

JAVA PROGRAMS

① class Hello {

 public static void main (String [] args)
 {

 System.out.println ("Hello World");

}

}

② class Prime {

 public static void main (System.in)

{

 int n = 37;

 int count = 0;

 for (int i = 1; i <= n; i++)

 { if (n % i == 0)

 { count++;

 }

}

 if (count == 2)

 System.out.println ("Prime");

 else

 System.out.println ("Not Prime");

}

}

Addition, Subtraction, Multiplication, Division

class Calc

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

```
System.out.println ("Hello World");
```

```
int a = 10;
```

```
int b = 20;
```

```
System.out.println (a+b);
```

~~```
System.out.println (a-b);
```~~~~```
System.out.println (a*b);
```~~~~```
System.out.println (a/b);
```~~

```
}
```

## Fibonacci Series

class Fib

```
<
```

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

```
<
```

```
int num1 = 0, num2 = 1, num;
```

```
System.out.println (num1 + " " + num2);
```

```
for (i=2; i<count; i++)
```

```
    num3 = num1 + num2;
```

```
    System.out.println (" " + num3)
```

```
    num1 = num2;
```

```
    num2 = num3;
```

```
}
```

```
5
```

LAB - II

```
import java.util.Scanner;  
class Grocery {  
    double p1, q1, avg;  
    Grocery () {  
        q1 = 1.0;  
        p1 = 1.0;  
        avg = 1.5;  
    }  
}
```

```
Grocery (double a) {  
    q1 = p1 = avg = a;  
}
```

```
Grocery (double a, double b, double c) {  
    q1 = a;  
    p1 = b;  
    avg = c;  
}
```

```
Grocery (Grocery a) {  
    q1 = a.q1;  
    p1 = a.p1;  
    avg = a.avg;
```

```
void print() {
```

```
    System.out.println("Sal" + 100 + "Pul" + 150 +  
        "Avg" + 200);
```

```
}
```

```
}
```

```
class Run
```

```
{
```

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

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

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

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

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

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

```
        Grocery g1 = new Grocery ();
```

```
        Grocery g2 = new Grocery (a);
```

```
        Grocery g3 = new Grocery (a, b, c);
```

~~```
 Grocery g4 = new Grocery (g3);
```~~~~```
        g1.print();
```~~~~```
 g2.print();
```~~~~```
        g3.print();
```~~~~```
 g4.print();
```~~

```
}
```

```
}
```

## #Quadratic

```
import java.util.*;
import java.lang.*;
class Quad {
 int a;
 int b;
 int c;
 void input()
 {
```

```
 Scanner sc = new Scanner (System.in);
 System.out.println ("Enter the numbers : ");
 System.out.print ("Enter a : ");
 a = sc.nextInt();
 System.out.println ("Enter b : ");
 b = sc.nextInt();
 System.out.print ("Enter c : ");
 c = sc.nextInt();
 }
```

```
void calc()
```

```
{ float D, x1, x2;
 D = (b * b - (4 * a * c));
 if (D > 0)
 {
```

$$x_1 = \text{float}(-b - \text{Math.Sqrt}(b^2 - 4ac)) / (2a);$$

$$x_2 = \text{float}(-b + \text{Math.Sqrt}(b^2 - 4ac)) / (2a);$$

System.out.println ("The roots are imaginary  
and distinct");

System.out.println ("root 1: " + x1 + " + " +  
x2);

System.out.println ("Root 2: " + x + "-i" + x2);  
}

else if (D == 0)

{

$$x_1 = x_2 = -b / (2a);$$

System.out.println ("The roots are  
real and equal: " + x1 + " and " + x2);

}

}

}

Class Quotient

{

public static void main (String [] args)

{

Quot q = new Quot ();

```
g. input();
```

```
g. calc();
```

```
}
```

```
}
```

### Output:

Enter the numbers:

Enter a: 10

Enter b: 1

Enter c: 1

The roots are imaginary & distinct.

## II Book Database

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

```
class Book
```

```
{
```

```
 String name;
```

```
 String author;
```

```
 int price;
```

```
 int numPages;
```

```
Book() { }
```

```
Books (String name, String author, int price,
 int numPages)
```

```
{
```

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

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

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

```
 this.numPages = numPages;
```

```
}
```

```
public String toString()
```

```
{
```

```
 String name, author, price, numPages;
```

```
 name = "Book name: " + this.name + "\n";
```

```
 author = "Author name: " + this.author + "\n";
```

price = "Price" + this.price + "\n";  
numPages = "Number of pages : " +  
this.numPages + "\n";

return name + author + price + numPages;  
}  
}

class Main {

public static void main (String [] args)  
{

Scanner sc = new Scanner (System.in);  
int n;  
String name;  
String author;  
int price;  
int numPages;

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

n = sc.nextInt();

Books b[] = new Books(n);

```
for(int i=0; i<n; i++)
{
 System.out.println ("Book" + (i+1) + ".");
 System.out.println ("Enter name of the Book:");
 name = sc.nextLine();
 System.out.println ("Enter author:");
 author = sc.nextLine();
 System.out.println ("Enter the price:");
 price = sc.nextInt();
 System.out.println ("Enter no of pages:");
 numPages = sc.nextInt();

 b(i) = new Book (name, author, price,
 numPages);
}
for(int i=0; i<n; i++)
{
 System.out.println ("Book" + (i+1) + "\n"
 + b(i));
}
for(int i=0; i<n; i++)
{
 System.out.println ("Books " + (i+1) + "\n"
 + b(i));
}
```

Output :

Enter the number of books : 2

Book 1 :

Enter the name of the book : Jungle Book

Enter the author of the book : Rudyard  
Kipling

Enter the price of the book : 1000

Enter the number of pages of the book : 500

Book 2 :

Enter the name of the book :

Tales of Akbar And Birbal

Enter the author of the book : Birbal

Enter the price : 900

Enter the number of pages : 400

Book 1 :

Publisher : Jungle - Book

Author : Rudyard - Kipling

Price : 1000

Number of pages : 500

classmate

Date \_\_\_\_\_

Page \_\_\_\_\_

Book 2:

Book name : Tales of - Andersen - Aar - Birbal

Author : Birbal

Price: 900

Number of Pages: 400

25  
01/01/24

## SGPA

```
import java.util.Scanner
class student {
 String usn, name;
 int n;
 int c[], m[];
```

void all()

{

```
Scanner s1 = new Scanner (System.in);
System.out.println ("Enter the usn
of student ");
```

usn = s1.nextLine();

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

System.out.println ("Enter number of  
courses ");

n = s1.nextInt();

c = new int[n];

m = new int[n];

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

{

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

## SGPA

```
import java.util.Scanner
class student {
 String usn, name;
 int n;
 int c[], m[];
```

```
void all()
{
```

```
Scanner s1 = new Scanner (System.in);
System.out.println ("Enter the usn
of student");
usn = s1.nextLine();
System.out.println ("Enter name");
System.out.println ("Enter number of
courses");
n = s1.nextInt();
```

c = new int[n];

m = new int[n];

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

```
 System.out.println ("Enter the credit
of subjects");
```

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

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

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

```
}
```

```
}
```

```
int gp(int marks)
```

```
<
```

```
if (marks >= 90)
```

```
 return 10;
```

```
else if (marks >= 80)
```

```
 return 9;
```

```
else if (marks >= 70)
```

```
 return 8;
```

```
else if (marks >= 60)
```

~~```
    return 7;
```~~~~```
else if (marks >= 50)
```~~~~```
    return 6;
```~~

```
else
```

```
    return 0;
```

```
>
```

Double sum()

{

int t = 0, sum = 0;

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

{

t = t + c[i];

sum = sum + g(m[i]) * c[i];

}

return (Double) sum / t;

{

void disp()

{

System.out.println ("USN=" + usn);

System.out.println ("Name=" + name);

}

}

Class main

{

public static void main (String args[])

{

Student s = new Student();

s. ar();

S. & op();

System.out.println ("The score = " +
S. sgpa);

}

}

Output:-

U5N: IBM22CS079

Name: Chirag

Subject 1 credit: 1

Marks: 100

Subject 2 credit: 1

Marks: 100

Subject 3 credit: 2

Marks: 100

Subject 4 credit: 4

Marks: 100

Subject 6 Credit : 5
Marks : 100

Subject 7 Credit : 4
Marks : 100

Subject 8 Credit : 1
Marks : 100

~~SCRA : 10.0~~

22/01/2014

SHAPE

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

```
abstract class Shape
```

<

```
Double x, y;
```

```
Shape (Double x, Double y)
```

<

```
this. x = x;
```

```
this. y = y;
```

>

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

>

```
class Rectangle extends Shape
```

<

```
Rectangle (Double x, Double y)
```

<

```
super (x, y);
```

>

~~void printArea()~~

<

```
System.out.println ("Area of Rectangle : "
+ (x * y) + " square units (in");
```

}

}

class Triangle extends Shape

{

Triangle (double x, double y)

{

super (x, y);
}

void printArea()

{

System.out.print ("Area of Triangle : "
+ (0.5 * x * y) + " square units");
}
}

class Circle extends Shape

{

Circle (double x)

{

super (r, a),
}

void printArea()

{

```
System.out.println ("Area of Circle : "
+ (3.14 * x * x) + " square units \n");
}
```

class ShapeFun

<

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

<

Double x, y;

Scanner input = new Scanner (System.in);

System.out.println ("Enter length and
width of rectangle : ");

x = input.nextDouble();

y = input.nextDouble();

Rectangle rectangle = new Rectangle (x, y);

rectangle.printArea();

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

x = input.nextDouble();

y = input.nextDouble();

Triangle triangle = new Triangle (x, y);

triangle.printArea();

System.out.println ("Enter radius of
Circle: ");

x = input.nextDouble();

Circle circle = new Circle (x);

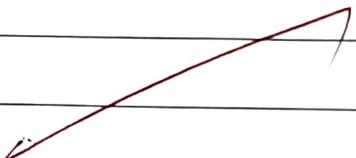
circle.printArea();

input.close();

)

)

Op:-



Enter length and width of rectangle

2

3

Area of Rectangle: 6.0 square units

Enter height and base of Triangle:

5

3

Area of Triangle : 7.5 square units.

Enter radius of Circle : 5

Area of Circle: 78.5 square units.

BANK

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

```
class Account
```

```
{
```

```
    String customerName;
```

```
    long accountNumber;
```

```
    String accountType;
```

```
    double balance;
```

```
public Account( String customerName,  
                long accountNumber, String accountType,  
                double balance)
```

```
{
```

```
    this.customerName = customerName;
```

```
    this.accountNumber = accountNumber;
```

```
    this.accountType = accountType;
```

```
    this.balance = balance;
```

```
}
```

```
public void deposit (double amount)
```

```
{
```

```
    balance += amount;
```

```
System.out.println ("Deposit successful,  
Update balance : " + balance);
```

1

public void displayBalance()

Figure 1. The relationship between the number of species and the area of forest cover.

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

```
System.out.println ("Account Type : " +  
                    accountType));
```

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

1

2

Class Savings Account ~~extinct~~ Account

2

~~public Drawing Account (String customerName,
String customerNumber)~~

1

Super (CustomerName, CustomerNumber);

1

```
public void computeInterest ()
```

```
<
```

```
    double interestRate = 0.05;
```

```
    double interest = balance * interestRate;
```

```
    balance += interest;
```

```
    System.out.println ("Interest of $" +  
    interest + " computed and added to the  
    balance.");
```

```
}
```

```
public void withdraw (double amount)
```

```
<
```

```
if (balance >= amount)
```

```
<
```

```
    balance -= amount;
```

```
    System.out.println ("Withdrawal of $"  
    + amount + " successful");
```

```
}
```

```
else
```

```
<
```

~~```
System.out.println ("Insufficient funds
for withdrawal.");
```~~

```
}
```

```
} }
```

Class Current Account extends Account

1

```
private double minimumBalance = 1000,
public CurrentAccount (String customerName,
String accountNumber)
```

1

Super ( customersName , accountNumber );

3

public void withdraw (BankAmount)

1

if ( balance - amount  $\geq$  minimumBalance )

1

Galance = onward

System.out.println ("withdrawal of \$" + amount + " successful");

3

۱۰۷

1

~~System.out.println ("Insufficient funds.");  
Service charge applied.");  
impose Service Charge();~~

3

}

private void impore ServiceCharge();

&lt;

• Double serviceCharge = 20;

balance -= serviceCharge;

System.out.println ("Service charge of \$" +  
" serviceCharge + " imposed");

}

&gt;

class Bank

&lt;

public static void main (String args)

&lt;

Savings Account . Savings Account :> new

Savings Account ("John", "SA10001");

Current Account . current Account :> new

Current Account ("Jony", "CA2002");

Savings Account . deposit (5000);

Savings Account . displayBalance ();

Savings Account . compute Interest ();

Savings Account . displayBalance ();

Current Account. withdraw (ruu);  
Current Account. Starting Balance ();  
}  
)

### Output:

Deposit of \$5000 Successful

Account Number : 5A1001

Balance : \$ 5000.0

Interest of \$150.0 computed and added to  
the balance

Account Number: 5A1001

Balance : \$ 5250.0

Withdrawal of \$2000 Successful

Account Number : 5A1001

Balance : \$ 3250.0

Deposit of \$8000 Successful

Account Number: CA2001

Balance : \$ 8000.0

Withdrawal of \$5000 successful

Account Number : CA2002

Balance : \$ 3000.0

## PACKAGE:

→ pod

→ package CIF;

public class Student

{

String name;

String VSN;

int rem;

public Student (String name, String VSN,  
int rem)

{

this.name = name;

this.VSN = VSN;

this.rem = rem;

}

}

package CIF

public class Internals extends CIF.Student

{

public int internalMaths();

public Internals (String name, String  
VSN, int rem, int internal Maths())

{

Super (name, usn, rem);  
this. InternalMarks = InternalMarks;

}

}

package SEE;

import CIE.Student

public class Externalo extends CIE.Student

{

public int SEEMarks () {

public Externalo (String Name, String USN,

int rem, int SEEMarks ())

{

Super (name, usn, rem);

this. SEEMarks = SEEMarks;

}

}

import CIE.Student;

import CIE.Student;

import SEE.Externalo;

import java.util.Scanner;

public class FinalMarks :

&lt;

public static void main (String args[])

&lt;

Scanner sc = new Scanner (System.in);

System.out.println ("In: Enter the number  
of Students");

int n = sc.nextInt();

String name[] = new String [n];

String USN[] = new String [n];

int sem[] = new int [n];

int IITFinalMarks [][] = new int [n][5];

int SEMMarks [][] = new int [n][5];

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

&lt;

SOPN ("Enter details of Student " +  
(i+1) + " ");

SOPN ("Name : ");

name[i] = sc.nextLine();

SOPN ("USN : ");

USN[i] = sc.nextLine();

SOPN ("Semester ");

sem[i] = sc.nextInt();

S.O.P ("Enter internal marks for 5 courses : ");

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

&lt;

S.O.P ("courses " + (j+1) + ":" );

Internal Marks [i][j] = sc.nextInt();

}

S.O.P ("Enter SEE marks for 5

courses : ");

for (int k=0; k<5; k++)

&lt;

S.O.P ("Courses " + (k+1) + ":" );

SEEMarks [i][j] = sc.nextInt();

}

}

int FinalMarks [i][j] = new int [n][5];

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

&lt;

Intervals IV = new Intervals (name[i],  
won[i], rem[i], lesser internalMark [i]);

External EI = new External (name[i],  
won[i], rem[i], seeMarks [i]);

S.O.P ("Final Marks for " + name + " Student  
in S course");

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

{

S.O.P ( name(h) + ":" );

S.O.P ("CIE marks " + ":" );

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

{

S.O.P ("course " + (j+1) + ":" + interval  
marks(h)(j));

}

S.O.P ("In In");

}

SI. close();

}

}

}

Input:

Bob : 10 10 10 10 10  
10 10 10 10 10

Sem 1

Andy: 20 20 20 20 20  
20 10 20 20

Sem 2

Output:

Final marks for 12 students in 5 courses:

Bob:

CIE Marks

Course 1 : 10

Course 2: 10

Course 3: 10

Course 4: 10

Course 5: 10

SEE Marks

Course 1 : 10

Course 2: 10

Course 3: 10

Course 4: 10

Course 5: 10

Andy:

CIE Marks

Course 1 : 20

Course 2: 20

Course 3: 20

Course 4: 20

Course 5: 20

SEE Marks

Course 1 : 20

Course 2: 20

Course 3: 20

Course 4: 20

Course 5: 20

## Exception Handling

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

```
class WrongAge extends Exception {
```

```
 public WrongAge() {
```

```
}
```

```
 Super ("Age Error");
```

```
}
```

```
 public WrongAge (String message) {
```

```
}
```

```
 Super (message);
```

```
}
```

```
}
```

```
class InputScanner {
```

```
 protected Scanner scanner;
```

```
 public InputScanner () {
```

```
}
```

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

```
}
```

```
public int nextInt() {
    return scanner.nextInt();
}
```

Class Father extends InputScanner {
protected int fatherAge;
public Father() throws WrongAge {
S.O.P ("Enter Father's age : ");
fatherAge = super.nextInt();
if (fatherAge < 0)
throw new WrongAge ("Age cannot
be negative");
}
}

Class Son extends Father {
protected int sonAge;
public Son() throws WrongAge {
super();
S.O.P ("Enter Son's age : ");
sonAge = super.nextInt();
if (sonAge >= fatherAge)

throw new WrongAge ("Son's age
cannot be greater than or equal
to Father's age ");

}

}

public class thisisMain

<

public static void main (String [] args)

{

try {

Son son = new Son ();

S. O. P ("Father's age :: " + son

. son . father Age),

S. O. P ("Son's age :: " + son . son

Age),

}

catch (WrongAge e)

<

S. O. P ("Exception :: " + e . get Message ())

}

}

>

Output:

① Enter Father's age:

40

Enter Son's age:

25

Father's age : 40

Son's age : 25

② Enter Father's age:

50

Enter Son's age:

55

Exception: Son's age cannot be greater than or equal to Father's age.

Enter Father's age: 40

Enter Son's age: 25

Father's age: 40

Son's age: 25

Threads

class Thread1 extends Thread

<

 public void run()

<

 while (true)

<

 S.O.P ("BMS College of
 Engineering");

 try

<

 Thread.sleep (1000);

<

 catch (InterruptedException e)

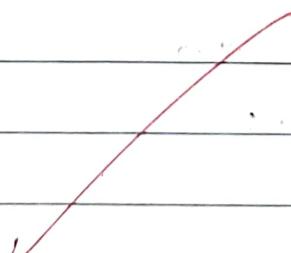
<

 b

}

}

}



class Thread2 extends Thread

<

public void run()

< while (true)

< s.o.p ("SE");

try

< Thread.sleep(2000);

> catch (InterruptedException e)

<

}

}

}

public class Threads

< public static void main (String [] args)

 Thread t1 = new Thread1();

 Thread t2 = new Thread2();

 t1.start();

 t2.start();

Output:-

BMS College of Engineering

CSE

CSE

CSE

CSE

CSE

BMS College of Engineering

CSE

CSE

CSE

CSE

CSE

BMS College of Engineering.

20.02.2024
10:00 AM

AWT → Creating Label, button, TextField
in a Frame using AWT

```
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);
```

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

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

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

```
f.add(l);
```

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

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

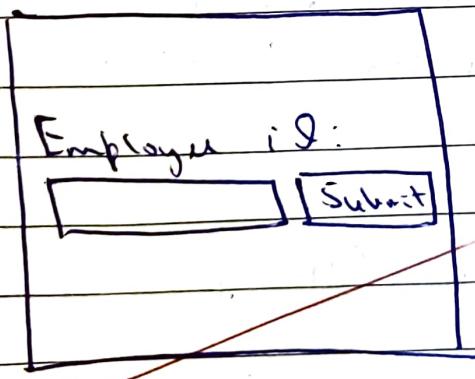
```
f.setTitle ("Employee info");  
f.setLayout (null);  
f.setVisible (true);  
}  
})
```

```
public void windowClosing (WindowEvent e)
```

```
{ System.exit (0);  
}
```

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

```
{ AWTExample awtObj = new AWTExample ();  
}
```



Create a button and add a action
listener for Mouse Click.

```
import java.awt.*;
import java.awt.event.*;
public class EventHandling extends
WindowAdapter implements ActionListener
```

```
Frame f;
TextField tf;
EventHandling()
{}
```

```
f = new Frame();
f.addWindowListener(this);
tf = new TextField();
tf.setBounds(60, 50, 170, 20);
Button b = new Button("click me");
b.setBounds(100, 110, 80, 30);
```

```
b.addActionListener(this);
```

```
f.add(b);
f.add(tf);
f.setLayout(null);
```

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

```
}
```

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

```
{
```

```
If netText ("Welcome");
```

```
}
```

```
public void windowClosing (WindowEvent)
```

```
{
```

```
System.exit(0);
```

```
}
```

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

```
{
```

```
new EventHandling();
```

```
}
```

```
)
```

