

8/1/24.

# ✓) Student Program:

```
import java.util.Scanner;
class Student
{
    String name, usn;
    int marks[] = new int[10];
    Scanner sn = new Scanner(System.in);

    void setMarks()
    {
        for(int i=0; i<6; i++)
    }

    void acceptDetails()
    {
        System.out.println("Enter the USN");
        Usn = sn.next();
        System.out.println("Enter the name");
        name = sn.next();
        System.out.println("Enter 6 marks");
        for(int i=0; i<6; i++)
        {
            marks[i] = sn.nextInt();
        }
    }
}
```

```
double calculate()
```

```
{
```

```
    int sum = 0;
```

```
    double per;
```

```
    for (int i = 0; i < 6; i++)
```

```
{
```

```
    sum = sum + marks[i];
```

```
}
```

```
    per = sum / 6.0;
```

```
    return per;
```

```
}
```

```
void display()
```

```
{
```

```
    System.out.println("The name of student is :" + name);
```

```
    System.out.println("The usn of student is :" + usn);
```

```
    System.out.println("The percentage of student is :" +
```

```
        calculate() + "%");
```

```
}
```

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

```
{
```

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

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

```
int stu = sn.nextInt();
```

```
Student[] student = new Student[stu];
```

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

```
{
```

```
student[i] = new Student();
```

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

```
student[i].setDetails();
```

```
}
```

```
System.out.println("Student details are :");
```

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

```
{
```

```
System.out.println("Details of student " + (i+1) + " are");
```

```
student[i].calculate();
```

```
}
```

```
sn.close();
```

```
}
```



Q.P.:

Enter no of students: 3.

Enter details of student 1:

Enter other name: ~~Rohit~~ Aditya

Enter the USN: IBNA2AC5011

Enter 6 marks:

45  
66

90

85

71

99.

Enter details of student 2:

Enter name of student: Roshan.

Enter the usn: IBNA2AIS569.

Enter 6 marks:

48  
60

98

100

99.

Enter details of student 3:

Enter name of student: Rahul

Enter usn : IBNA2AME420

Enter 6 marks : 22 80 65 40 100 100 90.

## Student Details. are:

Name of Student 1 is Aditya.

USN of Student is IBNA2ACSON1.

The percentage is 85.035%.

Name of Student is Roshan.

USN of Student is IBNA2AS069.

The percentage is : 90.45%.

Name of Student is Rahul.

USN of Student is IBNA2ME020.

The percentage is 88.240%.



(OKAY)

## Q) Quadratic Eqn:

```
import java.util.*;  
  
import java.lang.Math;  
  
class Quad {  
  
    double a, b, c, r1, r2, r;  
  
    void input()  
    {  
        Scanner sc = new Scanner(System.in);  
  
        System.out.println("Enter the 1st coefficient");  
        a = sc.nextInt();  
  
        System.out.println("Enter the 2nd coefficient");  
  
        b = sc.nextInt();  
  
        System.out.println("Enter the 3rd coefficient");  
        c = sc.nextInt();  
    }  
  
    void calc()  
    {  
        double d = b * b - 4 * a * c;  
  
        if(d > 0){  
            r1 = (-b + Math.sqrt(d)) / (2 * a);  
            r2 = (-b - Math.sqrt(d)) / (2 * a);  
        }  
    }  
}
```

System.out.println ("The roots are real & distinct = " + r1 + " and

(-r2),

}

else if (d < 0) {

r = -b / (2\*a);

r = Math.sqrt(-d) / (2\*a);

System.out.println ("The roots are imaginary & distinct : ")

" + r1 + " + i + " and " + r2 + " + i )^2

else {

r = -b / (2\*a);

System.out.println ("The roots are real and equal : " + r);

}

}

class Quad {

public static void main (String args []) {

Quad q = new Quad ();

q.input ();

q.calc ();

}

}

elp

Enter first coefficient:

1

Enter second coefficient:

2

Enter 3<sup>rd</sup> coefficient:

1.

Roots are real and equal: -1.0.

Q

'1). abstract class Shape {

protected int side1;

protected int side2;

public static void main (String args[]) {

public Shape (int side1, int side2) {

this.side1 = side1;

this.side2 = side2;

public abstract void printArea();

}.

class Rectangle extends Shape {

public Rectangle (int length, int width) {

super (length, width);

}

@Override

public void printArea () {

int area = side1 \* side2;

System.out.println ("Area of rectangle : " + area);

}.

```
class Triangle extends Shape{
```

```
    public Triangle(int base, int height){
```

```
        super(base, height);
```

```
}
```

```
@Override
```

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

```
    double area = 0.5 * side1 * side2;
```

```
    System.out.println("Area of Triangle : " + area);
```

```
}
```

```
}
```

```
class Circle extends Shape{
```

```
    public Circle(int radius){
```

```
        super(radius, 0);
```

```
}
```

```
@Override
```

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

```
    double area = Math.PI * side1 * side1;
```

```
    System.out.println("Area of Circle : " + area);
```

```
}
```

```
}
```

```
public class Main {
```

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

```
        Rectangle rectangle = new Rectangle(5, 10);  
        rectangle.printArea();
```

```
        Triangle triangle = new Triangle(8, 6);
```

```
        triangle.printArea();
```

```
        Circle circle = new Circle(4);
```

```
        circle.printArea();
```

3.

(rectangle) rectangle rectangle

3.

rectangle

triangle

circle

rectangle.printArea();

triangle.printArea();

circle.printArea();

Area of Rectangle = 50

Area of Triangle = 24

Area of Circle = 50.264

Q

2) Bank account class:

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

```
class Account {
```

```
    boolean cheque;
```

```
    String name;
```

```
    long accno;
```

```
    String acctype;
```

```
    double bal;
```

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

```
Account (String name, long accno, String acctype,  
         double bal, boolean cheque) {
```

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

```
    this.accno = accno;
```

```
    this.acctype = acctype;
```

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

```
    this.cheque = cheque;
```

```
}
```

```
}
```

```
void dept() {
```

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

```
double amt = sn.nextDouble();
```

```
bal += amt;
```

```
}
```

```
void display_Bal () {
```

```
System.out.println("Balance : "+bal);
```

```
}
```

```
public void interest () {
```

~~System.out.println("Interest rate : ");~~~~double rate = sn.nextDouble();~~~~if ("Savings".equals(account)) {~~~~double interest = bal \* (rate/100);~~~~bal += interest;~~

```
}
```

```
}
```

```
class Bank {
```

```
    String acctype;
```

```
    double bal;
```

```
    double rate;
```

```
}
```

```
    }
```

```
public void withdraw() {
```

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

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

```
    if(amt <= bal) {
```

```
        bal -= amt;
```

```
    } else {
```

```
        System.out.println("Insufficient funds");
```

```
} class SavAcc extends Account {
```

```
    public SavAcc (String name, long accno, double bal, boolean  
cheque) {
```

```
        Super (name, accno, "Savings", bal, cheque);
```

```
}
```

~~```
class CurrentAcc extends Account {
```~~

```
    double minBal;
```

```
    double serv;
```

```
    public CurrentAcc (String name, long accno, double bal, double minBal,
```

```
                      double serv, boolean cheque) {
```

```
        Super (name, accno, "Current", bal, cheque);
```

Bingo

this.serv = serv;

@Override

```
public void withdraw() {
```

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

```
double amt = senextDouble();
```

if (amt <= bal - minbal) {

$\text{bal} = \text{amt};$

else

```
System.out.println("Insufficient funds");
```

```
public void check() {
```

POL - 1 SERV

```
System.out.println("Service charges applied");
```

4

2

class Main {

public static void main (String args[]) {

SaveAcc S = new SaveAcc ("Joseph J", "12456789",  
1000.0, false);

Current Acc C = new CurrentAcc ("John Milk", "987654321",  
"2500.00", "500.00",  
true);

System.out.println ("Savings Acc : ");

S.displayBal();

S.dep();

S.displayBal();

S.interest();

S.displayBal();

S.withdraw();

S.displayBal();

System.out.println ("Current Acc : ");

C.displayBal();

C.dep();

C.displayBal();

C.withdraw();

C.displayBal();

C.dep();

C.displayBal();

3.

3

Op:

Saving Acc:

Balance : 1000.0.

Enter amount to be deposited

250.

Balance : 1200.0.

Enter rate : 8.

Balance : 1296.0.

Enter amount to be withdrawn.

670.

Balance : 626.0

Current Acc:

Balance : 2000.0

Amount to be deposited : 0

Balance : 2000.0

~~Amount to withdraw : 1600.~~

Balance : 400.

Service charge approved.

Balance : 350.

J. Miller

29/11/24.

Package:

package CIE;

public class Student {

    public String usn, name;

    public int sem;

    public Student (String usn, String name, int sem) {

        this.usn = usn;

        this.name = name;

        this.sem = sem;

}

}

package CIE;

public class Internals extends Student {

    public double [] internalMarks = new double [5];

    public Internals (String usn, String name, int sem, double [] internalMarks) {

        super (usn, name, sem, internalMarks);

    } // this.internals = internalmarks;

```
package SEE;
```

```
import CIE.Student;
```

```
public class External extends Student {
```

```
    public double [] seeMarks = new double [5];  
  
    public External (String usn, String name, int sem,  
                    double [] seeMarks) {  
        super (usn, name, sem);  
        this.seeMarks = seeMarks;  
    }
```

```
    package result;
```

```
    import CIE.Student;  
    import CIE.Internals;  
    import SEE.External;  
  
    public class result {
```

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

~~double internal [] = { 43, 45, 47, 44, 413 };~~

~~double internals [] = { 90, 87, 65, 98, 439 };~~

~~Student s1 = new Student ("IBN20CS150", "Jose",~~

~~Internals i1 = new Internals ("IBN20CS150", "Jose",~~

~~Internals i2 = new Internals ("IBN20CS150", "Jose",~~

~~3, internal );~~

```
External el = new External ("IBH22CS150", "Joe",  
externals);
```

```
System.out.println ("USN:" + sl.usn + "name:" + sl.name  
+ "Semi:" + sl.sem),  
Sep ("Internal marks"),
```

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

```
Sep ("Internal marks." + (i+1) + ":" + i + ".internal  
Marks[i]),  
}
```

```
Sep ("External Marks");  
for (int i=0; i<5; i++) {  
    Sep ("External Marks." + (i+1) + ":" + el.sections[i]);  
}
```

3  
3

elp:

USN: 1BMA200150 name: Jose sem: 3

Internal Marks:

Internal Marks 1 : 43  
2: 45  
3: 47.  
4: 44  
5: 41

External Marks:

External Marks 1: 45  
2 40  
3 45  
4 49  
5. 50.

Final Marks:

Course 1: 98.  
Course 2: 95  
Course 3: 92  
Course 4: 93  
Course 5: 91.

Signature

19/2/24: Father - son exception:

class WrongAge extends Exception{

public WrongAge(){

super("Age cannot be negative");

}

.

class Father{

private int age;

public Father(int age) throws WrongAge{

if(age < 0){

throw new WrongAge();

.

this.age = age;

public int getAge(){

return age;

.

class Son extends Father{

private int sonAge;

public Son(int fatherAge, int sonAge) throws  
WrongAge, IllegalArgumentException{

super(fatherAge);

if(sonAge >= fatherAge)

throw new IllegalArgumentException("Son's")

age must be less than father's");

3.

this.sonAge = sonAge;

3.

public int getSonAge() {

return <sup>son</sup>Age;

3.

3.

public class ExceptionHandlingInheritance {

public static void main(String args[]) {

try {

Father father = new Father(age: 50);

Son son = new Son(fatherAge: 50, sonAge: 25);

System.out.println("Father's age : " + father.getAge());

System.out.println("Son's age : " + son.getSonAge());

3.

catch (WrongAge e) {

System.out.println("Exception: " + e.getMessage());

3.

catch (IllegalArgumentException e) {

System.out.println("Exception: " + e.getMessage());

3.

3. 3.

Q1: Father's age: 50.

Son's age: 25.

## ② Thread Program:

```
class DisplayMessage extends Thread {  
    private String message;  
    private int interval;  
  
    public DisplayMessage(String message, int interval)  
    {  
        this.message = message;  
        this.interval = interval;  
    }  
}
```

@Override

```
public void run() {
```

```
    while (true) {
```

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

```
        try {
```

```
            Thread.sleep(interval * 1000);
```

```
}  
}
```

```
catch (InterruptedException e) {  
    e.printStackTrace();  
}
```

```
e.printStackTrace();  
}
```

3.

3. 3. 3.

```
public class Main {
```

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

```
        DisplayMessage thread1 = new DisplayMessage(  
            message: "BMS College of  
            Engineering",  
            interval: 10);  
  
        DisplayMessage thread2 = new DisplayMessage(message: "CSE",  
            interval: 2);  
  
        thread1.start();  
        thread2.start();  
    }
```

3.

Q1P:

CSE.

BMS College of Engineering

CSE

CSE.

BMS College of Engineering

CSE

CSE.

BMS College Of Engineering

CSE

CSE

....

*Q1P  
S1  
P1*

② Book Program:

```
import java.util.*;  
  
class Book {  
  
    private String name;  
    private String author;  
    private double price;  
    private int num_pages;
```

```
public Book(String name, String author, double price,  
           int num_pages) {
```

```
    this.name = name;  
    this.author = author;  
    this.price = price;  
    this.num_pages = num_pages;  
}
```

```
public String getName() {  
    return name;  
}
```

~~```
public String getAuthor() {  
    return author;
```~~

```
public double getPrice () {
```

```
    return price;
```

```
}
```

```
public int getNumPages () {
```

```
    return num_pages;
```

```
}
```

```
public void setName (String name) {
```

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

```
}
```

```
public void setAuthor (String author) {
```

```
    this.author = author;
```

```
}
```

```
public void setPrice (double price) {
```

```
    this.price = price;
```

```
}
```

```
public void setNumPages (int num_pages) {
```

```
    this.num_pages = num_pages;
```

```
}
```

## @Override

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

```
    return "Book Details : \n Name : " + name + "\n" +
           " Author : " + author + "\n" +
           " Price : $" + price + "\n" +
           " Number of Pages : " + num_pages;
```

}

}

```
public class BookTest {
```

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

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

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

  

```
        int n = sn.nextInt();
```

```
        Book[] book = new Book[n];
```

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

```
            System.out.print ("Enter details for Book " + (i+1) + ": ");
```

~~```
            System.out.print ("Name");
```~~~~```
            String name = sn.nextLine();
```~~

```
System.out.print("Author");  
String author = sn.nextLine();  
System.out.print("Price");  
double price = sn.nextDouble();  
System.out.print("Number of pages");  
int numPages = sn.nextInt();  
books[i] = new Book(name, author, price, numPages);
```

{

```
System.out.println("Details of all books");  
for(int i=0; i<n; i++) {  
    System.out.println("\nBook" + (i+1) + ":" );  
    System.out.println(books[i]);  
}
```

{

```
sn.close();
```

{

{

+

Author  
Price  
Number of pages

Books

Author

Price

Number of pages

Books

Author

Price

Number of pages

Books

Op: Enter number of books : 3

Enter details of Book 1 :

Name : To Kill a Mockingbird.

Author : Harper Lee.

Price : 400.

Number of Pages : 281.

Enter details of Book 2 :

Name : The Catcher in the Rye

Author : J. D Salinger.

Price : 380.

Number of Pages : 328.

Enter details of Book 3 :

Name : The Lord of Rings

Author : J. R. R. Tolkien.

Price : 1000

No of pages : 1200.

Details of all books :

Book 1:

Name: To Kill a Mockingbird

Author : Harper Lee.

Price \$400.

No of pages : 281

Book 2:

Name: The catcher in the Rye.

Author : J.D Salinger.

Price : \$380

No of pages : 328.

Book 3:

Name: The Lord of Rings

Author : J.R.R Tolken.

Price : \$1000

No of pages : 1200.

public class AWTExample

```
import java.awt.*;
import java.awt.event.*;
```

```
public class AWTExample extends WindowAdapter
```

```
Frame f;
```

```
AWTExample() {
```

```
f = new Frame();
```

```
f.addWindowListener(this);
```

```
Label l = new Label("Employee id :");
```

```
Button b = new Button("Submit");
```

```
TextField t = new TextField();
```

```
l.setBounds(20, 80, 80, 30);
```

```
b.setBounds(20, 100, 80, 30);
```

```
b.setBounds(100, 100, 80, 30);
```

```
f.add(b);
```

```
f.add(t);
```

```
f.setSize(400, 300);
```

```
f.setLayout(NULL);
```

```
f.setVisible(true);
```

public class AWTExample extends WindowAdapter {

    AWTExample() {

        System.out.println("exit(0)");

}

    public static void main(String args[]) {

        AWTExample awtObj = new AWTExample();

}

Employee id:

②

import java.io.\*;

public class ByteArrayInput {

    public static void main(String args[]) {

        byte[] buf = {35, 36, 37, 38};

        ByteArrayInputStream byt = new ByteArrayInputStream(buf);

    int k=0;

    while((k=byt.read())!= -1) {

        char ch = (char)k;

        System.out.println("ASCII value of character

            is: "+k+" Special character

            is: "+ch);

      OP:

      click me

      Welcome.

③ import java.io.FileInputStream;

import java.io.IOException;

public class FileEx2 {

public static void main (String args[]) throws  
IOException {

FileInputStream f = new FileInputStream ("From  
byte [] bytes = new byte [20];

int i;  
char c;  
i = f.read (bytes);

System.out.println ("Number of bytes read");  
System.out.print ("Byte read ");

for (byte b: bytes) {

c = (char) b;  
System.out.print (c);

}  
}

Q. Help : Number of bytes read: 20.

Byte read: My name is Brandon.

Ans: 20