

αAB (week 3).

→ ① Quadratic eqn program.

'public class Main {

 public static void main (String args[]) {

 double α_1, α_2 ; .

 Scanner sc = new Scanner (System.in);

 System.out.println ("Enter a,b,c value : ");

 double a = sc.nextDouble();

 double b = sc.nextDouble();

 double c = sc.nextDouble(); .

 double d = $b^2 - 4ac$; .

 if ($d < 0$) .

 System.out.println ("Imaginary root");

$$\frac{-b \pm \sqrt{(-b)^2 - 4ac}}{2a}$$

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`System.out.println ("Imaginary root2: " +
 (-b/2*a) + "j" + Math.sqrt((-D)/2*a))
 + "i")j`

{ else }

$x_1 = (-b + \sqrt{D})/2*a - j$

$x_2 = (-b - \sqrt{D})/2*a - j$

`System.out.println ("real root 1: +x1)j`

`System.out.println ("real root2: +x2)j`

{}

{}

{}

BASIC ALGO / LOGIC

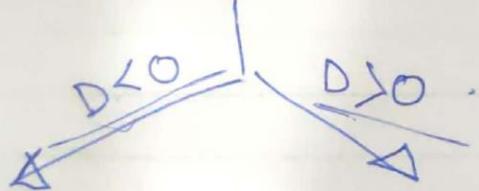
① Quadratic determinant : $b^2 - 4ac$

where a, b, c are variables.

$$\underline{ax^2 + bx + c}$$

INPUT (a, b, c)

$$b^2 - 4ac = D$$



$$\frac{-b \pm \sqrt{-D}}{2a} = \begin{cases} \text{(some form)} \\ \text{of fraction) } \end{cases} \frac{-b + \sqrt{D}}{2a} = \text{some value}$$

OUTPUT $a \quad b \quad c$

$$\begin{aligned} \text{Imaginary root 1} &= -12.5 + 21.65 \\ \text{Imaginary root 2} &= -12.5 - 21.65 \end{aligned}$$

$$\left| \begin{array}{l} \frac{1}{4} \\ \text{real root 1: } -1.0 \\ \text{real root 2: } -4.0 \end{array} \right.$$

```
1 public class Main{  
2     public static void main(String args[]){  
3         double r1,r2;  
4         Scanner sc = new Scanner(System.in);  
5         System.out.println("Enter a,b,c value:\t");  
6         double a = sc.nextDouble();  
7         double b = sc.nextDouble();  
8         double c = sc.nextDouble();  
9         double D = b*b-4*a*c;  
10        if(D<0) {  
11            System.out.println("Imaginary root1: "+(-b/2*a)+"+"+(Math.sqrt(-D)/2*a)+"i");  
12            System.out.println("Imaginary root2: "+(-b/2*a)+"-"+(Math.sqrt(-D)/2*a)+"i");  
13        }else {  
14            r1 = (-b+Math.sqrt(D))/2*a;  
15            r2 = (-b-Math.sqrt(D))/2*a;  
16            System.out.println("real root1: "+r1);  
17            System.out.println("real root2: "+r2);  
18        }  
19    }  
20 }  
21 }  
22 }  
23 }  
24 }
```

input

```
Enter a,b,c value:  
5  
5  
5  
Imaginary root1: -12.5+ 21.65063509461097i  
Imaginary root2: -12.5- 21.65063509461097i
```

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Q) SGPA Program.

import java.util.Scanner;

class Student

```
2 private String USN;
private String name;
private int n;
private double SGPA = 0;
private int totalCredits = 0;
```

Scanner ss = new Scanner (System.in);

void Details ()

```
2 System.out.println ("Enter USN of student");
USN = ss.nextLine();
```

```
System.out.println ("Enter name ");
name = ss.nextLine();
```

```
System.out.print ("Enter no of subjects");
n = ss.nextInt();
```

```
int credits [] = new int [n];
```

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double marks [] = new double [n];
 System.out.println ("Enter details of sub");

for (int i=0; i<n; i++) -

{ System.out.println ("Enter credits allotted to sub" + (i+1));

marks[i] = ss.nextInt();

Calculate (credits[i], marks[i], i);

} }

void Calculate (int credits, double marks, int j)

{ totalCredits = totalCredits + credit;

if (mark >= 90 && mark <= 100) -

SGPA = SGPA + (10 * credit);

else if (mark >= 80 && mark <= 89)

SGPA = SGPA + (9 * credit);

else if (mark >= 70 && mark <= 79)

SGPA = SGPA + (6 * credit);
 Teacher's Signature : _____

else if (marks >= 60 && mark <= 69)

$$SGPA = SGPA + (7 * \text{credits})$$

else if (marks >= 50 && mark <= 59)

$$SGPA = SGPA + (6 * \text{credits})$$

else if (marks >= 40 && mark <= 39)

$$SGPA = SGPA + (5 * \text{credits})$$

else

System.out.println("Failed subject " + (j+1));

}

void Display()

{ System.out.println("Name: " + name);

System.out.println("USN: " + USN);

System.out.println("CGPA of student " +
(SGPA / total credits));

Teacher's Signature:



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class Main	
{ Public static void main (String args [])	
{	
student s1 = new Student ();	
s1. Details (); // similar to	
s1. Display (); calling function	
{	
{	
X	
Teacher's Signature : _____	

Output

Enter USN of student
151 -

Enter name of student

Shivanshu P

Enter no of subj

① - 3

Credits allotted to sub 1

5

Enter marks in sub 1.

80

Credits allotted to sub 2

4

Enter marks in sub 2

75

Enter ~~marks~~ credits allotted to sub 3

4 -

Enter marks in sub 3,

72

Details of student

~~Name~~ Name: Shivanshu P -

USN 8 151 -

SGPA 8 8.3846

basic logic for
input

? name —

U3N —

~~marks~~ subj — n

marks [1] - - - marks [$\leq n$]

credits [1] - - - credit [$\leq n$]

basic logic of program & marks [0+1]

↓
marks [$\leq n$]

total ↓ using if-else cond
~~marks~~ SCA PA

$$= (\text{SCA PA} + 'n' * \text{credit})$$

↓

$$\text{SCA PA} = \frac{\text{total SCA PA}}{\text{total credits}}$$

'n' ⇒ Crore Point

10 - 5 or else fail.
depending on
if-else -

C:\Users\shivanshu\Desktop> java lab

Enter USN of the student

151

Enter Name of the student

shivanshu p

Enter no of subjects

5

Enter details of the subjects:

Enter credits allotted to the subject 1

5

Enter marks in the subject 1

80

Enter credits allotted to the subject 2

4

Enter marks in the subject 2

75

Enter credits allotted to the subject 3

4

Enter marks in the subject 3

72

Enter credits allotted to the subject 4

3

Enter marks in the subject 4

71

Enter credits allotted to the subject 5

1

Enter marks in the subject 5

58

Enter credits allotted to the subject 6

3

Enter marks in the subject 6

88

Details of the Student

Name :shivanshu p

USN: 151

SGPA of student 8.523809523809524

C:\Users\shivanshu\Desktop>

```
import java.util.Scanner ;  
Class Main {  
    public static void main( String args [] ) {  
        Scanner sc = new Scanner( System.in );  
        int n = sc.nextInt();  
        Book B[] = new Book[n];  
        for ( i=0 ; i<n ; i++ ) {  
            System.out.println( .B[i] );  
            System.out.print( "\n" );  
        }  
    }  
}
```

{

{

// Algo → create a class Book with constructor function to string() which shall return string
class BookName Eg call the Book Class
code → // contd.

→ class Book {

int

String name, author; price, nPages;

Book()

2 Scanner sc = new Scanner(system.in);

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

name = sc.nextLine();

System.out.println("Enter the author of book");

author = sc.nextLine();

System.out.println("Enter price of book");

price = sc.nextInt();

System.out.println("Enter no of pages");

nPages = sc.nextInt();

}

public String to String() {

return ("Name of book : " + this.name +
"Author : " + author + " Price : " + price
+ " Pgno : " + this.pgno +);

}

}

Main.java

```
9 import java.util.Scanner;  
10
```

```
Enter the Number of Books:
```

```
2
```

```
Enter the Name of The book: da  
Enter the Author of book da: a  
Enter the Price of book da: 12  
Enter the Number of pages: 11
```

```
Enter the Name of The book:
```

```
Enter the Author of book : pas  
Enter the Price of book : 24  
Enter the Number of pages: 1
```

```
Name of Book : da
```

```
Author : a
```

```
Price : 12
```

```
Number of Pages: 11
```

```
Name of Book :
```

```
Author : pas
```

```
Price : 24
```

```
Number of Pages: 1
```

Area Abstract

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

```
class Shape {
```

```
    int slength;
```

```
    int shreadth;
```

```
    void printArea() {
```

```
}
```

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

```
{
```

```
class Rectangle extends Shape {
```

```
    void printArea() {
```

```
        System.out.println("Enter the length of rect");
```

```
        Slenght = Sinp.nextInt();
```

```
        System.out.println("Enter breath of rect");
```

```
        Shreadth = Sinp.nextInt();
```

```
        System.out.println("The area of rectangle  
is : " + (Shreadth * Slenght));
```

```
}
```



Class Triangle extends Shape {

void paintArea() {

System.out.println("Enter the height : ");

Slenght = Sinp.nextInt();

System.out.println("Enter the base : ");

Sbreadth = Sinp.nextInt();

"System.out.println("The Area of triangle
is : " + (0.5 * Sbreadth * Slenght));

}

}

Class Circle extends Shape {

void paintArea() {

System.out.println("Enter the radius : ");

Slenght = Sinp.nextInt();

System.out.println("The area of circle
is : " + (3.143 * Slenght * Slenght));

}

}



public class App {

public static void main (String [] args)

throws Exception {

 Rectangle R1 = new Rectangle ();
 }

 Triangle T1 = new Triangle ();
 }

 Circle C1 = new Circle ();
 }

 R1.paintArea ();
 }

 T1.paintArea ();
 }

 C1.paintArea ();
 }

}

3

o

—

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Transactions.java App.java

1 package java1;

2

<

Problems Javadoc Declaration Console

terminated> App [Java Application] C:\Users\shivanshu.p2\pool\plugins\org.eclipse.jdt.openjdk.hotspot.jre.full.win32.x86_64_14.0.2.v20200815-0932\jre\bin\javaw.exe (06-Nov-2020, 3:11:08 pm - 3:11:33 pm)

Enter the length of Rectangle

10

Enter the breadth of Rectangle

20

The AREA of RECTANGLE is : 200

Enter the Height :

11

Enter the Base :

10

The AREA of TRIANGLE is : 55.0

Enter the Radius :

7

The AREA of CIRCLE is : 154.00699999999998

LAB 5 DOWN-→

BANK

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

```
class Bank
```

{

```
int depositbal;
```

```
int withdrawbal;
```

```
String customername;
```

```
String accountno;
```

```
String accounttype;
```

```
int Balenue = 27800;
```

```
void accept()
```

{ Scanner s = new Scanner (System.in);

System.out.println ("Enter customer name\n");

```
customername = s.next();
```

System.out.println ("Enter acc number\n");

```
accountno = s.next();
```

System.out.println ("Enter acc type\n");

```
accounttype = s.next();
```

}



void display()

{ System.out.println ("CUSTOMER NAME : " + customer
- name + "\n"); }

System.out.println ("CUSTOMER Acc NO : " + accountno)

System.out.println ("CUSTOMER Acc TYPE : " + acc_type);

System.out.println ("BALANCE : " + balance);

}

} // end of class .i

Class current extends Bank {

int updatedbalance;

int AfterWithdrawing;

int updatedlostbalance;

int cdeposit()

updatedbalance = Balance + depositbalance;

return updatedbalance;

}



int c.withdraw() {

Afterwithdraw = ((updated balance) - withdrawn
balance) ;

}

int minimum ()

{ if (After withdraw) <= (2000))

{ updatedlostbalance = ((After withdraw) - (200));

System.out.println ("You have minimum but
below 2000 so you have lost 200Rs");

return updatedlostbalance; }

else

return Afterwithdraw;

}

class savings extends Bank {

int updatedbalance;

int Afterwithdraw;

int updatedlostbalance;

sdep - bal();



subdotted balance = Balance + depositbalance

return subdotted balance;

{

int interest();

{ double r = 0.08; }

int n = 12;

int t = 5;

compound interest = (int) ↗

((subdotted balance) * (Math · pow ((1+r/n)
* (n*t)))) ;

return compound interest;

{

int Smithba(); {

- Afterwithdraws = (compoundinterest) - (withdraw
balance);

return Afterwithdraws;

int minimum();

{ if ((Afterwithdraws) < -(1000))

$S \cdot \text{updatedlostbalance} = ((\text{After withdraws}) - 100);$

$\text{return updatedlostbalance};$

{}

else

$\text{return Afterwithdraws}; \quad \}$

Class Transactions {

public static void main (String args()) {

Scanner s = new Scanner (System.in);

current CA = new current();

CA.accept();

System.out.println ("Enter the money you
want to deposit in current acc");

CA.depositbalance = s.nextInt();

System.out.println ("After your deposit,
of " + CA.depositbalance + " New Balance is:
+ CA.cdeposit());

System.out.println ("Enter the money you
want to withdraw");

CA.withdrawbalance = s.nextInt();



System.out.println ("After your withdrawal of "+
CA.withdrawBalance + "\n Now your total balance
is Rs - " + CA.cWithBal());

System.out.println ("After checking if you have
minimum balance is Rs " + CA.minimum());

SavAcc SA = new SavAcc();
SA.accept();

System.out.println ("Enter money u want to
deposit in Saving acc");

SA.depositBalance = r.nextInt();

SA.display();

System.out.println ("After your deposition of " + SA.
"\n Now your total bal is Rs " + SA.depositBalance());

System.out.println ("After interest your total "
+ SA.interest());

System.out.println ("After checking if u have
minimum balance you are not updated
total balance hence is Rs - " + SA.minimum());

3

3

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Problems Javadoc Declaration Console

<terminated> Transactions [Java Application] C:\Users\shivanshu\p2\pool\plugins\org.eclipse.jdt.openjdkhotspot.jre.full.win32.x86_64_14.0.2.v20200815-0932\jre

```

Enter the customer name
shivanshu
Enter the Account Number
911
Enter the Account type
current
Enter the money u want to deposit in current account in rupees
1000
CUSTOMER NAME : shivanshu
ACCOUNT NUMBER : 911
ACCOUNT TYPE : current
After your deposition of 1000
Now your total balance is RS-28800
Enter the money you want to withdraw in rupees
800
After your withdrawal of 800
Now your total balance is RS-28000
After checking if u have minimum balance are not your updated total balance is RS-28000
Enter the customer name
shivanshu
Enter the Account Number
911
Enter the Account type
savings
Enter the money u want to deposit in Saving account
10000
CUSTOMER NAME : shivanshu
ACCOUNT NUMBER : 911
ACCOUNT TYPE : savings
After your deposition of 10000
Now your total balance is RS-37800
After interest ur updated balance is RS-56316|
Enter the money you want to withdraw in Saving account
316
After your withdrawal of RS-316
Now your total balance is RS-56000
After checking if u have minimum balance are not your updated total balance is RS-56000
<
```

```

ACCOUNT TYPE : savings
After your deposition of 10000
Now your total balance is RS-37800
After interest ur updated balance is RS-56316|
Enter the money you want to withdraw in Saving account
316
After your withdrawal of RS-316
Now your total balance is RS-56000
After checking if u have minimum balance are not your updated total balance is RS-56000
<
```

