QUADRATIC EQUATION

```
import java.util.*;
class Roots
{
  public static void main (String args[])
    {
      int a,b,c,d,f=0;
      Scanner sc = new Scanner (System.in);
      System.out.print("Enter the values ");
      a=sc.nextInt();
      b=sc.nextInt();
      c=sc.nextInt();
      d=(b*b)-(4*a*c);
      if(d==0)
        {
          System.out.println("Roots are real and
          Equal"); f=1;
        }
      else if(d>0)
        {
          System.out.println("Roots are real and
          unequal");
          f=1;
        }
      else
        {
          System.out.print("Roots are imaginary");
        }
      else if(f==1)
        {
          float r1=(float)(-b+Math.sqrt(d))/
                   (2*a);
          float r2=(float)(-b-Math.sqrt(d))/
                   (2*a);
          System.out.printf("Roots are : %.4f
          and %.4f", r1, r2);
        }
    }
```

```
G:\bin\Programs>
G:\bin\Programs>java Roots

Enter the values of a ,b ,c :
1 4 6
Roots are imaginary

G:\bin\Programs>java Roots

Enter the values of a ,b ,c :
3 12 12
Roots are real and Equal
Roots are : -2.0000 and -2.0000
G:\bin\Programs>
G:\bin\Programs>java Roots

Enter the values of a ,b ,c :
2 4 -2
Roots are real and UnEqual
Roots are : 0.4142 and -2.4142
G:\bin\Programs>
```

LAB PROGRAM 2

```
import java.util.Scanner;
class Student
  {
    private int i,a;
    private int credits[]=new int[5];
    private int points[]=new int[5];
    private String name, usn;
    private double sgpa;
    private double marks[]=new double[5];

     Student()
     {
        usn="1BM19CS001";
        name="Aakash";
        for(int i=0; i<5; i++)
            {
              marks[i]=80;
              credits[i]=4;
            }
     }

  Student(double[] mark, int[] credit, String nam, String us)
     {
        this.marks=mark;
        this.credits=credit;
        name=nam;
        usn=us;
     }

  void enter()
     {
        System.out.println("Enter name and USN");
        Scanner s1=new Scanner(System.in);
```

```
name = s1.next();
usn = s1.next();
for(i=0;i<=4;i++)
  {
    System.out.println("Enter marks for
    SUBJECT "+(i+1));
    marks[i]=s1.nextInt();
    System.out.println("Enter credit for
    SUBJECT "+(i+1));
    credits[i]=s1.nextInt();
  }
}

void display()
{
    System.out.println("Student details:");
    System.out.println("NAME :"+name+
      "  "+"USN:"+usn+"  ");
    for(i=0;i<=4;i++)
        System.out.println("marks for
        subject "+(i+1)+"is"+marks[i]);
    System.out.println("The sgpa of "+name+
          "is"+(double)sgpa/a);
}

void calculate()
{
    for(int i=0;i<5;i++)
      {
        if(marks[i]>100)
          {
            System.out.print("Error:
            Marks are above 100");
            return;
          }
```

```
else if(marks[i]>=90)
        points[i]=10;
else if(marks[i]>=80)
        points[i]=9;
else if(marks[i]>=70)
        points[i]=8;
else if(marks[i]>=60)
        points[i]=7;
else if(points[i]>=50)
        points[i]=5;
else if(points[i]>=40)
        points[i]=4;
else
        points[i]=0;

sgpa=sgpa+(points[i]*credits[i]);
a=a+credits[i];
}
}
}
class Student1
{
public static void main(String args[])
{
Student s1=new Student();
s1.enter();
s1.calculate();
s1.display();

double[] marks=new double[]{66,96,82,85,40};
int[] credits=new credits[]{3,4,4,5,4};

Student s2=new Student(marks,credits,"Ishika","IBM");
s2.calculate();
s2.display();
}
}
```

```
G:\bin\Programs>java Student1
enter the name and usn of the student
Hriday 1bm19cs098
enter marks for SUBJECT1
78
enter credit of SUBJECT1
3
enter marks for SUBJECT2
96
enter credit of SUBJECT2
4
enter marks for SUBJECT3
85
enter credit of SUBJECT3
4
enter marks for SUBJECT4

67
enter credit of SUBJECT4
4
enter marks for SUBJECT5
82
enter credit of SUBJECT5
5
Student details:
NAME:Hriday USN:1bm19cs098
marks for subject 1is 78.0
marks for subject 2is 96.0
marks for subject 3is 85.0
marks for subject 4is 67.0
marks for subject 5is 82.0
The sgpa of Hridayis8.65
Student details:
NAME:Ishika Singhal USN:1BM19CS064
marks for subject 1is 66.0
marks for subject 2is 92.0
marks for subject 3is 88.0
marks for subject 4is 45.0
marks for subject 5is 78.0
The sgpa of Ishika Singhalis7.8
```

LAB PROGRAM WEEK 3

```
import java.util.Scanner;
class Book
  {
    String author, name;
    int no;
    double price;

    Book (String author, String name, int no, double price)
      {
        this.author=author;
        this.name=name;
        this.no=no;
        this.price=price;
      }

    Book()
      { }

    void getdetails()
      {
        System.out.println("Enter the details of the book"); setdetails();
      }

    void setdetails()
      {
        Scanner sc= new Scanner(System.in);
        name=sc.nextline();
        author=sc.nextline();
        price=sc.nextDouble()
        no=sc.nextInt();
        price=sc.nextdouble();
      }
```

```
public String toString()
    {
        return("Author : " + auther +
               "Name : " + name +
               "No of pages : " + no +
               "Price : " + price);

    }
}

public class bookMain
{
    public static void main(String args[])
    {
        Book b = new Book();
        Book b2 = new Book("abc", "xyz", 34, 677);
        Scanner x = new Scanner(System.in);
        System.out.println("Enter the no. of books");
        int n = x.nextInt();
        Book b1[] = new Book[n];
        for(int i=0; i<n; i++)
        {
            b1[i] = new Book();
            b1[i] = getDetails();
        }

        for(i=0; i<n; i++)
        {
            System.out.println(b1[i]);
        }
    }
}
```

```
G:\bin\Programs>javac bookMains.java

G:\bin\Programs>java bookMains
Enter the number of books
2
enter the name of the book, author of the book, price of the book and the number of pages
abc
xyz
450
100
enter the name of the book, author of the book, price of the book and the number of pages
abc
xyt
800
300
AUTHOR: xyz  NAME: abc  NUMBER OF PAGES: 450  PRICE: 100.0
AUTHOR: xyt  NAME: abc  NUMBER OF PAGES: 800  PRICE: 300.0

G:\bin\Programs>
```

~~WEEK 4.~~
LAB 4.

```
abstract class Shape
{
    int side1, side2;
    double area;
    abstract void printArea();
}

class Rectangle extends Shape
{
    Rectangle(int l, int b)
    {
        ~~Input~~ side1 = l;
                  side2 = b;
    }

    void printArea()
    {
        area = side1 * side2;
        System.out.println("Area of rectangle is :" + area);
    }
}

class Circle extends Shape
{
    Circle(int r)
        side1 = r;
    void printArea()
    {
        area = 3.14 * side1 * side1;
        System.out.println("Area of circle is:" + area);
    }
}
```

```
class ShapeMain
{
    public static void main(String args[])
    {
        Rectange rect=new Rectangle(5,6);
        rect.printArea();
        Triangle tri=new Triangle(10,20);
        tri.printArea();
        Circle cir=new Circle(20);
        cir.printArea();
    }
}
```

```
Microsoft Windows [Version 10.0.18362.959]
(c) 2019 Microsoft Corporation. All rights reserved.

G:\bin\Programs>javac Shapemain.java
'javac' is not recognized as an internal or external command,
operable program or batch file.

G:\bin\Programs>set path="g:/bin"

G:\bin\Programs>javac Shapemain.java

G:\bin\Programs>java Shapemain
Error: Could not find or load main class Shapemain

G:\bin\Programs> java ShapeMain
The area of the Rectagle is: 30.0
The Area of the triangle is: 20.0
The Area of the Circle is: 314.0
```

~~REF~~ LAB 5

```
import java.util.Scanner;

class Account
{
    Scanner sc = new Scanner(System.in);
    String acc_name;
    String acc_no;
    int acc_type;
    double balance;

    void CreateAccount()
    {
        System.out.println("Enter the details of new
                            account");
        System.out.println("Name:");
        acc_name = sc.next();
        System.out.println("Account no: ");
        acc_no = sc.next();
        if(acc_type == 1)
        {
            System.out.println("Enter deposit value");
            balance = sc.nextDouble();
        }
```

```
else
    {
        System.out.println("Enter deposit value (more than 5000)");
        balance = sc.nextDouble();
    }
}

String getAccountNo()
{
    String cation acc_no;
}

void display ()
{
    System.out.println(acc_name);
    System.out.println(acc_no);
    system.out.println(balance);
}

class Sav_Acct extends Account
{
    void withdraw ()
    {
        double amount;
        System.out.println("Amount to be withdrawn");
        amount = ss.nextDouble();
        balance = -amount;
    }
    void deposite ()
    {
        double amount, interest;
        System.out.println("Enter amount to be deposited");
        amount = sc.nextDouble();
        balance += amount;
        interest = balance * 0.01;
    }
}
```

```
class curr_acct extends account
{
    void withdraw()
    {
        double amount;
        amount=sc.nextDouble();
        balance=-amount;
        penaltycheck();
    }

    void deposite()
    {
        double amount;
        System.out.println("Enter the amount to
            be deposited");
        amount=sc.nextDouble();
    }

    void penaltycheck()
    {
        if(balance<5000)
        {
            balance = balance-100;
        }
    }
}

class Bank
{
    public static void main(String args[])
    {
        SavAcct S[]= new Sav_acct[5];
        Curr_Acct c[] =new curr_Acct[5];
        Scanner ss=new Scanner(System.in);
        String acctno;
        int ch,i=0,j=0;
```

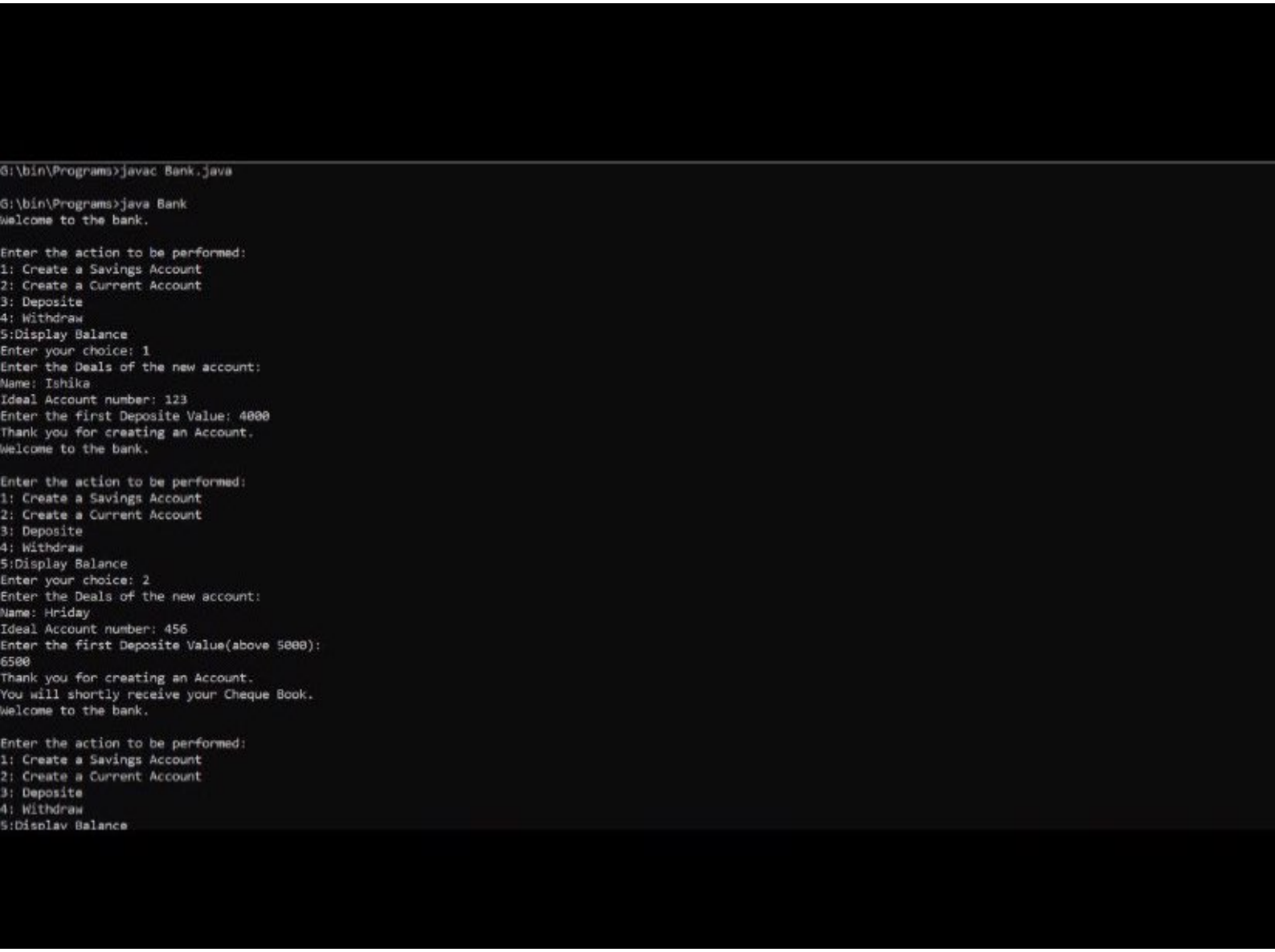
```
while(true)
{
    System.out.print("Enter choice");
    ch = ss.nextInt();
    switch(ch)
    {
        case 1: S[i] = new Sav_Acct();
                S[i].acc_type = 1;
                i++;
                break;
        case 2: C[j] = new Curr_Acct();
                C[j].acc_type = 0;
                j++;
                break;
        case 3: System.out.println("Enter account no");
                actno = ss.next();
                for(int k=0; k<j; k++)
                {
                    if(acctno.equals(C[k].
                    getAccountNo()))
                    {
                        C[k].deposite();
                    }
                }
                for(int k=0; k<i; k++)
                {
                    if(acctno.equals(S[k].getAc-
                    countNo()))
                        S[k].deposite();
                }
                break;
```

```
case 4: System.out.println("Enter account no.");
        acctno=ss.nextInt();
        for(k=0;k<j;k++)
        {
          if(acctno.equals(C[k].getAccountNo
          ()))
          {
            C[k].withdraw();
          }
        }
      for(int k=0;k<i;k++)
      {
        if(acctno.equals(S[k].getAccountNo
        ()))
          S[k].withdraw();
      }
    break;
case 5: System.out.println("Enter account no:");
        acctno=ss.next();
        for(int k=0;k<j;k++)
        {
          if(acctno.equals(C[k].getAccounts()))
            C[k].display();
        }
      for(int k=0;k<i;k++)
      {
        if(acctno.equals(S[k].getAccounts()))
          S[k].display();
      }
    break;
  }
}
}
```

```
456
This Account is a Current Account.
Warning: A minimum of 5000 balance must be maintained
        If failed, a penalty of Rs.100 will be imposed.
Enter the Amount to be withdrawn:
2300
The balance is less than 5000 a penalty of Rs.100 is imposed.
Welcome to the bank.

Enter the action to be performed:
1: Create a Savings Account
2: Create a Current Account
3: Deposite
4: Withdraw
5:Display Balance
Enter your choice: 5
Enter the account number:
123
The Account Details are given as follows:
Name: Ishika
Account Number: 123
Account Type: Savings Account
Balance: 3183.399999999996
Welcome to the bank.

Enter the action to be performed:
1: Create a Savings Account
2: Create a Current Account
3: Deposite
4: Withdraw
5:Display Balance
Enter your choice: 5
Enter the account number:
456
The Account Details are given as follows:
Name: Hriday
Account Number: 456
Account Type: Current Account
Balance: 4100.0
Welcome to the bank.
```



```
Enter your choice: 3
Enter the account number:
123
This Account is a Savings Account.
Enter the Amount to be Deposited:
340
Welcome to the bank.

Enter the action to be performed:
1: Create a Savings Account
2: Create a Current Account
3: Deposite
4: Withdraw
5:Display Balance
Enter your choice: 4
Enter the account number:
123
This Account is a Savings Account.
Enter the Amount to be withdrawn:
1200
Welcome to the bank.

Enter the action to be performed:
1: Create a Savings Account
2: Create a Current Account
3: Deposite
4: Withdraw
5:Display Balance
Enter your choice: 4
Enter the account number:
456
This Account is a Current Account.
Warning: A minimum of 5000 balance must be maintained
        If failed, a penalty of Rs.100 will be imposed.
Enter the Amount to be withdrawn:
2300
The balance is less than 5000 a penalty of Rs.100 is imposed.
Welcome to the bank.

Enter the action to be performed:
1: Create a Savings Account
```

```
ter the action to be performed:
 Create a Savings Account
 Create a Current Account
 Deposite
 Withdraw
Display Balance
ter your choice: 5
ter the account number:
3
e Account Details are given as follows:
me: Ishika
count Number: 123
count Type: Savings Account
lance: 3183.399999999996
lcome to the bank.

ter the action to be performed:
 Create a Savings Account
 Create a Current Account
 Deposite
 Withdraw
Display Balance
ter your choice: 5
ter the account number:
6
e Account Details are given as follows:
me: Hriday
count Number: 456
count Type: Current Account
lance: 4100.0
lcome to the bank.

ter the action to be performed:
 Create a Savings Account
 Create a Current Account
 Deposite
 Withdraw
Display Balance
ter your choice: 8
lcome to the bank.
```