

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“JnanaSangama”, Belgaum -590014, Karnataka.



LAB REPORT
on

Object Oriented Java Programming **(23CS3PCOOJ)**

Submitted by

Rohan Raghu Prasad (1BF24CS255)

in partial fulfillment for the award of the degree of
BACHELOR OF ENGINEERING
in

B.M.S. COLLEGE OF ENGINEERING

(Autonomous Institution under VTU)

BENGALURU-560019

Aug-2025 to Jan-2026

B.M.S. College of Engineering,
Bull Temple Road, Bangalore 560019
(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 (23CS3PCOOJ)” carried out by **Rohan Raghu Prasad (1BF24CS255)**, who is a bonafide student of **B.M.S. College of Engineering**. It is in partial fulfilment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum. The Lab report has been approved as it satisfies the academic requirements in respect of an Object-Oriented Java Programming (23CS3PCOOJ) work prescribed for the said degree.

Dr. Seema Patil Associate Professor Department of CSE, BMSCE	Dr. Kavitha Sooda Professor & HOD Department of CSE, BMSCE
--	--

Index

Sl. No.	Date	Experiment Title	Page No.
1	23-09-25	Implementing Quadratic Equation	4
2	14-10-25	Calculating SGPA of a Student	6
3	14-10-25	Using the toString() Method	9
4	4-11-25	Using Abstract Class	11
5	11-11-25	Implementing Inheritance	13
6	18-11-25	Using Packages	19
7	25-11-25	Implementing User Defined Exceptions	22
8	9-12-25	Multithreading	24

Github Link:

<https://github.com/rohanraghuprasad/JAVA-1BF24CS255>

Program 1

Implement Quadratic Equation

Code:

```
import java.util.Scanner;
public class quadratic {
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter a, b and c coefficients");
        int a=sc.nextInt();
        int b=sc.nextInt();
        int c=sc.nextInt();
        if(a==0)
        {
            System.out.println("Not a quadratic equation");
        }
        else
        {
            double r1, r2;
            int d=b*b-4*a*c;
            if(d==0)
            {
                System.out.println("Roots are real and equal");
                r1=-b/(2*a);
                System.out.println("r1=r2="+r1);
            }
            else if(d>0)
            {
                System.out.println("Roots are distinct");
                r1=(-b)+(Math.sqrt(d))/(double)(2*a);
                r2=(-b) - (Math.sqrt(d))/(double)(2*a);
                System.out.println("r1="+r1);
                System.out.println("r2="+r2);
            }
            else if(d<0)
            {
                System.out.println("Roots are imaginary");
                r1=(-b)/(2*a);
                r2=Math.sqrt(-d)/(2*a);
                System.out.println("r1="+r1);
                System.out.println("r2="+r2);
            }
        }
    }
}
```

Output:

```
Enter a, b and c coefficients
0
2
3
Not a quadratic equation
PS C:\Users\Admin\Desktop\1BF24CS255> cd "c:\Users\Admin\Desktop\1BF24CS255\" ; if ($?) { javac quadratic.java } ; if ($?) { java
quadratic }
0
0
Roots are real and equal
r1=r2=0.0
PS C:\Users\Admin\Desktop\1BF24CS255> cd "c:\Users\Admin\Desktop\1BF24CS255\" ; if ($?) { javac quadratic.java } ; if ($?) { java quadratic }
1
4
2
Roots are distinct
r1=-0.5857864376269049
r2=-3.414213562373095
PS C:\Users\Admin\Desktop\1BF24CS255> cd "c:\Users\Admin\Desktop\1BF24CS255\" ; if ($?) { javac quadratic.java } ; if ($?) { java quadratic }
Enter a, b and c coefficients
1
2
3
Roots are imaginary
r1=-1.0
r2=1.4142135623730951
PS C:\Users\Admin\Desktop\1BF24CS255> cd "c:\Users\Admin\Desktop\1BF24CS255\" ; if ($?) { javac quadratic.java } ; if ($?) { java quadratic }
Enter a, b and c coefficients
1
0
0
Roots are real and equal
r1=r2=0.0
PS C:\Users\Admin\Desktop\1BF24CS255> 
```

Program 2

Calculating SGPA of a student

Code:

```
import java.util.Scanner;

class Subject {
    int subjectMarks, credits, grade;
}

class Student {
    String name, usn;
    double SGPA;
    Scanner sc = new Scanner(System.in);
    Subject[] subject;

    Student() {
        subject = new Subject[8];
        for (int i = 0; i < 8; i++) {
            subject[i] = new Subject();
        }
    }

    void getStudentDetails() {
        System.out.print("Enter name: ");
        name = sc.nextLine();
        System.out.print("Enter USN: ");
        usn = sc.nextLine();
    }

    void getMarks() {
        for (int i = 0; i < 8; i++) {
            System.out.print("Enter Marks for Subject " + (i + 1) + ": ");
            subject[i].subjectMarks = sc.nextInt();
            System.out.print("Enter Credits for Subject " + (i + 1) + ": ");
            subject[i].credits = sc.nextInt();

            subject[i].grade = (subject[i].subjectMarks / 10) + 1;
            if (subject[i].grade == 11)
                subject[i].grade = 10;
            if (subject[i].grade <= 4)
                subject[i].grade = 0;
        }
        sc.nextLine(); // consume leftover newline
    }
}
```

```

void calculateSGPA() {
    int effectiveScore = 0, totalCredits = 0;
    for (int i = 0; i < 8; i++) {
        effectiveScore += (subject[i].grade * subject[i].credits);
        totalCredits += subject[i].credits;
    }
    SGPA = (double) effectiveScore / (double) totalCredits;
}

void displayStudentInfo() {
    System.out.println("\nStudent Details:");
    System.out.println("Name: " + name);
    System.out.println("USN: " + usn);
    System.out.println("SGPA: " + SGPA);
}
}

public class Program2
{
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        Student[] students = new Student[2]; // for 2 students

        for (int i = 0; i < 2; i++) {
            System.out.println("\nEnter details for Student " + (i + 1) + ": ");
            students[i] = new Student();
            students[i].getStudentDetails();
            students[i].getMarks();
            students[i].calculateSGPA();
            System.out.println("Results: ");
            students[i].displayStudentInfo();
        }
    }
}

```

Output:

```
PS C:\Users\Admin\Desktop\1BF24CS255> cd "c:\Users\Admin\Desktop\1BF24CS255\" ; if ($?) { javac Main.java } ; if ($?) { java Main }
```

```
Enter details for Student 1:
Enter name: ABC
Enter USN: 123ABC
Enter Marks for Subject 1: 90
Enter Credits for Subject 1: 4
Enter Marks for Subject 2: 87
Enter Credits for Subject 2: 4
Enter Marks for Subject 3: 81
Enter Credits for Subject 3: 3
Enter Marks for Subject 4: 78
Enter Credits for Subject 4: 3
Enter Marks for Subject 5: 90
Enter Credits for Subject 5: 2
Enter Marks for Subject 6: 91
Enter Credits for Subject 6: 2
Enter Marks for Subject 7: 94
Enter Credits for Subject 7: 1
Enter Marks for Subject 8: 89
Enter Credits for Subject 8: 1
Results:
```

```
Student Details:
Name: ABC
USN: 123ABC
SGPA: 9.3
```

```
Enter details for Student 2:
Enter name: DEF
Enter USN: 123DEF
Enter Marks for Subject 1: 81
Enter Credits for Subject 1: 4
Enter Marks for Subject 2: 78
Enter Credits for Subject 2: 4
Enter Marks for Subject 3: 57
Enter Credits for Subject 3: 3
Enter Marks for Subject 4: 67
Enter Credits for Subject 4: 3
Enter Marks for Subject 5: 86
Enter Credits for Subject 5: 2
Enter Marks for Subject 6: 80
Enter Credits for Subject 6: 2
Enter Marks for Subject 7: 74
Enter Credits for Subject 7: 1
Enter Marks for Subject 8: 90
Enter Credits for Subject 8: 1
Results:
```

```
Student Details:
Name: DEF
USN: 123DEF
SGPA: 8.05
```

```
PS C:\Users\Admin\Desktop\1BF24CS255> █
```


Program 3

Using the toString() method

Code:

```
import java.util.Scanner;

class Books {
    String name, author;
    int price, numPages;

    Books(String n, String a, int p, int numPages) {
        this.name = n;
        this.author = a;
        this.price = p;
        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;
    }

    public static void main(String args[]) {
        int n;
        String name, author;
        int price, numPages;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter no of books: ");
        n = sc.nextInt();
        sc.nextLine();
        Books b[] = new Books[n];
        for (int i = 0; i < n; i++) {
            System.out.println("Enter name of book: ");
            name = sc.nextLine();

            System.out.println("Enter name of author: ");
            author = sc.nextLine();

            System.out.println("Enter price: ");
            price = sc.nextInt();
```

```

        System.out.println("Enter number of pages: ");
        numPages = sc.nextInt();

        sc.nextLine();

        b[i] = new Books(name, author, price, numPages);
    }

    for (int i = 0; i < n; i++) {
        System.out.println("Details for book " + (i + 1) + ": ");
        System.out.println(b[i]);
    }
}
}

```

Output:

```

PS C:\Users\Admin\Desktop\1BF24CS255> cd "c:\Users\Admin\Desktop\1BF24CS255\" ; if ($?) { javac Books.java } ; if ($?) { java Books }
Enter no of books:
2
Enter name of book:
abc
Enter name of author:
def
Enter price:
34
Enter number of pages:
45
Enter name of book:
xyz
Enter name of author:
pqr
Enter price:
32
Enter number of pages:
23
Details for book 1:
Book name: abc
Author name: def
Price: 34
Number of pages: 45

Details for book 2:
Book name: xyz
Author name: pqr
Price: 32
Number of pages: 23

PS C:\Users\Admin\Desktop\1BF24CS255> 

```

Program 4

Using Abstract Class

Code:

```
import java.util.Scanner;
class InputScanner
{
    Scanner sc=new Scanner(System.in);
}
abstract class Shape extends InputScanner
{
    int dim1, dim2;
    abstract void printArea();
}
class Rectangle extends Shape
{
    void printArea()
    {
        System.out.println("Enter length of rectangle: ");
        dim1=sc.nextInt();
        System.out.println("Enter breadth of rectangle: ");
        dim2=sc.nextInt();
        double a=dim1*dim2;
        System.out.println("Area of rectangle: "+ a);
    }
}
class Triangle extends Shape
{
    void printArea()
    {
        System.out.println("Enter base of triangle: ");
        dim1=sc.nextInt();
        System.out.println("Enter height of triangle: ");
        dim2=sc.nextInt();
        double a=0.5*dim1*dim2;
        System.out.println("Area of triangle: "+ a);
    }
}
class Circle extends Shape
{
    void printArea()
    {
        System.out.println("Enter radius of circle: ");
        dim1=sc.nextInt();
        double a=Math.PI*dim1*dim1;
        System.out.println("Area of circle: "+a);
    }
}
```

```

    }
}

public class program4
{
    public static void main(String [] args)
    {
        Rectangle ob1=new Rectangle();
        ob1.printArea();
        System.out.println();
        Triangle ob2=new Triangle();
        ob2.printArea();
        System.out.println();
        Circle ob3=new Circle();
        ob3.printArea();
        System.out.println();
    }
}

```

Output:

```

PS C:\Users\student\Desktop\1BF24CS255> cd "c:\Users\student\Desktop\1BF24CS255\" ; if ($?) { javac classMain.java } ; if ($?) { java classMain }
Enter length of rectangle:
4
Enter breadth of rectangle:
2
Area of rectangle: 8.0

Enter base of triangle:
6
Enter height of triangle:
7
Area of triangle: 21.0

Enter radius of circle:
5
Area of circle: 78.53981633974483

PS C:\Users\student\Desktop\1BF24CS255>

```

Program 5

Implementing Inheritance

Code:

```
import java.util.Scanner;

class Account
{
    String customerName;
    String accountNumber;
    String accountType;
    double balance;

    Account(String c, String aN, String aT, double b) {
        this.customerName = c;
        this.accountNumber = aN;
        this.accountType = aT;
        this.balance = b;
    }

    void deposit(double amount)
    {
        if (amount > 0)
        {
            balance += amount;
            System.out.println("Deposited: " + amount);
        }
        else
        {
            System.out.println("Invalid deposit amount.");
        }
    }

    void displayBalance() {
        System.out.println("Current Balance: Rs. " + balance);
    }
}

class Saving extends Account
{
    double INTEREST_RATE = 0.05;

    Saving(String customerName, String accountNumber, double initialBalance)
    {
        super(customerName, accountNumber, "Savings", initialBalance);
    }
}
```

```

void computeAndDepositInterest(int years) {
    double interest = balance * Math.pow((1 + INTEREST_RATE), years) - balance;
    balance += interest;
    System.out.println("Interest of Rs. " + String.format("%.2f", interest) + " added to your
account.");
}
void withdraw(double amount)
{
    if (amount <= balance)
    {
        balance -= amount;
        System.out.println("Withdrawn:" + amount);
    } else
    {
        System.out.println("Insufficient balance!");
    }
}
}

class Current extends Account {
    double MIN_BALANCE = 1000.0;
    double SERVICE_CHARGE = 50.0;

    public Current(String customerName, String accountNumber, double initialBalance)
    {
        super(customerName, accountNumber, "Current", initialBalance);
    }

    void withdraw(double amount) {
        if (amount <= balance) {
            balance -= amount;
            System.out.println("Withdrawn: Rs. " + amount);
            checkMinimumBalance();
        } else {
            System.out.println("Insufficient balance!");
        }
    }

    void checkMinimumBalance() {
        if (balance < MIN_BALANCE) {
            balance -= SERVICE_CHARGE;
            System.out.println("Balance below minimum! Service charge of Rs." +
SERVICE_CHARGE + " imposed.");
        }
    }
}

```

```

public class program5 {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);

        System.out.println("Enter Customer Name:");
        String name = in.nextLine();

        System.out.println("Enter Account Number:");
        String accNo = in.nextLine();

        System.out.println("Enter Account Type (savings/current):");
        String type = in.nextLine().toLowerCase();

        System.out.println("Enter Initial Balance:");
        double balance = in.nextDouble();

        Account account;

        if (type.equals("savings"))
        {
            account = new Saving(name, accNo, balance);
        }
        else
        {
            account = new Current(name, accNo, balance);
        }

        int choice;
        do {
            System.out.println("\nOptions Available");
            System.out.println("1. Deposit");
            System.out.println("2. Withdraw");
            System.out.println("3. Display Balance");
            if (account instanceof Saving)
                System.out.println("4. Compute and Deposit Interest");
            System.out.println("5 . Exit");
            System.out.print("Enter choice: ");
            choice = in.nextInt();

            switch (choice) {
                case 1:
                    System.out.print("Enter amount to deposit: ");
                    double depositAmount = in.nextDouble();
                    account.deposit(depositAmount);
                    break;
            }
        } while (choice != 5);
    }
}

```

```

case 2:
    System.out.print("Enter amount to withdraw: ");
    double withdrawAmount = in.nextDouble();
    if (account instanceof Saving) {
        ((Saving) account).withdraw(withdrawAmount);
    } else {
        ((Current) account).withdraw(withdrawAmount);
    }
    break;

case 3:
    account.displayBalance();
    break;

case 4:
    if (account instanceof Saving) {
        System.out.print("Enter number of years for interest: ");
        int years = in.nextInt();
        ((Saving) account).computeAndDepositInterest(years);
    } else {
        System.out.println("Interest computation not available for Current Account.");
    }
    break;

case 5:
    System.out.println("Exiting Program ");
    System.exit(0);

default:
    System.out.println("Invalid choice. Try again.");
}
} while (choice != 0);

in.close();
}
}

```

Output:

Savings:


```

PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> cd "c:\Users\Admin\Desktop\JAVA -1BF24CS255\" ; if ($?) { javac program5.java } ; if ($?) { java program5 }
Enter Customer Name:
ABC
Enter Account Number:
123ABC
Enter Account Type (savings/current):
savings
Enter Initial Balance:
10000

Options Available
1. Deposit
2. Withdraw
3. Display Balance
4. Compute and Deposit Interest
5 . Exit
Enter choice: 1
Enter amount to deposit: 2000
Deposited: 2000.0

Options Available
1. Deposit
2. Withdraw
3. Display Balance
4. Compute and Deposit Interest
5 . Exit
Enter choice: 3
Current Balance: Rs. 12000.0

Options Available
1. Deposit
2. Withdraw
3. Display Balance
4. Compute and Deposit Interest
5 . Exit
Enter choice: 2
Enter amount to withdraw: 1500
Withdrawn:1500.0

Options Available
1. Deposit
2. Withdraw
3. Display Balance
4. Compute and Deposit Interest
5 . Exit
Enter choice: 3
Current Balance: Rs. 10500.0

```

```

Options Available
1. Deposit
2. Withdraw
3. Display Balance
4. Compute and Deposit Interest
5 . Exit
Enter choice: 4
Enter number of years for interest: 3
Interest of Rs. 1655.06 added to your account.

Options Available
1. Deposit
2. Withdraw
3. Display Balance
4. Compute and Deposit Interest
5 . Exit
Enter choice: 5
Exiting Program
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255>

```

Current:

```

PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> cd "C:\Users\Admin\Desktop\JAVA -1BF24CS255\" ; if ($?) { javac program5.java } ; if ($?) { java program5 }
Enter Customer Name:
ABC
Enter Account Number:
123ABC
Enter Account Type (savings/current):
current
Enter Initial Balance:
10000

Options Available
1. Deposit
2. Withdraw
3. Display Balance
5 . Exit
Enter choice: 1
Enter amount to deposit: 200
Deposited: 200.0

Options Available
1. Deposit
2. Withdraw
3. Display Balance
5 . Exit
Enter choice: 2
Enter amount to withdraw: 2000
Withdrawn: Rs. 2000.0

Options Available
1. Deposit
2. Withdraw
3. Display Balance
5 . Exit
Enter choice: 3
Current Balance: Rs. 8200.0

Options Available
1. Deposit
2. Withdraw
3. Display Balance
5 . Exit
Enter choice: 2
Enter amount to withdraw: 300000
Insufficient balance!

Options Available
1. Deposit
2. Withdraw
3. Display Balance
5 . Exit
Enter choice: 5
Exiting Program
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255>

```

Program 6

Using Package

Code:

Package: CIE

package CIE;

import java.util.Scanner;

```
public class Internals extends Student{
    public int marksin[] = new int[5];

    public void CIEmarks(){
        Scanner scnr=new Scanner(System.in);
        int i;
        System.out.println("Enter CIE marks:");
        for(i=0;i<5;i++){
            System.out.print("Enter marks for subject "+(i+1)+" ": );
            marksin[i]=scnr.nextInt();
            scnr.nextLine();
        }
    }
}
```

package CIE;

import java.util.Scanner;

```
public class Student {
    public String usn = new String();
    public String name = new String();
    public int sem;
    Scanner scnr=new Scanner(System.in);
    public void inputDetails(){
        System.out.print("Enter USN: ");
        usn=scnr.nextLine();
        System.out.print("Enter Name: ");
        name=scnr.nextLine();
        System.out.print("Enter Sem: ");
        sem=scnr.nextInt();
        scnr.nextLine();
    }
    public void Details(){
        System.out.println("Name: "+name);
        System.out.println("Usn: "+usn);
        System.out.println("Sem: "+sem);
    }
}
```

```
}
```

Package: SEE

package SEE;

import CIE.Internals;

import java.util.Scanner;

```
public class External extends Internals{
    int i=0;
    public int marks[]=new int[5];
    public int finalMarks[]=new int[5];
    public void SEEmarks(){
        Scanner scnr=new Scanner(System.in);
        System.out.println("Enter SEE marks:");
        for(i=0;i<5;i++){
            System.out.print("Enter marks for subject "+(i+1)+" ": );
            marks[i]=scnr.nextInt();
            scnr.nextLine();
        }
    }
    public void Final_marks(External in){
        System.out.println("Final marks:");
        for(i=0;i<5;i++){
            finalMarks[i]=marks[i]+in.marksin[i];
        }
        for(i=0;i<5;i++){
            System.out.println("Marks for subject"+(i+1)+" ": "+finalMarks[i]);
        }
    }
}
```

Main:

import SEE.External;

```
class program6{
    public static void main(String args[]){
        External e=new External();
        e.inputDetails();
        e.CIEmarks();
        e.SEEmarks();
        e.Details();
        e.Final_marks(e);
    }
}
```

Output:

```
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> cd "c:\Users\Admin\Desktop\JAVA -1BF24CS255\Program6\" ; if ($?) { javac program6.java } ; if ($?) { java program6 }
Enter USN: 1BF24CS255
Enter Name: Rohan
Enter Sem: 1
Enter CIE marks:
Enter marks for subject 1: 47
Enter marks for subject 2: 42
Enter marks for subject 3: 45
Enter marks for subject 4: 49
Enter marks for subject 5: 46
Enter SEE marks:
Enter marks for subject 1: 44
Enter marks for subject 2: 42
Enter marks for subject 3: 49
Enter marks for subject 4: 47
Enter marks for subject 5: 43
Name: Rohan
Usn: 1BF24CS255
Sem: 1
Final marks:
Marks for subject1: 91
Marks for subject2: 84
Marks for subject3: 94
Marks for subject4: 96
Marks for subject5: 89
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255\Program6> |
```

Program 7

Implementing User Defined Exception

Code:

```
import java.util.Scanner;

class WrongAge extends Exception{
    public WrongAge(int i){
        if(i==1){
            System.out.println("Age cannot be negative or zero.");
        }
        else if(i==2){
            System.out.println("Father's age cannot be less than son's age.");
        }
        else if(i==3){
            System.out.println("Son's age cannot be that close to father's.");
        }
    }
}

class Father{
    int fatherAge;
    Scanner sc=new Scanner(System.in);
    Father() throws WrongAge{
        System.out.print("Enter father's age: ");
        fatherAge=sc.nextInt();
        sc.nextLine();

        if(fatherAge<=0){
            throw new WrongAge(1);
        }
    }
    void display(){
        System.out.println("Father's age: "+fatherAge);
    }
}

class Son extends Father{
    int sonAge;

    Son() throws WrongAge{
        System.out.print("Enter son's age: ");
        sonAge=sc.nextInt();
        sc.nextLine();
    }
}
```

```

        if(sonAge<=0){
            throw new WrongAge(1);
        }
        else if(sonAge>=fatherAge){
            throw new WrongAge(2);
        }
        int gap=fatherAge-sonAge;
        if(gap<18){
            throw new WrongAge(3);
        }
    }
}
void display(){
    System.out.println("Son's age: "+sonAge);
    super.display();
}
}

public class program7 {
    public static void main(String[] args) {
        try{
            Son s=new Son();
            System.out.println("Valid ages.");
            s.display();
        }
        catch(WrongAge e){
            System.out.println(e.getMessage());
        }
    }
}

```

Output:

```

PS C:\Users\Admin> cd "c:\Users\Admin\Desktop\JAVA -1BF24CS255\" ; if ($?) { javac program7.java } ; if ($?) { java program7 }
Enter father's age: 0
Age cannot be negative or zero.
null
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> cd "c:\Users\Admin\Desktop\JAVA -1BF24CS255\" ; if ($?) { javac program7.java } ; if ($?) { java program7 }
Enter father's age: 44
Enter son's age: 0
Age cannot be negative or zero.
null
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> cd "c:\Users\Admin\Desktop\JAVA -1BF24CS255\" ; if ($?) { javac program7.java } ; if ($?) { java program7 }
Enter father's age: 44
Enter son's age: 45
Father's age cannot be less than son's age.
null
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> cd "c:\Users\Admin\Desktop\JAVA -1BF24CS255\" ; if ($?) { javac program7.java } ; if ($?) { java program7 }
Enter father's age: 44
Enter son's age: 43
Son's age cannot be that close to father's.
null
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> cd "c:\Users\Admin\Desktop\JAVA -1BF24CS255\" ; if ($?) { javac program7.java } ; if ($?) { java program7 }
Enter father's age: 44
Enter son's age: 20
Valid ages.
Son's age: 20
Father's age: 44
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255>

```

Program 8

Multithreading

Code:

```
class FirstThread extends Thread {
    public void run() {
        try {
            while (true) {
                System.out.println("BMS College of Engineering");
                Thread.sleep(10000);
            }
        } catch (InterruptedException e) {
            System.out.println("FirstThread interrupted");
        }
    }
}
```

```
class SecondThread extends Thread {
    public void run() {
        try {
            while (true) {
                System.out.println("CSE");
                Thread.sleep(2000);
            }
        } catch (InterruptedException e) {
            System.out.println("SecondThread interrupted");
        }
    }
}
```

```
public class Program8 {
    public static void main(String[] args) {
        FirstThread ob1=new FirstThread();
        SecondThread ob2=new SecondThread();

        ob1.start();
        ob2.start();
    }
}
```

Output:


```
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> cd "c:\Users\Admin\Desktop\JAVA -1BF24CS255\" ; if ($?) { javac Program8.java } ; if ($?) { java Program8 }
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
PS C:\Users\Admin\Desktop\JAVA -1BF24CS255> █
```