## **LAB1**:

Develop a Java program that prints all real solutions to the quadratic equation ax2 +bx+c = 0.Read in a, b, c and use the quadratic formula. If the discriminate b2-4ac is negative, display a message stating that there are no real solutions.

SERVA	ΠΟΝ:
the	B1  Rep a Java program that prints all real solutions to guadratic equation $ax^2+bx+c=0$ . Read in a, b, c are guadratic equation $ax^2+bx+c=0$ . Read in a, b, c are guadratic equation $ax^2+bx+c=0$ . Read in a, b, c are guadratic equation $ax^2+bx+c=0$ . Read in a, b, c are guadratic equation formula. If the discriminate $b^2-4ac$ megative, display a message stating that there are a solutions
ALC	уренти
1) 51 2) R	EAD a,b,c (co-efficients of the quadratic equation) alculate $d = b^2 - 4ac$ .
4	$ \begin{array}{c} \text{Tf} (d > 0) \\ \text{Calculate} & \text{4:1 (nost 1)} = (-b + \sqrt{d}) \\ \text{2a} \end{array} $
	1 1 1 2 2 (noot 2) = (-b-Jd)
	-> Calculate 22 2a  -> Display two real and different roots (91,92)
5>	Else I) $(d==0)$ $\Rightarrow$ (alculate $(r1)(root 1) = (root 2)(root 2) = \frac{-b}{2a}$
	-> Display real and equal roots (91,92)
c>	Else If (d <0)  - Display, no real solutions.
7> 5	
	STOP : A start Dubtains and moley and a start
	TO AND A TOWN TO A TOWN THE PARTY OF THE PAR
	att himsel dealling the miles display
	The william of the state of the

```
import java. util. *;
class lab1 {
 public static roid main (string SS[]) {
   double 81,82;
    Scanner 5 = new Scanner (System . in);
    System out printle ("Enter the coefficients of the quadratic
    System out o println ("Enter a");
    double a = s.next Double ();
     System. out. println ("Enter 6");
    double b = so next Double ();
     System out oprintln ("Enter c");
     double c = linext Double ();
     double d = (b*b)-(4+a*c);
      if (170)
       System : out . printly ("Roots are real and different");
         9.1 = (-b+ Moth-sgrt (d))/(2*0);
        2 = (-b-Math. sgrt (d)) (2*49);
        System . out. println ("noot 1 = "+ 9.1 + ") ni hoot 2 = "+9.2);
      else if (d == 0)
         System : out . println ("Roots are real and equal");
           11 = 12 = -b/(2 * a);
         System . out . printtn ("hoot 1 = root 2 = "+ 21);
         else
         System . out . printler ("No real solutions");
```

## **SOURCE CODE:**

```
import java.util.*;
class lab1 {
       public static void main(String ss[]) {
               double r1,r2;
               Scanner s=new Scanner(System.in);
               System.out.println("Enter the coefficients of the quadratic equation");
               System.out.println("Enter a");
               double a = s.nextDouble();
               System.out.println("Enter b");
               double b = s.nextDouble();
               System.out.println("Enter c");
               double c = s.nextDouble();
               double d = (b*b)-(4*a*c);
               if(d>0)
               {
                       System.out.println("Roots are real and different");
                       r1 = (-b + Math.sqrt(d))/(2*a);
                       r2 = (-b - Math.sqrt(d))/(2*a);
                       System.out.println("root1 = "+r1+"\nroot2 = "+r2);
               else if(d==0)
               {
                       System.out.println("Roots are real and equal");
                       r1=r2=-b/(2*a);
                       System.out.println("root1 = root2 = "+r1);
               }
               else
               {
                       System.out.println("No real solutions");
               }
       }
}
```

#### **CASE 1:REAL AND DIFFERENT ROOTS**

```
D:\Kusum\00J2020>java lab1
Enter the coefficients of the quadratic equation
Enter a
1
Enter b
-5
Enter c
6
Roots are real and different
root1 = 3.0
root2 = 2.0
```

## **CASE 2:REAL AND EQUAL ROOTS**

```
D:\Kusum\00J2020>java lab1
Enter the coefficients of the quadratic equation
Enter a
1
Enter b
2
Enter c
1
Roots are real and equal
root1 = root2 = -1.0
```

## **CASE 3:NO REAL SOLUTIONS**

```
D:\Kusum\00J2020>java lab1
Enter the coefficients of the quadratic equation
Enter a
1
Enter b
2
Enter c
3
No real solutions
```

# **Lab 2:**

Develop a Java program to create a class Student with members usn, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

OBSERVATION:
Develop a Java program to create a class Student Develop a Java program to create a class Student with members user, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student
ALGORITHM:
property to the
1. STAKI
2. READ the members usn, name, credits, marks in the
method accept ().
I DISPLAY the student delate
4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the SGPA of the student in the method 4. CALCULATE the student in the student in the method 4. CALCULATE the student in the student
4. CALCULATE the SGPA of the student in the medical calculate () using array of credits and marks calculate () using array of sqpA 15 hourse (redits) (Grade Points) 2 course (redits) (Grade Points)
calculate has the object is created and
5. In Student Main class, the regular is called.  the default constructor of class Student is also
the default constructor of the child also
1 TI MULLINOS MI
colled I invoked in the main class.
To SGPA is DISPLAYED from the return value of calculate 8. STOP
7. 5GrA 16 1000000
8. 2101

```
import jara util . *;
class Student ?
   private String usn;
   private String name;
  private int credita IJ;
   periote int marks [];
   private int n;
   roid accept ()
     Scanner 8 = new Scanner (System oin);
     System out println ("Enter student details");
     System out . println ("USN:");
     usn = s.next();
     System . out. println ("Name ",");
     name = 8. next();
     System . out . println ("Enter the number of subjects:");
      n = bonest Int ();
     credits = new int[n];
      marks = new int [n];
      System . out . println ("Enter credits and marks attained by the student in each subject");
      for (int i=0; i<n;i++)
          credits[i] = s.next Int();
        marks[i] = sonext Int ();
  roid display ()
     System. out. println ("Student details:");
     System · out · println ("USN: "+usn);
     System. out. println ("Name: "+ name);
     System · out · println ("Marks in each subject:");
```

```
for list i=0; l < n; i++)
  E System · out priently ("Subject"+ (2+1) +":" + marks[1]).
 double calculate()
    int top=0, tc=0;
     for (int i=0; i<n; i++)
       te = tc+ credits [i];
       if (marks[2] >= 40)
          ty = tep + (((marks [i]/10) + i) * credits [i]);
         3 else if (marks[i] >= 40 && marks[i] <50)
tcp = tcp + (4 * credits[i]);
    return (double)ty/tc;
class Student Main
  public static roid main (String SS[]) {
     Student 51 = new Student ();
        51 · accept();
        S1. display ();
      System. out. println ("SGPA:"+S1. calculate ());
```

## **SOURCE CODE:**

```
import java.util.*;
class Student {
       private String usn;
       private String name;
      private int credits[];
       private int marks[];
       private int n;
       void accept()
              Scanner s=new Scanner(System.in);
              System.out.println("Enter student details");
              System.out.println("USN:");
              usn=s.next();
              System.out.println("Name:");
              name=s.next();
              System.out.println("Enter the number of subjects:");
              n=s.nextInt();
              credits=new int[n];
              marks=new int[n];
              System.out.println("Enter credits and marks attained by the student in each
subject");
             for(int i=0;i<n;i++)
             {
                     credits[i]=s.nextInt();
                     marks[i]=s.nextInt();
             }
       }
       void display()
      {
              System.out.println("Student details:");
              System.out.println("USN:"+usn);
              System.out.println("Name:"+name);
              System.out.println("Marks in each subject:");
             for(int i=0;i<n;i++)
             {
                    System.out.println("Subject "+(i+1)+":"+marks[i]);
             }
       double calculate()
       {
```

```
int tcp=0,tc=0;
              for(int i=0;i<n;i++)
              {
                     tc=tc+credits[i];
                     if(marks[i]>=50)
                     tcp=tcp+(((marks[i]/10)+1)*credits[i]);
                     else if(marks[i]>=40 && marks[i]<50)
                     {
                            tcp=tcp+(4*credits[i]);
                     }
              return (double)tcp/tc;
      }
}
       class StudentMain
       {
       public static void main(String ss[]) {
              Student s1=new Student();
              s1.accept();
              s1.display();
              System.out.println("SGPA: "+s1.calculate());
      }
      }
```

```
OUTPUT:
D:\Kusum\00J2020>java StudentMain
Enter student details
USN:
1BM19CS000
Name:
Palak
Enter the number of subjects:
Enter credits and marks attained by the student in each subject
4 77
5 78
3 74
4 75
4 77
Student details:
USN:1BM19CS000
Name:Palak
Marks in each subject:
Subject 1:77
Subject 2:78
Subject 3:74
Subject 4:75
Subject 5:77
SGPA: 8.0
D:\Kusum\OOJ2020>java StudentMain
Enter student details
USN:
```

```
1BM19EC000
Name:
Anusha
Enter the number of subjects:
Enter credits and marks attained by the student in each subject
4 91
5 88
3 99
4 94
4 93
Student details:
USN:1BM19EC000
Name: Anusha
Marks in each subject:
Subject 1:91
Subject 2:88
Subject 3:99
Subject 4:94
Subject 5:93
SGPA: 9.75
```

## **Lab 3:**

Create a class Book which contains four members: name, author, price, num\_pages. Include a constructor to set the values for the members. Include methods to set and get the details of the objects. Include a toString() method that could display the complete details of the book. Develop a Java program to create n book objects.

```
Week 5-Lab 3 Program
>> Java Program to create n book objects
import jara. util . *;
class Book &
   String name;
  String author;
int price;
int nun-pages;
   Book ()
  Book (String name, String author, int price, int num-page)
       this . name = name;
        this author = author;
    this . price = price;
this . num-pages = num-pages;
    roid accept ()
    3 Scarner 8 = new Scarner (System .in);
        System out . println ("Enter the name of the book");
        name = 8. next ();
        System out openth ("Enter the author of the book");
        author = 2 - next ();
```

```
System - out- println ("Enter the price of the book");
    price: so next Int 1);
   System out printle ("Enter the number of pages of the
    nun-pages = s-next Int ();
  public String to String ()
     return ("Name: "+ name +" \n" + "Author: "+author +" ""+
      "Price: "+ price + "In" + "Number of pages: "+ num pages);
class Book Main ?
   public static void main (String SS [])
      Scarner a = new Scarner (System . in);
      Book b1 = new Book ("Heights", "Anne", 299, 345);
      System . out . println ("Sample input: \n"+61);
      System out operator ("Enter the number of books");
      int n=aonextInt();
      book b[] = new Book[n];
      for (int i=0; i=n;i++)
         b[i] - new Book ();
        System out printly ("Enter the details of "+ (i+1)+"book)
       b[e] · accept ();
      for (int i=0; i/n; e+r)
        System out println ("Details of book"+(i+1));
        System out o println (b[i]);
```

```
SOURCE CODE:
import java.util.*;
class Book {
      String name;
      String author;
      int price;
      int num_pages;
      Book()
      Book(String name, String author, int price, int num_pages)
      {
             this.name=name;
             this.author=author;
             this.price=price;
             this.num_pages=num_pages;
      void accept()
      {
             Scanner s=new Scanner(System.in);
             System.out.println("Enter the name of the book");
             name=s.next();
             System.out.println("Enter the author of the book");
             author=s.next();
             System.out.println("Enter the price of the book");
             price=s.nextInt();
             System.out.println("Enter the number of pages of the book");
             num_pages=s.nextInt();
      }
      public String toString()
             return ("Name: "+name + "\n" + "Author: "+author + "\n" + "Price: "+price +
"\n" +"Number of pages: "+num_pages );
}
class BookMain {
      public static void main(String ss[])
      {
             Scanner a=new Scanner(System.in);
             Book b1=new Book("Heights","Anne",299,345);
             System.out.println("Sample input:\n"+b1);
             System.out.println("Enter the number of books");
             int n=a.nextInt();
             Book b[]=new Book[n];
```

```
D:\Kusum\III SEMESTER\00J2020>java BookMain
Sample input:
Name: Heights
Author: Anne
Price: 299
Number of pages: 345
Enter the number of books
Enter the details of 1 book
Enter the name of the book
Rise
Enter the author of the book
William
Enter the price of the book
Enter the number of pages of the book
455
Enter the details of 2 book
Enter the name of the book
Star
Enter the author of the book
Enter the price of the book
Enter the number of pages of the book
Enter the details of 3 book
Enter the name of the book
Oceans
Enter the author of the book
Enter the price of the book
Enter the number of pages of the book
```

Details of book 1

Name: Rise Author: William

Price: 300 Number of pages: 455 Details of book 2

Name: Star Author: John Price: 299

Number of pages: 588 Details of book 3 Name: Oceans

Author: Joe

Price: 245 Number of pages: 366

## **LAB 4:**

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 only the method printArea() that prints the area of the given shape.

```
Lab 4
import java util. x; abstract class Shope
   abstract wind print Area ();
   int a, b;
class Rectangle extends Shape
  roid printArea ()
     Scanner 8 = new Scanner (System "in);
    System.out. println ("Enter length and breadth of the
     rectargle");
     a = $5. next Int ();
     b = 85. next Int();
     double area;
     area = (double) a * b;
     System out o println ("The area of Rectangle is "+ area);
class Triangle extends Shape
   roid printAreal)
       Scarner 85 = new Scarner (System . in);
       System o out o println ("Enter the base length and height of
        the triangle");
        a = ssonextInt();
       b = 88. next Int ();
        double area;
        Systemont. println ("The area of Triangle" "+ area);
        area = (double) 0.5 * a * b;
       3
```

```
class Circle extends Shope
  wid printArea()
      Scanner ss = new Scanner (System . in);
     System out println ("Enter the rodius of the circle");
       a = sk-next Int();
       double alea; area = (double) 3.14 * a * a;
       System-out-println ("The area of Circle is "+ area);
class Shapemain
  public static soid main (String args [3)
      Scanner Senew Scanner (System. in);
      Rectangle r=new Rectangle();
      Triangle t = new Triangle ();
     Circle c = new Circle ();
     System out o println ("Enter the choice of shape whose
     area has to be calculated");
    System. out. printle ("1. Rectangle In 2. Triangle In 3. Circle In
    ch = ss. nextInt();
    surter (ch)
    case 1: n. printArea();
break;
    case 2: t. print Area();
    cax 3: c- print Area();
    case 4: System exit (0);
             break,
    default: System. out - println ("Imalid choice!");
```

```
SOURCE CODE:
import java.util.*;
abstract class Shape
{
int a,b;
abstract void printArea();
}
class Rectangle extends Shape
void printArea()
Scanner ss=new Scanner(System.in);
System.out.println("Enter length and breadth of the rectangle");
a=ss.nextInt();
b=ss.nextInt();
double area;
area=(double)a*b;
System.out.println("The area of Rectangle is "+area);
}
}
class Triangle extends Shape
void printArea()
Scanner ss=new Scanner(System.in);
System.out.println("Enter base length and height of the triangle");
a=ss.nextInt();
b=ss.nextInt();
double area;
area=(double)0.5*a*b;
System.out.println("The area of Triangle is "+area);
class Circle extends Shape
void printArea()
Scanner ss=new Scanner(System.in);
System.out.println("Enter radius of the circle");
a=ss.nextInt();
double area;
area=(double)3.14*a*a;
System.out.println("The area of Circle is "+area);
```

```
}
}
class Shapemain
public static void main(String args[])
int ch;
Scanner ss=new Scanner(System.in);
Rectangle r=new Rectangle();
Triangle t=new Triangle();
Circle c=new Circle();
while(true){
System.out.println("Enter the choice of shape whose area has to be calculated");
System.out.println("1.Rectangle\n2.Triangle\n3.Circle\n4.Exit");
ch=ss.nextInt();
switch(ch)
{
case 1:
r.printArea();
break;
case 2:
t.printArea();
break;
case 3:
c.printArea();
break;
case 4:
System.exit(0);
break;
default:
System.out.println("Invalid choice!");
}
```

```
D:\Kusum\III SEMESTER\OOJ2020>javac lab4.java
D:\Kusum\III SEMESTER\OOJ2020>java Shapemain
Enter the choice of shape whose area has to be calculated
1.Rectangle
2.Triangle
3.Circle
4.Exit
Enter length and breadth of the rectangle
The area of Rectangle is 6.0
Enter the choice of shape whose area has to be calculated
1.Rectangle
2.Triangle
3.Circle
4.Exit
Enter base length and height of the triangle
The area of Triangle is 1.0
Enter the choice of shape whose area has to be calculated
1.Rectangle
2.Triangle
3.Circle
4.Exit
Enter radius of the circle
The area of Circle is 12.56
Enter the choice of shape whose area has to be calculated
1.Rectangle
2.Triangle
3.Circle
4.Exit
Invalid choice!
Enter the choice of shape whose area has to be calculated
1.Rectangle
2.Triangle
3.Circle
4.Exit
D:\Kusum\III SEMESTER\00J2020>
```

# **LAB 5:**

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 cheque 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 Curr-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks: •Accept deposit from customer and update the balance. • Display the balance. • Compute and deposit interest • Permit withdrawal and update the balance • Check for the minimum balance, impose penalty if necessary and update the balance

```
tab 5:
import java-util. Sonner;
abstract class Account ?
   String chame, according
   long occNs;
    final double minbel = 1000.0;
   double bul;
   Account (String Menre, long accNo, double bed, String
     this aceNo - aceNo;
     this eName = c Name;
     this . bal - bal;
     this occotype = acctype;
  abstract wild add Bal (double ant);
   abstract word displace ();
   abstract roid with bal [double ant);
class Cure-accept extends Account &
     Curracet (String ename, long acc No, double bal) {
       super (chlame, accNo, bal, "Current");
       System. out printle l'Name: "+ Name +" He accho :"+
       aceNo +" \thal; "+ bal +" \t type: "+accType);
  roid addball double ant) {
      the. bul += ant;
    System out println ("Your balance is :" + this . bal);
   roid disphal() {
   roid checkbal() {
       if (this bal < mirBal) }
          System. out println ("Insufficient balance, penalty imposed");

this - bal -= this-bal *0.02; 3 3
```

```
roid with bal (double ant) }
      this . bal - = ant;
     checkbal();
 Sav-acet (String Name, long aceNo, double bal) {
class Sav-acet extends Account !
    super ( aName, aceNo, bal, "Savings");
   System. out- printle ("Name: "+ c Name + "It accNo: "+ accNo +
      " \tbal: " + bal + " (ttype: " + aceType);
    roid addled (double ant) ?
       this. bal += ant;
       addIntr();
   roid add Intr () [ {
      this . bal += this . bal +0.07;
      System out . printin ("You balance is: " + this obal);
     wid display () }
   void withbal (double ant) {
     this bel -= ant,
class Bank ?
   public static word main (String[] args) }
      Scanner se= new Scanner (System.in);
      Double ant;
      System : out , printly ("Enter your details: ");
      System out o printer ("Name: ");
      String x = sc. ment();
```

```
System out println ("Account Number: ");
  along y = se next long();
   for (;;)
 System out - printle ("Type of account: In 1 Current account
 (n2 . Savings accoud (n3. Exit");
 int t= se next Int ();
 if (t ==1) {
 System-out-printle ("The current account provides
cheque book facility but no interest.");
 Curs-acet c= new Curs_acet (2, y, 50000);
 for (;;)
     System . out . println ("1: Deposit \m 2: Display Balance \n
     3: Withdraw In 4: Frut ");
     int sh = sc. next Int ();
    switch (ch) }
       System. out. println ("Enter the amount to be added!"),
     case 1:
        ant = sc. next Double ();
        c. add Bal (amt);
        break;
    rase 2: ( disp Ball);
            break;
         System out o printle ("Enter the amount to be
     case 3:
                                        withdrawn;");
         ant = & next Double ();
         ( ourthbal (ant);
         break:
    ease 4: System. exit (0);
    default: System. out. println ("Invalid choice! Try again");
```

```
System out println (" The savings account provides company interest and withdrawal facilities but no chequebout
  Sav- aut s= new Sav-out (x, y, 5000);
 facility ");
   System out println ("1: Depoint In 2: Display Balance \n3:
  for (;;) }
    Withdraw (n4: exit");
   int ch = sc. next Int ();
                                test allowed bed solvet
    surtch (ch) }
   System. out. println ("Enter the amount to be added:").
    ant = sc . next Double ();
    s. add Bal (ant);
   break;
   case 2%
      s. disp Bal ();
     break;
   System out pointln ("Enter the amount to be withdrawn: ");
   case 3°.
    ant = so next Double ();
    so with bal (ant);
    break;
   default : System . out . println !" Invalid choice! Try again");
  else if (t = = 3)
    System .cat (0);
   System out o println ("Inalid choice ! Try again");
```

## **SOURCE CODE:**

```
import java.util.Scanner;
abstract class Account {
  String cName, accType;
  long accNo;
  double bal:
  final double minBal = 1000.0;
  Account(String cName, long accNo, double bal, String accType) {
     this.accNo = accNo;
     this.cName = cName;
     this.bal = bal:
     this.accType = accType;
  }
  abstract void addBal(double amt);
  abstract void dispBal();
  abstract void withBal(double amt);
}
class Curr_acct extends Account {
  Curr_acct(String cName, long accNo, double bal) {
     super(cName, accNo, bal, "Current");
     System.out.println("Name: "+cName+"\taccno: "+accNo+"\tbal: "+bal+"\ttype: "+accType);
  }
  void addBal(double amt){
     this.bal += amt;
  }
  void dispBal(){
     System.out.println("Your balance is: " + this.bal);
  }
       void checkBal() {
     if (this.bal < minBal) {
                      System.out.println("Insufficient balance, penalty imposed");
       this.bal -= this.bal * 0.02;
     }
```

```
}
  void withBal(double amt){
     this.bal -= amt;
     checkBal();
  }
}
class Sav_acct extends Account {
  Sav_acct(String cName, long accNo, double bal) {
     super(cName, accNo, bal, "Savings");
     System.out.println("name: " + cName + "\taccno: " + accNo + "\tbal: " + bal + "\ttype: " +
accType);
  }
  void addBal(double amt){
     this.bal += amt;
     addIntr();
  }
  void addIntr() {
     this.bal += this.bal * 0.07;
  }
  void dispBal(){
     System.out.println("Your balance is: " + this.bal);
  }
  void withBal(double amt){
     this.bal -= amt;
  }
  }
class Bank {
  public static void main(String[] args) {
     Scanner sc = new Scanner(System.in);
     Double amt;
```

```
System.out.println("Enter your details:");
               System.out.println("Name:");
               String x=sc.next();
               System.out.println("Account Number:");
               long y=sc.nextLong();
              for(;;)
               System.out.println("Type of account:\n1.Current account\n2.Savings
account\n3.Exit");
              int t=sc.nextInt();
     if(t==1)
                      System.out.println("The current account provides cheque book facility but
no interest.");
               Curr_acct c = new Curr_acct(x, y, 50000);
     for(;;)
                      {
       System.out.println("1:Deposit\n2:Display Balance\n3:Withdraw\n4:Exit");
       int ch = sc.nextInt();
       switch (ch) {
          case 1:
            System.out.println("Enter the amount to be added:");
            amt = sc.nextDouble();
            c.addBal(amt);
            break;
          case 2:
            c.dispBal();
            break;
          case 3:
            System.out.println("Enter the amount to be withdrawn:");
            amt = sc.nextDouble();
            c.withBal(amt);
            break;
                              case 4:System.exit(0);
                    default:System.out.println("Invalid choice! Try again");
       }
                      }
              }
```

```
else if(t==2){
                      System.out.println("The savings account provides compound interest and
withdrawal facilities but no cheque book facility.");
               Sav_acct s = new Sav_acct(x, y, 5000);
     for(;;) {
       System.out.println("1:Deposit\n2:Display Balance\n3:Withdraw\n4:Exit");
       int ch = sc.nextInt();
       switch (ch) {
          case 1:
            System.out.println("Enter the amount to be added:");
             amt = sc.nextDouble();
            s.addBal(amt);
            break;
          case 2:
            s.dispBal();
            break;
          case 3:
            System.out.println("Enter the amount to be withdrawn:");
             amt = sc.nextDouble();
            s.withBal(amt);
            break;
          case 4:System.exit(0);
                    default:System.out.println("Invalid choice! Try again");
       }
               }
               else if(t==3)
                      System.exit(0);
               else
                      System.out.println("Invalid choice! Try again");
               }
  }
```

## CASE 1:Current Account(With deposit, display, withdraw, Penalty, Exit)

```
D:\Kusum\III SEMESTER\OOJ2020>javac lab5.java
D:\Kusum\III SEMESTER\00J2020>java Bank
Enter your details:
Name:
Kusum
Account Number:
38216481
Type of account:
1.Current account
2.Savings account
3.Exit
The current account provides cheque book facility but no interest.
Name: Kusum accno: 38216481 bal: 50000.0 type: Current
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Enter the amount to be added:
200
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Your balance is: 50200.0
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Enter the amount to be withdrawn:
500
```

```
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Enter the amount to be withdrawn:
49000
Insufficient balance, penalty imposed
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Your balance is: 686.0
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Invalid choice! Try again
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
D:\Kusum\III SEMESTER\00J2020>
```

CASE 2:Savings account(Deposit,Compound interest,Display,withdraw,Invalid choice,Exit)

```
D:\Kusum\III SEMESTER\OOJ2020>javac lab5.java
D:\Kusum\III SEMESTER\OOJ2020>java Bank
Enter your details:
Name:
Kusum
Account Number:
12487183
Type of account:
1.Current account
2.Savings account
3.Exit
The savings account provides compound interest and withdrawal facilities but no cheque book facility.
name: Kusum
                accno: 12487183 bal: 5000.0
                                                 type: Savings
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Enter the amount to be added:
300
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Your balance is: 5671.0
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Enter the amount to be withdrawn:
500
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Your balance is: 5171.0
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
Invalid choice! Try again
1:Deposit
2:Display Balance
3:Withdraw
4:Exit
D:\Kusum\III SEMESTER\00J2020>
```

Case 3:Invalid choice and exit

```
D:\Kusum\III SEMESTER\OOJ2020>javac lab5.java

D:\Kusum\III SEMESTER\OOJ2020>java Bank
Enter your details:
Name:
Kusum
Account Number:
491493257
Type of account:
1.Current account
2.Savings account
3.Exit
6
Invalid choice! Try again
Type of account:
1.Current account
2.Savings account
3.Exit
6
Invalid choice! Try again
Type of account:
1.Current account
2.Savings account
3.Exit
3
D:\Kusum\III SEMESTER\OOJ2020>
```