class Main{
    public static void main (String args[])
     { int numOfStudents = 2;

        Externals finalMarks[] = new Externals
                                 [numOfStudents];

       for (int i = 0; i < numOfStudents; i++)
        {
          finalMarks[i] = new Externals();
          finalMarks[i].inputStudentDetails();

          System.out.println("Enter CIE marks");
          finalMarks[i].inputCIEMarks();
```

```
        System.out.println("Enter SEE marks");
        finalMarks[i].inputSEEmarks();
    }
    System.out.println("Displaying data:\n");

    for(int i=0; i<numOfStudents; i++)
    {
        finalMarks[i].calculateFinalMarks();
        finalMarks[i].displayFinalMarks();
    }
  }
}
```

//output:

```
Enter USN: 1BM22CS300
Enter Name: swap
Enter Semester: 2
Enter CIE marks
Enter Internal Marks for swap
Subject 1 marks: 48
Subject 2 marks: 47
Subject 3 marks: 46
Subject 4 marks: 49
Subject 5 marks: 50

Enter SEE marks
Enter SEE marks for swap
Subject 1 marks: 45
Subject 2 marks: 43
Subject 3 marks: 42
Subject 4 marks: 48
Subject 5 marks: 49
```

Enter USN : 1BM22CS291
Enter Name : Sudu
Enter semester : 2
Enter CIE marks
Enter internal Marks for sudu
subject 1 marks : 48
subject 2 marks : 49
subject 3 marks : 49
subject 4 marks : 49
subject 5 marks : 50

Enter SEE marks
Enter SEE marks for sudu
subject 1 marks : 45
subject 2 marks : 42
subject 3 marks : 43
subject 4 marks : 45
subject 5 marks : 43

Displaying data :
USN : 1BM22CS300
Name : swap
semester : 2
subject 1 : 70
Subject 2 : 68
subject 3 : 67
subject 4 : 73
subject 5 : 74

USN : 1BM22CS300
Name : sudu
Semester : 2
subject 1 : 70
subject 2 : 70
subject 3 : 70
subject 4 : 71
subject 5 : 71

3 Write a program which creates two threads, one thread displaying "BMS college of Engineering" once every ten seconds and another displaying "CSE" once every two seconds.

```
class DisplayThread extends Thread{
    private final string message;
    prive final long interval;

    DisplayThread (String message, long interval)
    {
        this.message = message;
        this.interval = interval;
    }

    public void run()
    { try
        { while (true)
            { System.out.println(message);
              Thread.sleep(interval);
            }
        }
        catch (InterruptedException e)
        { System.out.println(Thread.currentThread
            .getName() + " interrupted");
        }
    }
}

public class TwoThreadDemo{
    public static void main (String args[]){
        DisplayThread t1 = new DisplayThread("BMS College
                of Engineering", 1000);
```

```
DisplayThread t2 = new DisplayThread
                    ("CSE", 2000);
t1.setName("Thread1");
t2.setName("Thread2");

t1.start();
t2.start();

try{
    Thread.sleep(30000);
  }
catch (InterruptedException e)
{
  System.out.println("Main thread
                  Interrupted");
}
  t1.interrupt();
  t2.interrupt();

System.out.println("Main thread exiting");
  }
}
```

//output:

```
BMS college of engineering
CSE
CSE
CSE
CSE
CSE
BMS college of engineering
CSE
CSE
CSE
CSE
CSE
```

1. Creating label, button and Text Field in a Frame using AWT.

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

public class AwtEg1 extends WindowAdapter
{
    Frame f;
    AwtEg1 (){
        f = new Frame ();
        f.addWindowListener (this);
        Label l = new Label ("Employee id:");
        Button b = new Button ("Submit")

        TextField t = new TextField();

        l.setBounds(20, 80, 80, 30);
        t.setBounds (20, 100, 80, 30);
        b.setBounds (100, 100, 80, 30);

        f.add(b);
        f.add(l);
        f.add(t);

        f.setSize (400, 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)
  {
    AwtEg1 obj = new AwtEg1 ();
  }
}

//output
```

Employee id:

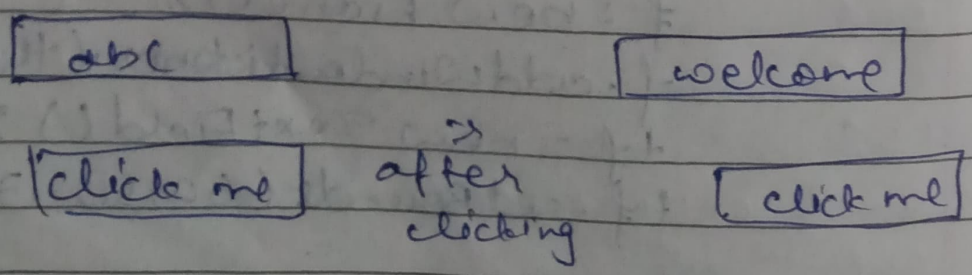
[ ] [submit]

2. create a button and a action listener for Mouse click.

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

public class EventHandling extends WindowAda
    -pter implements ActionListener {
      Frame f;
      TextField tf;
      EventHandling() {

        f = new Frame();
        f.addWindowListener (this);
        tf = new TextField();
        tf.setBounds (60, 50, 170, 20);
```

```
Button b = new Button("click me");
b.setBounds(100,120,80,30);

b.addActionListener(this);

f.add(b);
f.add(tf);
f.setSize(300,300);
f.setLayout(null);
f.setVisible(true);
}

public void actionPerformed(ActionEvent
{
  tf.setText("Welcome");
}

public void windowClosing(WindowEvent
{
  System.exit(0);
}

public static void main(String arg[])
{
  new EventHandling();
}
}
```

//output:



* Programs on IO

1. Example!

```
import java.io.*;
public class ByteArrayInput{

    public static void main(String[] args)
                        throws IOException
    {
        byte[] buf = (35, 36, 37, 38);

        ByteArrayInputStream byt = new ByteArray
                        InputStream(buf);
        int k = 0;

        while((k = byt.read()) != -1){

            char ch = (char) k;

            System.out.println("ASCII value
                of character is:" + k + "; Special
                character is:" + ch);
        }
    }
}
```

//output

ASCII value of character is: 35; Special character is: #

ASCII value of character is 36; special character is: $

ASCII value of character is 37; special character is: %

ASCII value of character is : 38; Special character is : &.

2. Example 2

```
import java.io.*;

public class ByteArray {
    public static void main (String args[])
                    throws Exception {
        FileOutputStream fout1 = new FileOutputStream
                    ("Example.txt");
        FileOutputStream fout2 = new FileOutputStream
                    ("Example2.txt")

        ByteArrayOutputStream bout = new ByteArray
                    OutputStream();
        bout.write (65);
        bout.writeTO (fout1);
        bout.writeTO (fout2);

        bout.flush ();
        bout.close ();

        System.out.println (" Success...")
    }
}
//output:
Success....
```

3. Example 3

```
import java.io.*;
public class FileEx {
    public static void main(String a[]) throws
                                IOException {
    FileInputStream fin = new FileInputStream
                        ("Example.txt");
    int content;
    System.out.println("Remaining bytes that
     can be read:" + fin.available());

    content = fin.read();
        System.out.print((char) content + " ");
        System.out.print(content + " ");
        System.out.println("Remaining bytes
        that can be read:" + fin.available
                                    );

        System.out.println("Remaining bytes
        that can be read:" + fin.available
                                ());
    }
}
```

//Output

Remaining bytes that can be read: 1
A 65 Remaining bytes that can be read: 0
Remaining bytes that can be read: 0

4. Example 4

```
import java.io.FileInputStream;
import java.io.IOException;

public class FileEx2 {
```

```
public static void main(String a[]) throws
                    IO Exception {
FileInputStream fin = new FileInputStream
                    ("Example.txt");
byte [] bytes = new byte [20];
int i;
char c;
i = fin.read(bytes);
System.out.println("Number of
                    bytes read: "+i);
System.out.print("Bytes read:");

for (byte b : bytes) {

        c = (char) b;

        System.out.print(c);
    }
  }
}
```

// output.

Number of bytes read : 1
Bytes read : A

23/2/24