

```

import java.util.Scanner;
class quadraticequation
{
    public static void main (String args[])
    {
        Scanner sc = new Scanner (System.in);
        double a, b, c, r1, r2, d;
        System.out.println ("Enter the value of a, b, c");
        a = sc.nextDouble();
        b = sc.nextDouble();
        c = sc.nextDouble();
        d = (b * b) - (4 * a * c);
        if (d < 0)
            System.out.println ("No real roots for the
                                given quadratic equation");
        else if (d == 0)
        {
            r1 = (-b + (Math.sqrt(d))) / (2 * a);
            r2 = (-b - (Math.sqrt(d))) / (2 * a);
            if (d == 0)
                System.out.println ("Roots are real and
                                    equal");
            System.out.printf ("The roots are: %.2f
                                and %.2f", r1, r2);
        }
        else
        {
            System.out.println ("Roots are real and
                                unequal");
        }
    }
}

```

Date / /

System.out.printf("The roots are: %.2f
and %.2f", x1, x2);

}
}
}

Command Prompt

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C:\Users\DELL>cd Desktop

C:\Users\DELL\Desktop>javac quadraticequation.java

C:\Users\DELL\Desktop>java quadraticequation.java
Enter the values of a,b,c

3 12 9

Roots are real and unequal

The roots are: -1.00 and -3.00

C:\Users\DELL\Desktop>javac quadraticequation.java

C:\Users\DELL\Desktop>java quadraticequation.java
Enter the values of a,b,c

1 2 3

No real roots for the given quadratic equation

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Lab 2

```
import java.util.Scanner;  
class Student  
{  
    String usn, name;  
    int credits[];  
    float marks[];  
    int n;  
    float tot=0;
```

Student()

```
{  
Scanner sc = new Scanner (System.in);  
System.out.println ("Enter the number of subjects");  
n = sc.nextInt();  
credits = new int [n];  
marks = new float [n];  
usn = " ";  
name = " ";  
}  
}
```

void Accept()

```
{  
Scanner sc = new Scanner (System.in);  
System.out.println ("Enter your USN and Name");  
usn = sc.nextLine();  
name = sc.nextLine();  
System.out.println ("Enter credits and marks  
for each subject");  
for (int i = 0; i < n, i++)  
{  
}
```

```
    credits [i] = sc.nextInt();  
    marks [i] = sc.nextFloat();  
}  
}
```

void calculate()

```
{  
    int o = 0  
    int m = 0  
    float a = 0  
    for (int i = 0; i < n; i++)  
    {  
        if (marks [i] >= 9.0)  
            m = 10;  
    }
```

```
    if (marks [i] >= 9.0)  
        m = 10;
```

```
else if (marks[i] < 80 && marks[i] >= 80)
m = 9;
else if (marks[i] < 80 && marks[i] >= 70);
m = 8;
else if (marks[i] < 70 && marks[i] >= 60);
m = 7;
else if (marks[i] < 60 && marks[i] >= 50);
m = 6;
else if (marks[i] < 50 && marks[i] >= 40);
m = 5;
else if (marks[i] < 40)
m = 0;
s = s + credits[i];
a = a + (credits[i] * m);
}
tot = a / s;
}

void Display()
{
    System.out.println("The details of the
Student");
    System.out.println("USN : " + usn);
    System.out.println("Name : " + name);
    System.out.println("Credits and Marks");
    for (int i = 0; i < n; i++)
    {
        System.out.println(credits[i] + " " +
marks[i]);
    }
    System.out.println("SGPA %.2f", tot);
}
```

```
class StudentMain
{
    public static void main(String args[])
    {
        Student s1 = new Student();
        s1.Accept();
        s1.Calculate();
        s1.Display();
    }
}
```

```
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C:\Users\DELL>cd Desktop

C:\Users\DELL\Desktop>javac Student.java

C:\Users\DELL\Desktop>java StudentMain
Enter the number of subjects
4
Enter your USN and Name
1bm19cs054
divya
Enter credits and marks for each subject
3 89
5 78
2 66
4 77
The details of the student
USN:1bm19cs054    Name:divya
Credits and Marks
3 89.0
5 78.0
2 66.0
4 77.0
SGPA 8.07
C:\Users\DELL\Desktop>
```

Lab 3 Create a class Book which contains four members: name, author, price, num-pages. Include a constructor to set the value for the members. Include two methods to set and get the details of the object. Include a toString() method that could display the ^{complete details} of the book.

import java.util.Scanner;

class Book

{

String name, author;

int pages;

double price;

Book()

{

name = " ";

author = " ";

pages = 0;

price = 0.0d;

{

void Accept()

{

Scanner sc = new Scanner(System.in)

System.out.println("Enter the name of the Book: ");

```
name = sc.nextLine();
System.out.println("Enter the author of the book");
author = sc.nextLine();
System.out.println("Enter the price of the book");
price = sc.nextDouble();
System.out.println("Enter the number of pages of the
book : ");
pages = sc.nextInt();

public String toString()
{
    return ("Name of the book :: " + name + " Author: "
           + author + " Price :: " + price +
           " Pages : " + pages);
}
```

class BookMain

```
{ public static void main (String args[])
{
    int n
    Scanner sc = new Scanner (System.in);
    System.out.println("Enter the number of objects");
    n = sc.nextInt();
    Book b[] = new Book[n];
    for (int i = 0; i < n; i++)
    {
        b[i] = new Book();
        b[i].Accept();
        System.out.println(b[i]);
    }
}}
```

C:\ Command Prompt
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C:\Users\DELL>cd Desktop

C:\Users\DELL\Desktop>javac BookMain.java

C:\Users\DELL\Desktop>java BookMain
Enter the number of objects:
2
Enter the name of the book:
CCP
Enter the author of the book:
ABC
Enter the price of the book:
25
Enter the total number of pages of the book:
100
Name of the book: CCP Author: ABC Price: 25.0 Pages: 100
Enter the name of the book:
COA
Enter the author of the book:
XYZ
Enter the price of the book:
50
Enter the total number of pages of the book:
200
Name of the book: COA Author: XYZ Price: 50.0 Pages: 200

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Ques. Develop a Java program to create an abstract class named Shape that contains two integer and an empty method name 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.

```
import java.util.Scanner;
```

```
abstract class Shape
```

```
{
```

```
    int a1, a2;
```

```
    Scanner sc = new Scanner(System.in);
```

```
    abstract void printArea();
```

```
}
```

```
class Rectangle extends Shape
```

```
{
```

```
    void printArea()
```

```
{
```

```
    System.out.println("Enter length and breadth  
of Rectangle:");
```

```
    a1 = sc.nextInt();
```

```
    a2 = sc.nextInt();
```

```
    System.out.println("The area of Rectangle is :"  
+ a1 * a2);
```

```
}
```

```
class Triangle extends Shape
```

```
{
```

```
    void printArea()
```

```
{
```

```
    System.out.println("Enter base and  
height of triangle:");
```

```
a1 = sc.nextInt();
```

```
a2 = sc.nextInt();
```

```
System.out.println("The area of Triangle is :  
" + (a1+a2)/2);
```

```
}
```

```
class Circle extends Shape
```

```
{
```

```
void printArea()
```

```
{
```

```
System.out.print("Enter radius of  
circle : ");
```

```
a1 = sc.nextInt();
```

```
System.out.println("Area of  
Circle is : " + a1 * a1 * 3.14);
```

```
}
```

```
class PolygonShape
```

```
{
```

```
public static void main(String args[])
```

```
{
```

```
Airline Rectangle r = new Rectangle();
```

```
r.printArea();
```

```
Triangle t = new Triangle();
```

```
t.printArea();
```

```
Circle c = new Circle();
```

```
c.printArea();
```

```
}
```

C:\ Command Prompt



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C:\Users\Lenovo>cd Desktop

C:\Users\Lenovo\Desktop>javac AbstractShape.java

C:\Users\Lenovo\Desktop>java AbstractShape

Enter length and breadth of Rectangle:

4 5

The area of Rectangle is: 20

Enter base and height of Triangle:

7 9

The area of Triangle is: 31.5

Enter radius of Circle:

4

The area of Circle is: 50.24

C:\Users\Lenovo\Desktop>

```
import java.util.Scanner;  
abstract class Account
```

{

```
String name, acctype;
```

```
long accNo;
```

```
double bal;
```

```
final double minBal = 1000.0;
```

```
Account (String name, long accNo, double bal,  
String acctype)
```

{

```
this.accNo = accNo;
```

```
this.name = name;
```

```
this.bal = bal;
```

```
this.acctype = acctype
```

{

```
abstract void addBal(double amt);
```

```
abstract void displayBal();
```

```
abstract void withdrawBal(double amt);  
}  
class Current extends Account  
{  
    Current(String name, long accNo, double bal)  
    {  
        super(name, accNo, bal, "Current");  
        System.out.println("Name: " + name + "  
AccNo: " + accNo + " In Balance:  
" + bal + " In Account Type:  
" + accType);  
    }  
    void addBal(double amt)  
    {  
        this.bal += amt;  
    }  
    void displayBal()  
    {  
        System.out.println("The balance is:  
" + this.bal);  
    }  
    void checkBal()  
    {  
        if (this.bal < minBal)  
            System.out.println("Insufficient  
balance, Service charge imposed");  
        this.bal -= this.bal * 0.02;  
    }  
    void withdrawBal(double amt)
```

```
this.bal -= amt;
```

```
checkBal();
```

```
}
```

```
}
```

class Sav-Acc extends Account

```
{
```

```
Sav-Acc (String name, long accNo,  
double bal)
```

```
{
```

```
super (name, accNo, Bal, " Savings");
```

```
System.out.println ("Name: " + name + "\n"  
"AccNo: " + accNo + "\n"  
"Balance: " + bal + "\n" + "Account  
Type: " + accType);
```

```
}
```

```
void addBal (double amt)
```

```
{
```

```
this.bal += amt;
```

```
addInts();
```

```
}
```

```
void addInts()
```

```
{
```

```
int bar = 2, R = 7;
```

```
this.bal += this.bal * (Math.pow (1 + (R /  
100)), bar));
```

```
}
```

```
void displayBal()
```

```
{
```

```
System.out.println ("The balance is : "  
+ this.bal);
```

```
}
```

```
void withdrawBal (double amt)
```

```
{
```

this. bal = amt;

}

Class AccountMain

(

```
public static void main (String [ ] args) {
Scanner sc = new Scanner (System.in);
double amt;
System.out.println ("Enter details:");
System.out.println ("Name:");
String n = sc.next ();
System.out.print ("Account Number:");
long y = sc.nextLong ();
while (true)
{
```

```
System.out.println ("Type of account:");
n1. Current account (n2. Savings
amount (n3. Exit");
int o = sc.nextInt ();
if (o == 1)
System.out.println ("The current
Account provides cheque book
facility but no interest:");
curr_act cr = new curr_act (n, y,
2000);
while (true)
{
```

```
System.out.println ("1. Deposite
2. Display Balance
3. Withdrawal
Amount (n4. Exit");
int ch = sc.nextInt ();
switch (ch)
{
```

case 1:

System.out.println("Enter the amt to be added:");

amt = sc.nextDouble();

cr.addBal(amt);

break;

case 2:

cr.displayBal();

break;

case 3:

System.out.println("Enter the amt to be withdrawn:");

amt = sc.nextDouble();

cr.withdrawalBal(amt);

break;

case 4:

System.exit(0);

default: System.out.println("Invailid choice");

}
y
y

else if (o == 2) {

System.out.println("The savings Account provides compound interest and withdrawal facilities but no cheque book facility.");

Sav_acct sw = new Sav_acct(10000, 5000);

while (true)

{

System.out.println("1: Deposit
2: Display Balance
3: Withdraw
Amount (n 4: Exit");

```
int ch = sc.nextInt()
switch (ch)
{
```

case 1:

```
System.out.println("Enter the amount to be
adduct");
```

```
amt = sc.nextDouble();
```

```
sv.addBal(amt);
```

```
break;
```

case 2:

```
sv.displayBal();
```

```
break;
```

case 3:

```
System.out.println("Enter the amount
amt = s to be withdrawl");
```

```
amt = sc.nextDouble();
```

```
sv.withdrawBal(amt);
```

```
break;
```

case 4: System.out.println();

```
default: System.out.println("Invalid
choice");
```

```
}
```

```
else if (o == 0)
```

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

```
else
```

```
System.out.println("Invalid choice");
```

```
}
```

```
}
```

Command Prompt

C:\Users\Lenovo\Desktop>javac AccountMain.java

C:\Users\Lenovo\Desktop>java AccountMain

Enter details:

Name:

janu

Account Number:

89755545000

Type of account:

- 1.Current account
- 2.Savings account
- 3.Exit

1

The Current Account provides cheque book facility but no interest.

Name: janu

Accno: 89755545000

Balance: 20000.0

Account Type: Current

- 1.Deposit
- 2.Display Balance
- 3.Withdraw Amount
- 4.Exit

2

The balance is: 20000.0

- 1.Deposit
- 2.Display Balance
- 3.Withdraw Amount
- 4.Exit

3

Enter the amount to be withdrawn:

6000

- 1.Deposit
- 2.Display Balance
- 3.Withdraw Amount
- 4.Exit

2

The balance is: 14000.0

- 1.Deposit
- 2.Display Balance
- 3.Withdraw Amount
- 4.Exit

4

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