



WEEK 3

① Write a program to calculate roots of a quadratic equation ($ax^2 + bx + c = 0$)

STEP 1 INPUT a, b, c

STEP 2 $D = b * b - 4 * a * c$

STEP 3 If ($D > 0$)
 PRINT Real Roots
 Roots are $(-b + \sqrt{D}) / (2 * a)$
 Roots are $(-b - \sqrt{D}) / (2 * a)$

EISE IF ($D = 0$)

PRINT EQUAL Roots
 Roots is $(-b) / (2 * a)$

ELSE

PRINT IMAGINARY ROOTS

~~PRINT~~

Roots are $(-b + i\sqrt{-D}) / (2 * a)$

Roots are $(-b - i\sqrt{-D}) / (2 * a)$

STEP 4 STOP

Java code

```
import java.util.*;
import java.lang.*;

public class quadratic
{
    private static int double a;
    private static double b;
    private static double c;
    public static void read()
    {
        Scanner sc = new Scanner (System.in);
        System.out.println("Enter the Co-efficient a");
        a = sc.nextDouble();
        System.out.println("Enter the Co-efficient b");
        b = sc.nextDouble();
        System.out.println("Enter the Co-efficient c");
        c = sc.nextDouble();
    }
}
```

```
public static void calc()
```

```
    read();
    double d = b * b - 4 * a * c;
    if (d > 0)
    {
```

```
        System.out.println("ROOTS ARE  
REAL AND  
DISTINCT");
```

System.out.println("First root is " + (-b + Math.

$\sqrt{d}) / (2 * a))$;

System.out.println("Second root is " + (-b - Math.

$\sqrt{d}) / (2 * a))$;

}

else if (d == 0)

System.out.println("Roots are equal");

System.out.println("Roots are " + (-b) / (2 * a));

);

}

else

{

System.out.println("Roots are imaginary");

System.out.println("Roots are " + (-b) / (2 * a))

+ " + " + "i" +

(Math.sqrt(-d)) / (2 * a))

);

System.out.println("Roots are " + (-b) / (2 * a))

+ " - " + "i" + " + Math.

.sqrt(-d))

);

}

(else have while condition)

}

$a^2 - d^2 = b \sin 2\theta$

$(a < b)$

public static void main (String [] args)

{

value();

}

ALGORITHM:

STEP 1

START

STEP 2 Read number of subjects, usn, name, credit P, mark[] from the user

STEP 3 fun() (grade.)
 If $i = 0$ to n
 if $\text{mark}[i] \geq 90 \& \text{mark}[i] \leq 900$
 Return 10

else if $\text{mark}[i] >= 80 \& \text{mark}[i] < 90$
 return 7

else if $\text{mark}[i] >= 70 \& \text{mark}[i] < 60$
 return 8

else if $\text{mark}[i] >= 60 \& \text{mark}[i] < 50$
 return 7

else if $\text{mark}[i] >= 50 \& \text{mark}[i] < 40$
 return 6

else
 return "fail"

STEP 4 PTO (NextPage)

for i = 0 to n
c = grade (mark[i])
sum_credit += credit[i];
sum += c * credit[i];

sgpa = sum / sum - credit;

STEP 5 PRINT sgpa

Date _____

A program to calculate SGPA of student

import java.util.*;

public class Lab2

{

private static int n;

private static String usn;

private static String name;

private static int credit[];

private static double mark[];

public static void read()

{

Scanner sc = new Scanner(System.in);

System.out.println("Enter the number
of students");

n = sc.nextInt();

credit = new int[n];

mark = new double[n];

System.out.println("Enter the name of
student").

name = sc.next();

System.out.println("Enter the usn");

usn = sc.next();

System.out.println("Enter the credits
of subject");

Date / /

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

{

```
System.out.print("Enter credit in  
subject " + " " +  
(i+1));
```

```
credit[i] = sc.nextInt();
```

}

```
System.out.print("Enter the marks in subject  
" + ");
```

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

{

```
System.out.print("Enter marks in  
subject " + " " +  
(i+1));
```

```
mark[i] = sc.nextDouble();
```

}

```
public static int grade(double marks)
```

```
if (marks >= 90 & & marks <= 100)  
return 10
```

```
else if (marks >= 80 & & marks < 90)
```

```
{ return 9
```

{

Date _____ / _____ / _____

```
else if (marks >= 70 & & marks < 80 )  
{
```

```
    return 4.8;
```

```
}
```

```
else if (marks >= 60 & & marks < 50 )  
{
```

```
    return 3.7;
```

```
}
```

```
else if (marks >= 50 & & marks < 60 )  
{
```

```
    return 6;
```

```
}
```

```
else if (marks >= 40 & & marks < 50 )  
{
```

```
    return 5;
```

```
}
```

```
else
```

```
{
```

```
    System.out.println ("You have failed");  
    return 0;
```

```
}
```

```
}
```

public static double calculate()

```

read()
double sgpa;
double sum_credits = 0;
double sum = 0;
int c;
for (int i = 0; i < n; i++)
{
    c = grade[mark[i]];
}

```

sum_credits += credit[i];

sum = sum + c * credit[i];

}

sgpa = (double) (sum / sum_credits);

return sgpa;

}

public static void main (String [] args)

Scanner sc = new Scanner (System.in);

double sgpa = calculate();

System.out.println ("Name of Student"
+ name);

System.out.println ("Marks are ");

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

System.out.print ("Mark in Subject
" + " " + (i + 1)
+ " is " + "());

System.out.println (mark[i]);

}

Date _____

System out.println ("SGPA of Student is "+
sgpa);

LAB 3

Date _____

Saath

Algorithm

Step 1 Start

class book

Step 2 Take inputs for name, autho
r price and no of pages, using
constructor

Step 3 toString()

return "Name is :" + name + "Autho
is " +
author
+ "Price is " +
price

+ "Number of page
are " + no of
pages

End class book

class Test

STEP 4: book obj = new book()
for i = n

take input from user each
object and its instance
variable

Date / /

STEP 5 for i=0 to n

display obj[7]

STEP 6 End

Date: / /

→ Lab 3

```
import java.io.*;
import java.lang.*;
import java.util.*;
```

```
public class Book_Lab3
```

```
{  
    public String name;  
    public String author;  
    public double price;  
    public double p no-of pages;
```

```
    public Lab_Programs(String n, String a,  
                        double p, int pages)
```

{

```
        name = n;
```

```
        author = a;
```

```
        price = p;
```

```
        no-of-pages = pages;
```

{

@Override

```
public String toString()
```

```
{ return "Name of book is: " + name +
```

```
           " Author of book is: "
```

```
+ author +
```

```
"Cost of the book is "
```

```
+ price +
```

```
"No of pages
```

```
is " + no-of-pages
```

Date

```
import java.util.*;
```

```
import java.io.*;
```

```
import java.lang.*;
```

```
public class ListBook3
```

```
{ public static String name;
```

```
public static String author;
```

```
public static double price;
```

```
public static int no_of_pages;
```

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

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

```
int n;
```

```
System.out.println("Enter the number of  
books");
```

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

```
book3[] ob = new book3[n];
```

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

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

```
name = sc.next();
```

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

```
author = sc.next();
```

```
System.out.print("Enter the price of  
book");
```

Date / /

```
price = sc.nextIntDouble();  
System.out.println("Enter the number of  
pages of book")
```

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

```
ob[i] = new Book3(name, author, price,  
no_of_pages);
```

{

```
for(int i=0; i<n; i++)  
{
```

```
System.out.println("Displaying the  
details of book")
```

```
System.out.println(ob[i]);
```

{

OUTPUT:

1 Enter the number of books

2

3 Enter the name of book

4

5 Enter the author of book

6

Date

Enter the price of book 1
500

Enter the number of pages of book 1
400

Enter the name of book 2
t

Enter the author of book 2
t

Enter the price of book 2
410

Enter the number of pages of book 2
500

Displaying Details of book 1

Name of book is : h Author of book is : t
cost of the book is : 500
No of pages in book : 400

Display Details of book 2

Name of the book is : r Author of book is : t
cost of the book is : ~~500~~ 410
No of pages in book is : 500

LAB - 6

Shapes program.

```

import java.io.*;
import java.lang.*;
import java.util.*;
abstract class Shape {
    int len, wid;
    Shape (int l, int w)
    {
        len = l;
        wid = w;
    }
    abstract void printArea();
}
class rectangle extends Shape {
    rectangle (int a, int b)
    {
        super (a, b);
    }
    void printArea()
    {
        System.out.println ("Area of Rectangle is " +
            (len * wid));
    }
}
class triangle extends Shape {
    triangle (int a, int b)
    {
        super (a, b);
    }
    void printArea()
    {
        System.out.println ("Area of the triangle");
    }
}

```

Date _____

```
is "+(len*wid)/2));
```

```
}
```

Class circle extends Shape

```
circle (int r1, int r2)
```

```
Super (r1, r2);
```

```
Void printArea()
```

```
System.out.println ("Area of the circle is "+  
(3.142 * len*len));
```

```
}
```

class test

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

```
Int l, b, rad;
```

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

```
System.out.println ("Enter the length/base of  
the rectangle/triangle respectively");
```

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

```
System.out.println ("Enter the breadth/height  
of the rectangle/triangle respectively");
```

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

```
System.out.println ("Enter the radius of  
the circle");
```

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

```
Shape s;
```

```
rectangle r = new rectangle (l, b);
```

```
triangle t = new triangle (l, b);
```

```
circle c = new circle (rad, rad);
```

Date / /

$$S = 8;$$

S. print Area(); // Prints the area of the rectangle.

$$S = 4;$$

S. print Area(); // Prints the area of the triangle.

$$S = C;$$

S. print Area(); // Prints the area of the circle.

{ }

OUTPUT

Enter the length/base of the rectangle/Tri
angle respectively.

4

Enter the breadth/height of the rectangle/
Triangle respectively.

4

Enter the radius of the circle.

4

Area of Rectangle is 16

Area of the Triangle is 8

Area of the circle is 50.272.

Date _____ / _____ / _____

Bank Programm

```
import java.io.*;  
import java.lang.*;  
import java.util.*;  
abstract class account
```

{
 String name;

String acc_no;

String type;

double balance;

account (String n, String a, String t, double b)

{

name = n;

acc_no = a;

type = t;

balance = b;

{

abstract void deposit();

abstract void display();

abstract void withdraw();

abstract void fine();

abstract void inter();

{

class curr_acc extends account

{

 curr_acc (String n, String a, String t,
 double b)

{

super (n, a, t, b);

{

void fine()

{

if (balance < 1000)

{

System.out.println ("you will be fined")

Date: / /

500 Rs Because minimum balance in your
Account must be 1000");
balance = balance - 500;

display ();
}

else

{
System.out.println("you will not be charged
Any fine Thank you");
display();
}

void display()
{
System.out.println("Name of the Account
Holder is" + name);
System.out.println("Account Number of
the Account Holder is" + acc_no);
System.out.println("Balance In your
Account is" + balance);
}
void deposit()
{
double sum;
Scanner sc = new Scanner(System.in);
System.out.println("Enter the amount
you want to withdraw");
sum = sc.nextDouble();
balance = balance - sum;
if (balance > 1000)
display();
else

Date / /

```
System.out.println("you cannot withdraw  
This much Amount");  
line()
```

```
void inter()
```

```
System.out.println("your Account Type is  
not Eligible For Any Interest");
```

```
class sav_acc extends account
```

```
sav_acc (String n, String a, String t,  
double b)
```

```
super (n, a, t, b);
```

```
void display ()
```

```
System.out.println("name of the Account  
Holder is "+ name);
```

```
System.out.println("Account Number of  
the Account Holder is "+ acc_no);
```

```
System.out.println("Type of the Account  
of the Account Holder is "+ type);
```

```
System.out.println("Balance in your  
Account is "+ balance);
```

```
void withdraw()
```

```
double sum;
```

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

```
System.out.println ("Enter the amount you
```

Date

```
want to withdraw");
System.out.println();
Sum = sc.nextDouble();
balance = balance - Sum;
display();
```

Void deposit()

```
int Sum;
Scanner sc = new Scanner(System.in);
System.out.println("Enter the principal amount you want to submit");
Sum = sc.nextInt();
```

Void inter()

```
double n, t;
double cpy = balance;
double interest;
Scanner sc = new Scanner(System.in);
System.out.println("Enter the Rate of interest");
n = sc.nextInt();
System.out.println("Enter the year of time Account has to be elapsed");
t = sc.nextInt();
System.out.println("Enter the period per year, when interest has to be calculated");
n = sc.nextInt();
balance = (balance) * (Math.pow((1 + (interest / 100)), t));
Interest = balance - cpy;
System.out.println("Interest Accumulated");
```

Date

In your Account is "t interest);
display();
System.out.println();

Void fine ()

{
System.out.println("you have no Restriction on your minimum Balance Thankyou");
System.out.println();

Y
class test

{
public static void main (String args)

{
account a;
Scanner sc = new Scanner (System.in);
String name, acc_num, typ;
int option;
double bal;
System.out.println ("Enter the name of the account holder");
name = sc.next();

System.out.println ("Enter the account number");
acc_num = sc.next();

typ = "current Account";
System.out.println ("Enter the minimum Balance in the account");
bal = sc.nextDouble();

System.out.println ("1: current Account");
System.out.println ("2: Savings Account");
System.out.println ("3: Exit");

```

System.out.println ("Enter your choice");
option = sc.nextInt();
switch (option)
{
}

```

Case 1;

```

curr_acc c = new curr_ac (name, acc
                           typ, bal);

```

a = c;

int counter;

do

```

System.out.println ("1 : Check For Fine");
System.out.println ("2 : Deposit");
System.out.println ("3 : withdraw");
System.out.println ("4 : Exit");
System.out.println ("Enter your choice");

```

```

counter = sc.nextInt();
switch (counter)
{
}

```

Case 1;

```

a. fine ();
break;

```

case 2;

```

a. deposit ();
break;

```

case 3;

```

a. withdraw ();
break;

```

case 4;

```

System.exit (0);
break;

```

4

```

while (counter != 4);
break;

```

Date _____

case 2;

Sav-Acc s = new Sav-Acc(name, acc-num,
type, bal);

a = s;

int cnr;

do

{

System.out.println("1; Deposit with
Interest");

System.out.println("2; withdraw");

System.out.println("3; Exit");

System.out.println("Enter your choice");

cnr = sc.nextInt();

switch(cnr)

{

case 1;

a.deposit();

break;

case 2;

a.withdraw();

break;

case 3;

System.exit(0);

break;

{

while(cnr != 3);

break;

case 3;

System.exit(0);

break;

{

}

Date / /

Saath

OUTPUT

Enter the name of the Account holder

Hari

Enter the Account Number

1bm19cs153

Enter the minimum balance in the account

2000

1 : current Account

2 : Saving Account

3 : Exit

Enter your choice

3

Enter the rate of

1 : Deposit

2 : withdraw

3 : Interest

4 : Exit

Enter your choice

1

Enter ~~your~~ the principle amount of you want to submit

500

Name of the Account Holder is Hari

Account Number of the Account holder

Current Account

Balance in your Account is 2500.

1 : Deposit

2 : withdraw

3 : Interest

4 : Exit

Enter your choice

3

Date _____ / _____ / _____

Enter the rate of the interest

5

Enter the year of the time Account has to be
clapped.

4

~~615153~~

Interest Accumulated In your Account is
538.7656.

Name of the Account holder is Hari
Account Number of the Account Holder
is 1bm19cs153

Type of the Account of the Account Holder
is current Account

Balance In your Account is 3038.7656