

# VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“Jnana Sangama”, Belgaum -590014, Karnataka.



## LAB REPORT on

## Object Oriented Java Programming

*Submitted by:*

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*in partial fulfillment for the award of the degree of*  
**BACHELOR OF ENGINEERING**  
*in*  
**COMPUTER SCIENCE AND ENGINEERING**



**B.M.S. COLLEGE OF ENGINEERING**

(Autonomous Institution under VTU)

**BENGALURU-560019**

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**B. M. S. College of Engineering,  
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(Affiliated To Visvesvaraya Technological University, Belgaum)  
**Department of Computer Science and Engineering**



**CERTIFICATE**

This is to certify that the Lab work entitled “**Object Oriented Java Programming**” carried out by **Namya R (1BM21CS111)**, who is bonafide student of **B. M. S. College of Engineering**. It is in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the year 2022-23. The Lab report has been approved as it satisfies the academic requirements in respect of **Object Oriented Java Programming-(21CS3PCOOJ)** work prescribed for the said degree.

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## 1. Course Outcomes

**CO1:** Apply the knowledge of Java concepts to find the solution for a given problem.

**CO2:** Analyse the given Java application for correctness/functionalities.

**CO3:** Develop Java programs / applications for a given requirement.

**CO4:** Conduct practical experiments for demonstrating features of Java.

## 2. Experiments

### 2.1 Experiment - 1

#### 2.1.1 Question:

Develop a Java program that prints all real solutions to the quadratic equation  $ax^2+bx+c = 0$ . Read in a, b, c and use the quadratic formula. If the discriminate  $b^2-4ac$  is negative, display a message stating that there are no real solutions.

#### 2.1.2 Code:

```
import java.util.*;

import java.lang.*;

class box
{
    public static void main (String args[])
    {
        System.out.println("Enter the coefficients of quadrartic equation");
        Scanner sc= new Scanner(System.in);
        double a=sc.nextDouble();
        double b=sc.nextDouble();
        double c=sc.nextDouble();
        double d=(b*b)-(4*a*c);
        double r1;
        double r2;
        if(d>0)
        {
```

```

    r1=(-b+Math.sqrt(d))/(2*a);
    r2=(-b-Math.sqrt(d))/(2*a);
    System.out.println("Roots are real and distinct");
    System.out.println("The roots are r1="+r1+" "+"and r2="+r2);
}
else if(d==0)
{
    r1=r2=(-b)/(2*a);
    System.out.println("Roots are real and same");
    System.out.println("The roots are r1=r2="+""+r1);
}
else
{
    r1=(-b)/(2*a);
    r2=(Math.sqrt(-d))/(2*a);
    System.out.println("Roots are imaginary and distinct");
    System.out.println("The roots are r1="+r1+" +i"+r2);
    System.out.println("The roots are r2="+r1+" -i"+r2);
}
}
}

```

## 2.1.3 Output:

```
Command Prompt
23-01-2023 07:04 <DIR> COA
26-01-2023 00:30 <DIR> DATA STRUCTURES
27-11-2022 10:35 <DIR> DBMS
19-01-2023 23:15 <DIR> EVS
23-01-2023 20:58 <DIR> LOGIC DESIGN
18-01-2023 15:25 <DIR> MATHS
26-01-2023 00:55 <DIR> OBJECT JAVA PROGRAMMING
14-12-2022 21:57 <DIR> Syllabus
28-12-2022 00:44 <DIR> WEB APPLICATION
0 File(s) 0 bytes
12 Dir(s) 174,920,179,712 bytes free

C:\Users\Admin\Desktop\BMS\3RD SEM>cd OBJECT JAVA PROGRAMMING
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING>cd Lab
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>set path="C:\Program Files\Java\jdk-19\bin"
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>javac Java1.java
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java box
Enter the coefficients of quadratic equation
1 2 1
Roots are real and same
The roots are r1=r2=-1.0

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java box
Enter the coefficients of quadratic equation
1 1 1
Roots are imaginary and distinct
The roots are r1=-0.5+10.8660254037844386i
The roots are r2=-0.5-10.8660254037844386i

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java box
Enter the coefficients of quadratic equation
1 4 1
Roots are real and distinct
The roots are r1=-0.2679491924311228 and r2=-3.73205080756877

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>
```

Windows taskbar at the bottom shows the search bar, taskbar icons, and system tray with date 26-01-2023 and time 01:06.



## 2.2 Experiment - 2

### 2.2.1 Question:

Develop a Java program to create a class Student with members usn, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

### 2.2.2 Code:

```
import java.util.*;

class Student{
    String usn;
    String name;
    int credits[] = new int[10];
    int marks[] = new int[10];
    int total_credits = 0;
    int sum = 0;
    int i;
    double SGPA;
    void initialize(String usn, String name)
    {
        this.usn = usn;
        this.name = name;
    }
    void display()
    {
        System.out.println("The name of the student is: " + name);
        System.out.println("The usn of the student is: " + usn);
    }
    void calculate(int credits[],int marks[],int n)
    {
        for(i = 0;i<n;i++)
        {
            total_credits+=credits[i];
            if(marks[i] > 89)
            {
                sum+=credits[i]*10;
            }
        }
    }
}
```

```

    }
    if(marks[i] > 79 && marks[i] < 90)
    {
        sum+=credits[i]*9;
    }
    if(marks[i] > 69 && marks[i] < 80)
    {
        sum+=credits[i]*8;
    }
    if(marks[i] > 59 && marks[i] < 70)
    {
        sum+=credits[i]*7;
    }
    if(marks[i] > 54 && marks[i] < 60)
    {
        sum+=credits[i]*6;
    }
    if(marks[i] > 49 && marks[i] < 55)
    {
        sum+=credits[i]*5;
    }
    if(marks[i] > 39 && marks[i] < 50)
    {
        sum+=credits[i]*4;
    }
}

System.out.println("Total credits in this course is " + total_credits);
System.out.println("sum of grade points multiplied by credis is " + sum);
SGPA = (double)sum/total_credits;
System.out.println("SGPA is " + SGPA);
}
}

```

```

class Main
{
    public static void main(String args[])
    {
        int i,n;
        String name,usn;
        int credits[] = new int[10];
        int marks[] = new int[10];
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter your name:");
        name = sc.next();
        System.out.println("Enter your USN: ");
        usn = sc.next();
        System.out.println("Enter number of courses");
        n = sc.nextInt();
        System.out.println("Enter marks");
        for(i=0;i<n;i++)
        {
            marks[i] = sc.nextInt();
        }
        System.out.println("Enter the credits");
        for(i=0;i<n;i++)
        {
            credits[i] = sc.nextInt();
        }
        Student s1 = new Student();
        s1.initialize(name,usn);
        s1.display();
        s1.calculate(credits,marks,n);
    }
}

```

## 2.2.3 Output:

```
Command Prompt
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Main
Enter your name:
qwe
Enter your USN:
12
Enter number of courses
3
Enter marks
34 45 56
Enter the credits
1 2 3
The name of the student is: 12
The usn of the student is: qwe
Total credits in this course is 6
sum of grade points multiplied by credis is 26
SGPA is 4.333333333333333

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Main
Enter your name:
wert
Enter your USN:
23
Enter number of courses
4
Enter marks
92 94 95 99
Enter the credits
1 2 3 4
The name of the student is: 23
The usn of the student is: wert
Total credits in this course is 10
sum of grade points multiplied by credis is 100
SGPA is 10.0

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>
```

## 2.3 Experiment - 3

### 2.3.1 Question:

Create a class Book which contains four members: name, author, price, num\_pages. Include a constructor to set the values for the members. Include methods to set and get the details of the objects. Include a toString( ) method that could display the complete details of the book. Develop a Java program to create n book objects.

### 2.3.2 Code:

```
import java.util.*;

class Book{

Scanner sc = new Scanner(System.in);

String name;

String author;

int price;

int num_pages;

    Book()

{

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

name = sc.next();

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

author = sc.next();

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

num_pages = sc.nextInt();

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

price = sc.nextInt();

}

void set()

{

    System.out.println("All inputs are set");

}

void get()

{

System.out.println("The details of the book are" + name + " " + author + " " + num_pages + " " + price);

}

}
```

```

public String toString()
{
    return name + " " + author + " " + num_pages + " " + price;
}
}

class Main
{
    public static void main(String args[])
    {
        int r,i;

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

        Scanner sc = new Scanner(System.in);

        r = sc.nextInt();

        Book b[] = new Book[r];

        for(i = 0;i<r;i++)
        {
            b[i] = new Book();

            b[i].set();

            b[i].get();

        }

        for(i = 0;i<r;i++)
        {
            System.out.println(b[i]);

        }

    }
}

```

### 2.3.3 Output:

```
Command Prompt
Enter number of courses
4
Enter marks
92 94 95 99
Enter the credits
1 2 3 4
The name of the student is: 23
The usn of the student is: wert
Total credits in this course is 10
sum of grade points multiplied by credis is 100
SGPA is 10.0

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>javac Java3.java

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Main
Enter number of books
2
Enter book name
qwe
Enter author name
wer
Enter number of pages
52
Enter price
123
All inputs are set
The details of the book are qwe wer 52 123
Enter book name
sdf
Enter author name
dfg
Enter number of pages
456
Enter price
567
All inputs are set
The details of the book are sdf dfg 456 567
qwe wer 52 123
sdf dfg 456 567

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>
```

## 2.4 Experiment - 4

### 2.4.1 Question:

Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea( ). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea( ) that prints the area of the given shape.

### 2.4.2 Code:

```
import java.util.*;

abstract class shape
{
    double a,b;
    shape(double len,double br)
    {
        a = len;
        b = br;
    }
    shape(double rad)
    {
        a = rad;
    }
    abstract double printarea();
}

class rectangle extends shape
{
    rectangle(double len,double br)
    {
        super(len,br);
    }
    double printarea()
    {
        return a*b;
    }
}
```



```
class triangle extends shape
{
    triangle(double len,double br)
    {
        super(len,br);
    }
    double printarea()
    {
        return a*b*0.5;
    }
}
```

```
class circle extends shape
{
    circle(double rad)
    {
        super(rad);
    }
    double printarea()
    {
        return 3.14*a*a;
    }
}
```

```
class Main
{
    public static void main(String args[])
    {
        double ra,ta,ca;
        rectangle sp1 = new rectangle(3,4);
        triangle sp2 = new triangle(4,5);
        circle sp3 = new circle(10);
        shape s;
```

```
s = sp1;  
ra = s.printarea();  
System.out.println("Area of rectangle is" + " " + ra);  
  
s = sp2;  
ta = s.printarea();  
System.out.println("Area of triangle is" + " " + ta);  
  
s = sp3;  
ca = s.printarea();  
System.out.println("Area of circle is" + " " + ca);  
}
```

## 2.4.3 Output:

```
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>javac Java4.java  
  
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Main  
Area of rectangle is 12.0  
Area of triangle is 10.0  
Area of circle is 314.0  
  
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>
```



## 2.5 Experiment - 5

### 2.5.1 Question:

Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed.

Create a class Account that stores customer name, account number and type of account. From this derive the classes Cur-acct and Sav-acct to make them more specific to their requirements.

Include the necessary methods in order to achieve the following tasks:

- a) Accept deposit from customer and update the balance.
- b) Display the balance.
- c) Compute and deposit interest
- d) Permit withdrawal and update the balance.

Check for the minimum balance, impose penalty if necessary and update the balance.

### 2.5.2 Code:

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

```
class Account
{
    String name;
    int type;
    long accno;
    double balance;
    void setA()
    {
        Scanner s=new Scanner(System.in);
        System.out.print("Enter customer name: ");
        name=s.nextLine();

        System.out.print("Enter account number: ");
```

```

        accno=s.nextLong();
        System.out.print("Enter bank balance: ");
        balance=s.nextDouble();
    }
    void display()
    {
        System.out.println("Customer name is: "+name);
        if(type==1) {
            System.out.println("Customer account type is: Savings");
        }
        else {
            System.out.println("Customer account type is: Current");
        }

        System.out.println("Customer account number is: "+accno);
        System.out.println("Current balance is: "+balance);
    }
    void deposit()
    {
        System.out.print("Enter the amount to be deposited: ");
        Scanner x=new Scanner(System.in);
        double amt=x.nextDouble();
        balance+=amt;
    }
}

```

```

class Sav_acct extends Account
{
    double interest;

```

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

```

Sav_acct() {
    type=1;
}
void cinterest()
{
    int timey;
    float irate;
    System.out.println("Compound Interest details:");

    System.out.println("Enter time in years: ");
    timey=s.nextInt();
    System.out.println("Enter rate of interest: ");
    irate=s.nextFloat();
    System.out.println("Interest will be compounded 5 times a year");
    interest=balance*(Math.pow((1+irate/5),(5*timey)));
    balance+=interest;
}
void withdraw()
{
    System.out.println("Enter the amount to be withdrawn: ");
    double amt=s.nextDouble();
    if(balance>amt)
    { balance-=amt; }
    else
    { System.out.println("Amount to be withdrawn greater than balance!!!"); }
}
}

```

```

class Curr_acct extends Account
{
    double check_amt;

    Curr_acct() {
        type=2;
    }

    void cheque()
    {
        System.out.print("Enter the cheque amount: ");
        Scanner s=new Scanner(System.in);
        check_amt = s.nextDouble();
        if(check_amt>balance-5000)
        {
            System.out.println("Rs. 500 penalty imposed...Is it ok to proceed?
Enter y for yes and n for no");
            String option=s.next();
            if(option.equals("y")) { balance=balance-check_amt-500;}
            else {System.out.println("no check debited");}
        }
        else
        {
            System.out.println("Rupees "+check_amt+" debited"); balance-
=check_amt;
        }
    }

    void withdraw()
    {
        System.out.println("Enter the amount to be withdrawn: "); Scanner s=new

```



Scanner(System.in);

```

        double amt=s.nextDouble();
        if(balance>amt)
        {balance-=amt;}
        else
        {System.out.println("Amount to be withdrawn greater than balance!!!");}
    }
}

```

```

class Bank {
    public static void main(String ss[]) {
        String op1,op2;
        Scanner s=new Scanner(System.in);
        System.out.println("1. Savings or 2. Current?");
        int q;
        q=s.nextInt();
        if(q==1) {
            Sav_acct s1 = new Sav_acct();
            while(true) {
                System.out.print("Enter the choice: \n1 .Set the values for savings
acc\n2. display\n3. deposit\n4. Interest\n5. Withdraw\n6. exit\n");
                op1=s.next();
                switch(op1)
                {
                    case "1":s1.setA();
                        break;
                    case "2":s1.display();
                        break;
                    case "3":s1.deposit();
                        break;
                    case "4":s1.cinterest();

```

```

        break;
    case "5":s1.withdraw();
        break;
    case "6":System.exit(0);
    }
}
else if(q==2) {
    Curr_acct c1 = new Curr_acct();
    while(true) {
        System.out.print("Enter the choice: \n1.Set the values for current
account\n2. display\n3. deposit\n4. transferCheck\n5. Withdraw\n6. exit\n");
        op2=s.next();
        switch(op2)
        {
            case "1":c1.setA();
                break;
            case "2":c1.display();
                break;
            case "3":c1.deposit();
                break;
            case "4":c1.chegue();
                break;
            case "5":c1.withdraw();
                break;
            case "6":System.exit(0);
        }
    }
}
}}
```

## 2.5.3 Output:

```
Command Prompt
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>javac Java5.java
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Bank
1. Savings or 2. Current?
1
Enter the choice:
1. Set the values for savings acc
2. display
3. deposit
4. Interest
5. Withdraw
6. exit
1
Enter customer name: qwe
Enter account number: 123
Enter bank balance: 345
Enter the choice:
1. Set the values for savings acc
2. display
3. deposit
4. Interest
5. Withdraw
6. exit
2
Customer name is: qwe
Customer account type is: Savings
Customer account number is: 123
Current balance is: 345.0
Enter the choice:
1. Set the values for savings acc
2. display
3. deposit
4. Interest
5. Withdraw
6. exit
3
Enter the amount to be deposited: 1000
Enter the choice:
1. Set the values for savings acc
2. display
3. deposit
```

```
Command Prompt
1. Set the values for savings acc
2. display
3. deposit
4. Interest
5. Withdraw
6. exit
3
Enter the amount to be deposited: 1000
Enter the choice:
1. Set the values for savings acc
2. display
3. deposit
4. Interest
5. Withdraw
6. exit
4
Compound Interest details:
Enter time in years:
12
Enter rate of interest:
10
Interest will be compounded 5 times a year
Enter the choice:
1. Set the values for savings acc
2. display
3. deposit
4. Interest
5. Withdraw
6. exit
5
Enter the amount to be withdrawn:
800
Enter the choice:
1. Set the values for savings acc
2. display
3. deposit
4. Interest
5. Withdraw
6. exit
6
```

## 2.6 Experiment - 6

### 2.6.1 Question:

Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called “Father” and derived class called “Son” which extends the base class. In Father class, implement a constructor which takes the age and throws the exception WrongAge( ) when the input age<0. In Son class, implement a constructor that cases both father and son’s age and throws an exception if son’s age is >=father’s age.

### 2.6.2 Code:

```
import java.util.*;
class FatherAgeException extends Exception
{
    public String toString()
    {
        return(" Father's Age cannot be negative");
    }
}
class SonnAgeException extends Exception
{
    public String toString()
    {
        return(" Son's Age cannot be negative");
    }
}
class SonAgeException extends Exception
{
    public String toString()
    {
        return(" Son's age is more than father's age");
    }
}

class Father
{
    int age;
    Father(int age)
    {
        this.age = age;
    }
    void ThrowingFather()
    {
        try
        {
            if(age < 0)
            {
                throw new FatherAgeException();
            }
        }
        catch (FatherAgeException e)
        {

```

```

        System.out.println(e);
    }
}

}

class Son extends Father
{
    int sage;
    Son(int fage,int sage)
    {
        super(fage);
        this.sage = sage;
    }
    void ThrowSon()
    {
        try
        {
            if(sage < 0)
            {
                throw new SonnAgeException();
            }
        }
        catch (SonnAgeException e)
        {
            System.out.println(e);
        }
    }
    void ThrowingSon()
    {
        try
        {
            if(sage > age)
            {
                throw new SonAgeException();
            }
        }
        catch (SonAgeException e)
        {
            System.out.println(e);
        }
    }
}

```

```
class Main
{
    public static void main(String args[])
    {
        int fatage,Sonage;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter Fathers age");
        fatage = sc.nextInt();
        System.out.println("Enter Son's age");
        Sonage = sc.nextInt();
        Son s = new Son(fatage,Sonage);
        s.ThrowingFather();
        s.ThrowSon();
        s.ThrowingSon();
    }
}
```

## 2.6.3 Output:

```
C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>javac Java6.java

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Main
Enter Fathers age
-1
Enter Son's age
23
Father's Age cannot be negative
Son's age is more than father's age

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Main
Enter Fathers age
23
Enter Son's age
-3
Son's Age cannot be negative

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Main
Enter Fathers age
12
Enter Son's age
34
Son's age is more than father's age

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Main
Enter Fathers age
56
Enter Son's age
34
```



## 2.7 Experiment - 8

### 2.7.1 Question:

Write a program which creates two threads, one thread displaying “BMS College of Engineering” once every ten seconds and another displaying “CSE” once every two seconds.

### 2.7.2 Code:

class Call implements Runnable

```
{  
    String a;  
    int x,time;  
    Thread t;  
    Call(String tn,int ti,int ex)  
    {  
        a=tn;  
        x=ex;  
        time=ti;  
        t=new Thread(this,a);  
        t.start();  
    }  
    public void run()  
    {  
        try{  
            for(int i=0;i<x      ;i++)  
            {  
                System.out.println(a);  
                Thread.sleep(time);  
            }  
        }  
        catch(InterruptedException ie)  
        {  
            System.out.println("Inturrupted ");  
        }  
    }  
}
```

```
    }  
    }  
}
```

```
class Lab8
```

```
{  
    public static void main(String xx[])  
    {  
        new Call("BMS College of Enginnering",10000,2);  
        new Call("CSE",2000,10);  
    }  
}
```

### 2.7.3 Output:

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.2364]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>set path="C:\Program Files\Java\jdk-19\bin"

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>javac Java7.java
'javac' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>javac Java7.java

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>java Lab8
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
CSE

C:\Users\Admin\Desktop\BMS\3RD SEM\OBJECT JAVA PROGRAMMING\Lab>
```