

LAB - 1QUADRATIC

```
import java.io.*;
import java.util.*;
import java.lang.*;
public class quadratic
```

```
{  
    private static 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();
```

```
    System.out.println("THANK YOU FOR ENTERING  
THE CO-EFFICIENTS");
```

```
}
```

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

```
{  
    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)) / (2 \* a));

}

public static void main (String [] args)

{

Class1;

}

}

LAB-2STUDENT

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

```
class Student
```

```
{
```

```
    private String USN;
```

```
    private String name;
```

```
    private int n;
```

```
    private double SPPA = 0;
```

```
    private int totalCredits = 0;
```

```
    private int credits[];
```

```
    private double marks[];
```

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

```
    void Details()
```

```
{
```

```
    System.out.println ("Enter USN of the student");
```

```
    USN = ss.nextLine();
```

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

```
    name = ss.nextLine();
```

```
    System.out.println ("Enter no. of subjects");
```

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

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

```
    marks = new double[n];
```

```
    System.out.println ("Enter details of subject : ");
```

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

```
{
```

```
    System.out.println ("Enter credits allotted to the subject
```

```
        "+(i+1));
```

credits[i] = ss.nextInt();

System.out.println ("Enter marks in the subject " + (i+1));

marks[i] = ss.nextInt();

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

}

void calculate (int credit, double mark, 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 <= 69)

SGPA = SGPA + (8 \* credit);

else if (mark >= 60 && mark <= 59)

SGPA = SGPA + (7 \* credit);

else if (mark >= 50 && mark <= 49)

SGPA = SGPA + (6 \* credit);

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

SGPA = SGPA + (5 \* credit);

else

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

}

void Display ()

{

```
System.out.println ("Details of the student");
```

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

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

```
System.out.println ("CGPA of Student " + (CGPA / total credit))
```

}

}

```
Class Main
```

{

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

{

```
Student s1 = new Student ();
```

```
s1.Details ();
```

```
s1.Display ();
```

}

}

LAB-3 Books

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

```
Class book
```

```
{
```

```
String booktitle;
```

```
String author;
```

```
int no_of_pages;
```

```
double price;
```

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

```
book ()
```

```
{
```

```
System.out.print ("Enter book title:");
```

```
booktitle = sc.nextLine();
```

```
System.out.print ("Enter the author name:");
```

```
Author = sc.nextLine();
```

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

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

```
System.out.print ("Enter the pages:");
```

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

```
}
```

```
public String toString ()
```

```
{
```

```
return ("Book name = " + booktitle + " Author = " + author + "
```

```
Price = " + price + " Pages = " + no_of_pages);
```

```
}
```

```
}.
```

class Books

{

public static void main (String [] args)

{

int n, i;

Scanner in = new Scanner (System.in);

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

n = in.nextInt();

book [] b = new book [n];

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

{

System.out.println ("Enter details of Books: " + (i+1));

b [i] = new book ();

y

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

{

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

}

}

}

LAB - 4SHAPE

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

abstract class Shape {

```
public int a;
```

```
public int b;
```

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

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

}

Class rectangle extends shape {

```
public int void printArea () {
```

System.out.println ("Please enter length  
and breadth of rectangle : ");

```
float a = s.nextFloat();
```

```
float b = s.nextFloat();
```

```
float area = a * b;
```

System.out.println ("Area = " + area + "sq. units");

}

Class triangle extends shape {

```
public void printArea () {
```

System.out.println ("Please enter three sides of  
triangle : ");

```
float a = s.nextFloat();
```

```
float b = s.nextFloat();
```

```
float c = s.nextInt();
```

```
float d = (a+b+c)/2;
```

```
double area = Math.sqrt((d*(d-a)*(d-b)*(d-c))));
```

```
System.out.println("Area = " + area + " sq. units");
```

{}

}

class circle extends shape {

```
public void printArea() {
```

```
System.out.println("Please enter the radius  
of circle : ");
```

```
float a = s.nextInt();
```

```
float area = 22/7 * a * a;
```

```
System.out.println("Area = " + area + " sq. units");
```

{}

{}

class ShapeDemo {

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

```
Shape r = new rectangle();
```

```
Shape t = new triangle();
```

```
Shape c = new circle();
```

```
for (int i=0; i<100; ++i)
```

```
System.out.println("In Triangle")
```

```
Triangle In")
```

```
Circle In");
```

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

```
int ch = s.nextInt();
```

## Switch (c++)

Case 1: t.printArea();  
break;

Case 2: r.printArea();  
break; (for next case)

Case 3: c.printArea();  
break; (for next case)

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

{Case 1, 2, 3} Main.java

y y (if you want to use switch)

if you want to use if else if then else,

if you want to use for loop,

> (Main.java)

else if

else if you want to use for loop and for

if else if then else

for (int i = 0; i < 10; i++)

System.out.println ("Hello world " + i);

> (HelloWorld.java)

public class

public void main (String args[]){}

{System.out.println ("Hello world");}

LAB-5BANK

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

```
class Account {
```

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

```
String cusName, accType;
```

```
long accNumber;
```

```
double balance = 9876.5
```

```
void Accept () {
```

```
System.out.println ("Enter name");
```

```
cusName = in.nextLine();
```

```
System.out.println ("Enter account number");
```

```
accNumber = in.nextLong ();
```

```
}
```

```
void deposit () {
```

```
int dep;
```

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

```
dep = in.nextInt();
```

```
balance += dep;
```

```
System.out.println ("Balance = "+balance);
```

```
}
```

```
void withdrawal () {
```

```
int withdraw;
```

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

```
    withdraw = in.nextInt();
```

```
    balance -= withdraw;
```

```
    System.out.println("Balance = " + balance);
```

{}

{}

```
class CurrentAccount extends Account {
```

```
    void penalty () {
```

```
        if (balance < 2000) {
```

```
            balance -= 400;
```

```
            System.out.println("400 penalty for maintained less  
than minimum balance");
```

```
            System.out.println("Balance = " + balance);
```

{}

{}

{}

```
class Bank {
```

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

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

```
        System.out.println ("Enter your choice \n1. Savings  
Account \n2. Current Account");
```

```
        int choice = sc.nextInt();
```

```
        CurrentAccount c = new CurrentAccount();
```

```
        SavingsAccount s = new SavingsAccount();
```

```
        if (choice == 2) {
```

```
            c.Accept();
```

System.out.println ("Enter your choice\n1. Deposit\n2. Withdraw");

int n = sc.nextInt();

switch () {

case 1: {

S.deposit();

break;

}

case 2: {

S.withdraw();

S.penalty();

break;

}

~~default:~~

System.out.println ("Wrong choice");

}

if (choice == 1) {

S.Accept();

System.out.println ("Enter your choice\n1. Deposit\n2. Withdraw");

int n = sc.nextInt();

switch (n) {

case 1: {

S.deposit();

S.withdraw();

break;      final for splitting

{

transient

Case 2: {

s.withdrawal();

breaks;

}

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

}

{

public class ATM {

y

{ atm. balance = 0; }

{ atm. max. limit = 1000; }

{ atm. min. limit = 100; }

{ atm. withdrawal = 0; atm. i = 0; }

{ atm. withdraw (int amount) { atm. i = 0; atm. balance = atm. balance - amount; atm. withdrawal = amount; atm. printBalance (); } }

{ atm. printBalance () {

System.out.println ("Available balance is " + atm. balance);

{

LAB 6PACKAGE PROGRAMCIE→ INTERNALS

```
package CIE;
import java.util.*;
```

```
public class Internals extends Student {
```

```
    public double cie[];
```

```
    public void display () {
```

```
        item = new double [5];
```

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

```
        System.out.println ("Enter cie marks out of 50 :");
```

```
        for (int i=0; i<5; i++)
```

```
            item [i] = E.nextDouble();
```

```
}
```

```
y
```

```
y
```

→ STUDENT

```
package CIE;
import java.util.*;
```

```
public class Student {
```

```
    public String Name;
```

```
    public String USN;
```

```
    public int sem;
```

```
    public void display() {
```

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

```
        System.out.println ("Name :");
```

```
        Name = sc.nextLine();
```

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

```
        USN = sc.nextLine();
```

```
        System.out.println ("Sem : ");
```

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

3

g

SEE

→ EXTERNAIS

```
package SEE;
```

```
import CIE.*;
```

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

```
public class External extends CIE.Student {
```

```
    public double sem[];
```

```
    public void display() {
```

```
Scen = new Scanner double [5];
```

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

```
System.out.println ("SEE marks for 5 subjects  
out of 100:");
```

```
for (int i=0; i<5; i++) {
```

```
Scen [i] = s.nextInt();
```

```
}
```

```
}
```

## MAIN

```
import CIE.*;
```

```
import SEE.*;
```

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

```
public class Main {
```

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

```
int n;
```

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

```
System.out.println ("Enter .no. of students: ");
```

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

```
CIE.Student st [] = new CIE.Student [n];
```

~~SEE.Externals ex [] = new SEE.Externals [n];~~

~~CIE.Internal<sup>in</sup> st [] = new CIE.Internal<sup>in</sup> [n];~~

~~SEE.Externals ex [] = new SEE.Externals [n];~~

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

st[i] = new CIE.Student();

in[i] = new CIE.Externals();

ex[i] = new SEE.Externals();

st[i].display();

in[i].display();

ex[i].display();

System.out.println("Total Marks of " + st[i].name + "\n");

for (int j=0; j<5; j++) {

System.out.println(in[i].item[j] + ex[i].item[j]/2);

}

}

}

}

LAB 7GENERIC

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

class gen<T>  
{

T ob;

gen(T o)  
{

ob=o;

}

T getob()  
{

return ob;

}

void showtype()  
{

System.out.println ("Type of T is "+ ob.getClass().

getName());

}

}

class generic

public static void main (String [] args)

String n;

Scanner sc = new Scanner(System.in);

System.out.println ("Enter the Integer Number

to be Displayed using the generic  
style");

n = sc.nextInt();

gen<Integer> ob1 = new gen<Integer>(Integer.  
valueOf(n));

ob1.showtype();

int val = ob1.getOb();

System.out.println ("Value is: " + val);

System.out.println();

System.out.println ("Enter the String to be Displayed  
using the generic style:");

n = sc.nextLine();

gen<String> ob2 = new gen<String>(n);

ob2.showtype();

String x = ob2.getOb();

System.out.println ("Value : " + x);

System.out.println();

System.out.println ("Enter the Double Number.  
to be Displayed Using the  
generic style:");

n = sc.nextDouble();

```

gen <Double> ob3 = new gen <Double> (Double.parseDouble("1"));
ob3.showType();
double ans = ob3.getOb();
System.out.println ("Value : " + ans);
    
```

y

(Object)

(Object)

• return Object -> any type object

(Object)

(Object)

(Object) + Object

• Java has 6 primitive data types

(Object)

long, float, double, int, char, boolean

(Object) + Object + Object

(Object)

String, Date, Date & Date & Date

(Object)

With some part

int, long, double, float, etc

(Object)

String, Date, Date & Date & Date

With some part

(Object)

(Object)

LAB 8AGE

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

```
class fatherAgeException extends Exception  
{
```

```
    public String toString()  
    {
```

```
        return ("Father's age is less than 0");
```

```
}
```

```
(class sonAgeException extends Exception  
{
```

```
    int a1;
```

```
    sonAgeException (int age)  
    {
```

```
        a1 = age;  
    }
```

```
    public String toString()  
    {
```

```
        if (a1 < 0)
```

```
            return ("Son's age is less than 0");
```

```
        else
```

```
            return ("Son's age is more than father's age");
```

```
}
```

```
}
```

```
class father
```

{

public int age1;

Scanner sc = new Scanner (System.in);

father () {

System.out.print ("Enter father's age: ");

age1 = sc.nextInt ();

}

void ex1 () throws FatherAgeException {

if (age1 &lt; 0)

throws new FatherAgeException ();

}

}

class son extends father

{

public int age2;

son () {

System.out.print ("Enter son's age: ");

age2 = sc.nextInt ();

void ex2 () throws SonAgeException {

{

if (age2 &lt; 0 || age2 &gt; super.age1)

throws new SonAgeException (age2);

}

}

class Main

{

public static void main (String args [])

{

Scanner s1 = new Scanner (System.in);

try

s1. nextInt();

{

catch (InputMismatchException e)

{

System.out.println (e);

}

try

{ s1.nextInt();

s1.nextInt();

}

catch (InputMismatchException e)

{

System.out.println (e);

}

}

LAB 9THREAD

Class bus implements Runnable {

Thread t1;

bus() {

t1 = new Thread (this, 'bus');

}

public void run () {

try {

for (int i = 5; i > 0; i--) {

System.out.println ("BMS College of Engineering");

Thread.sleep (10000);

}

}

Catch (InterruptedException e) {

System.out.println ("BMS interrupted");

}

System.out.println ("Exiting: " + t1);

}

Class Cse implements Runnable {

Thread t2;

cse() {

t2 = new Thread (this, "cse");

}

public void run () {

```
try {
```

```
    for (int i = 5; i > 0; i--) {
```

```
        System.out.println ("BMS (SE)");
```

```
        Thread.sleep (2000);
```

```
}
```

```
}
```

```
Catch (InterruptedException e) {
```

```
    System.out.println ("Exiting : "+t1);
```

```
    "CSE interrupted\n");
```

```
t1.interrupt();
```

```
    System.out.println ("Exiting : "+t2);
```

```
}
```

```
}
```

```
class threadprg {
```

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

```
    BMS obj1 = new BMS ();
```

```
    CR obj2 = new CR ();
```

```
    obj1.t1.start ();
```

```
    obj2.t2.start ();
```

```
y
```

```
y
```

## LAB-10

## DIVISION

```
import java.awt.*;
import java.awt.event.*;
class div extends Dialog implements ActionListener{
    Series d;
    div (Frame parent, String title){
        super (parent, title, false);
        d= (Series)parent;
        setLayout (new FlowLayout ());
        setSize (500, 200);
        add (new Label (d.er));
        Button b;
        add (b = new Button ("OK"));
        b.addActionListener (this);
    }
    public void actionPerformed (ActionEvent ae){
        dispose();
    }
}
public class Series extends Frame implements ActionListener {
    TextField n1, n2, r;
    Button Divide;
    String er = "";
    public Series () {
        n1 = new TextField ();
        n2 = new TextField ();
        Divide = new Button ("Divide");
        r = new TextField ();
        Divide.addActionListener (this);
        setLayout (new FlowLayout ());
        Divide = new Button ("Divide");
    }
}
```

```
Label n1p = new Label ("Num1": label.RIGHT);
Label n2p = new Label ("Num2": label.RIGHT);
n1 = new TextField (10);
n2 = new TextField (10);
r = new TextArea (10);
add (n1p);
add (n1);
add (n1);
add (n2p);
add (Divide);
add (r);
Divide.addActionListener (this);
add WindowListener (new WindowListener ());
public void windowClosing (WindowEvent we)
{
    System.exit (0);
}
```

```
public void actionPerformed (ActionEvent ae)
```

```
{
```

```
int a=0, b=0, c=0, d=0;
```

```
double re=0;
```

```
try {
```

```
a = Integer.parseInt (n1.getText ());
```

```
b = Integer.parseInt (n2.getText ());
```

}

```
(catch (NumberFormatExceptionException e1)){
```

```
    er = "Caught : "+e1;
```

```
    div dw = new div (this, "Error");
```

```
    dw.setVisible (true);
```

}

```
try {
```

```
    c = Integer.parseInt (nl.getText (1));
```

```
    d = Integer.parseInt (nl.getText (2));
```

```
    ne = c/d;
```

}

```
(catch (ArithmaticException e2)){
```

```
    er = "Caught : "+e2+" as n2 = "+nl.getText();
```

```
    div dw = new div (this, "Error");
```

```
    dw.setVisible (true)
```

}

```
    ne.setText ("."+ne);
```

}

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

```
    series appuin = new Series ();
```

```
    appuin.setSize (new Dimension (800, 400));
```

```
    appuin.setTitle ("Integer Division");
```

```
    appuin.setVisible (true);
```

}

}