

**VISVESVARAYA TECHNOLOGICAL
UNIVERSITY**

“JnanaSangama”, Belgaum -590014, Karnataka.



LAB REPORT

on

Object Oriented Java Programming

(23CS3PCOOJ)

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

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**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 **Sparsh Agrawal (1BF24CS299)**, who is 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
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Github Link:

<https://github.com/SparshAgrawal123/java->

Program 1: QUADRATIC EQUATIONS

Code:

```
import java.util.Scanner;
class Labprogram1 {
    public static void main(String[] args){

        Scanner sc = new Scanner(System.in);
        System.out.println("enter the coefficients: ");
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();

        if(a == 0){
            System.out.println("it is not a quadratic equation");
            System.out.println("enter again: ");
            int p = sc.nextInt();
            a = p;
        }

        double d = (b*b - 4*a*c);
        double r1 = ((-b) + (Math.sqrt(d)))/(double)(2*a);
        double r2 = ((-b) - (Math.sqrt(d)))/(double)(2*a);

        if(d == 0){
            System.out.println("both roots are equal");
            System.out.println("root is" + r1);
        }

        else if(d > 0){
            System.out.println("roots are different");
            System.out.println("roots are" + r1 + " " + r2);
        }
    }
}
```

```

else{

    System.out.println("roots are imaginary");
    double a1 = (-b)/(double)(2*a);
    double a2 = (Math.sqrt(-d))/(double)(2*a);
    System.out.println("roots are " + a1 + "+" + a2 + "i");
    System.out.println("roots are " + a1 + "-" + a2 + "i");
}

}
}

```

Output:

```

enter the coefficients:
4
2
1
roots are imaginary
roots are -0.25+0.4330127018922193i
roots are -0.25-0.4330127018922193i
PS D:\1BF24CS299> ^C
PS D:\1BF24CS299>
PS D:\1BF24CS299> d:; cd 'd:\1BF24CS299'; & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Admin\A
ppData\Roaming\Code\User\workspaceStorage\6c363fc0265330784d80467c46870ace\redhat.java\jdt_ws\1BF24CS299_83d9c4c4\bin' 'Labprogram1'
enter the coefficients:
4
4
1
both roots are equal
root is -0.5
PS D:\1BF24CS299> ^C
PS D:\1BF24CS299>
PS D:\1BF24CS299> d:; cd 'd:\1BF24CS299'; & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Admin\A
ppData\Roaming\Code\User\workspaceStorage\6c363fc0265330784d80467c46870ace\redhat.java\jdt_ws\1BF24CS299_83d9c4c4\bin' 'Labprogram1'
enter the coefficients:
5
6
1
roots are different
roots are -0.2 -1.0
PS D:\1BF24CS299> ^C
PS D:\1BF24CS299>
PS D:\1BF24CS299> d:; cd 'd:\1BF24CS299'; & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Admin\A
ppData\Roaming\Code\User\workspaceStorage\6c363fc0265330784d80467c46870ace\redhat.java\jdt_ws\1BF24CS299_83d9c4c4\bin' 'Labprogram1'
enter the coefficients:
4
2
1
roots are imaginary
roots are -0.25+0.4330127018922193i
roots are -0.25-0.4330127018922193i
PS D:\1BF24CS299> []

```

Program 2: SGPA CALCULATOR

CODE:

```
import java.util.Scanner;
class Student{
    String name;String usn;
    int submarks[] = new int[8];
    int credits[] = new int[8];
    double sgpa;
    void getdetails(){
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the name: ");
        name=s.nextLine();
        System.out.println("Enter the usn: ");
        usn=s.nextLine();
        for(int i=0;i<8;i++){
            System.out.println("Enter the subject "+(i+1)+"marks: ");
            submarks[i]=s.nextInt();
            System.out.println("Enter the credits of subject "+(i+1)+": ");
            credits[i]=s.nextInt();
        }
    }
    int getgrade(int m){
        if(m>=90)
            return 10;
        else if (m>=80)
            return 9;
        else if (m>=70)
            return 8;
        else if(m>=60)
            return 7;
        else if(m>=50)
            return 6;
        else
            return 0;
    }
    void getSgpa(){
        double totalcredit=0;
```

```

double totalmarks=0;
for(int i=0;i<8;i++){
    totalmarks=totalmarks+(getgrade(submarks[i])*credits[i]);
    totalcredit=totalcredit+credits[i];
}
sgpa=totalmarks/totalcredit;
}
void ddisplay(){
    System.out.println("NAME IS: "+name);
    System.out.println("USN IS: "+usn);
    System.out.println("SGPA IS: "+sgpa);
}
}
class Sgpa{
    public static void main(String[] args){
        Student students[]=new Student[2];

        for(int i=0;i<2;i++){
            Student a=new Student();
            a.getdetails();
            a.getSgpa();
            students[i]=a;
        }
        for(int i = 0; i < 2; i++){
            students[i].ddisplay();
        }
    }
}

```

Output:

```
PS C:\1BF24CS299JAVA> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:65427' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\7077e3bf54e28ee66dc4dcedb68031e9\redhat.java\jdt_ws\1BF24CS299JAVA_739a86e5\bin' 'Sgpa'
Enter the name:
spars
Enter the usn:
299
Enter the subject 1marks:
90
Enter the credits of subject 1:
4
Enter the subject 2marks:
37
Enter the credits of subject 2:
4
Enter the subject 3marks:
36
Enter the credits of subject 3:
3
Enter the subject 4marks:
33
Enter the credits of subject 4:
3
Enter the subject 5marks:
96
Enter the credits of subject 5:
3
Enter the subject 6marks:
76
Enter the credits of subject 6:
3
Enter the subject 7marks:
78
Enter the credits of subject 7:
3
Enter the subject 8marks:
95
Enter the credits of subject 8:
3
Enter the name:
95
Enter the credits of subject 8:
3
Enter the name:
sudhanshu
Enter the usn:
300
Enter the subject 1marks:
```

```
95
Enter the credits of subject 8:
3
Enter the name:
sudhanshu
Enter the usn:
300
Enter the subject 1marks:
87
Enter the credits of subject 1:
4
Enter the subject 2marks:
78
Enter the credits of subject 2:
4
Enter the subject 3marks:
65
Enter the credits of subject 3:
3
Enter the subject 4marks:
87
Enter the credits of subject 4:
3
Enter the subject 5marks:
98
Enter the credits of subject 5:
3
Enter the subject 6marks:
74
Enter the credits of subject 6:
3
Enter the subject 7marks:
89
Enter the credits of subject 7:
3
Enter the subject 8marks:
94
Enter the credits of subject 8:
3
NAME IS: sparsh
USN IS: 299
SGPA IS: 9.153846153846153
NAME IS: sudhanshu
USN IS: 300
SGPA IS: 8.73076923076923
PS C:\1BF24CS299JAVA> █
```

Program 3: BOOK DETAILS

CODE:

```
import java.util.Scanner;
class Books {
    String name; String author; int price; int numPages;

    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 labprogram3 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int n; String name; String author; int price; int numPages;

        System.out.println("Enter number of books: ");
        n = s.nextInt();

        Books b[] = new Books[n];
        for (int i = 0; i < n; i++) {
            System.out.println("Enter the name: ");
```

```

name = s.next();

System.out.println("Author of the book: ");
author = s.next();

System.out.println("Enter the price of the book: ");
price = s.nextInt();

System.out.println("ENTER THE NUMBER OF PAGES: ");
numPages = s.nextInt();

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

```

```

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

```

Output:

```

PS C:\1BF24CS299JAVA> cd "c:\1BF24CS299JAVA\" ; if ($?) { javac labprogram3.java } ; if ($?) { java labprogram3 }

Enter number of books:
2
Enter the name:
qwerty
Author of the book:
asdfg
Enter the price of the book:
500
ENTER THE NUMBER OF PAGES:
455
Enter the name:
zxcvb
Author of the book:
lkjh
Enter the price of the book:
600
ENTER THE NUMBER OF PAGES:
657
Book name: qwerty
Author name: asdfg
Price: 500
Number of pages: 455

Book name: zxcvb
Author name: lkjh
Price: 600
Number of pages: 657

PS C:\1BF24CS299JAVA>

```

Program 4: CALCULATE AREA OF SHAPES

CODE:

```
import java.util.Scanner;

class InputScanner {
    Scanner s = new Scanner(System.in);
}

abstract class Shape extends InputScanner {
    int a, b;
    abstract void printArea();
}

class Rectangle extends Shape {
    void input() {
        System.out.println("Enter the dimensions of the rectangle (length and breadth):");
        a = s.nextInt();
        b = s.nextInt();
    }

    void printArea() {
        double area = a * b;
        System.out.println("Area of Rectangle = " + area);
    }
}

class Triangle extends Shape {
    void input() {
        System.out.println("Enter the dimensions of the triangle (base and height):");
        a = s.nextInt();
        b = s.nextInt();
    }

    void printArea() {
        double area = 0.5 * a * b;
        System.out.println("Area of Triangle = " + area);
    }
}

class Circle extends Shape {
    void input() {
        System.out.println("Enter the dimension of the circle (radius):");
        a = s.nextInt();
    }
}
```

```

    }

void printArea() {
    double area = 3.142 * a * a;
    System.out.println("Area of Circle = " + area);
}

public class MainShape {
    public static void main(String[] args) {
        Rectangle r = new Rectangle();
        Triangle t = new Triangle();
        Circle c = new Circle();

        r.input();
        t.input();
        c.input();
        r.printArea();
        t.printArea();
        c.printArea();
    }
}

```

Output:

```

PS C:\1BF24CS299JAVA> & 'C:\Program Files\Java\jdk-24\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:59312' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\BMSCE\AppData\Roaming\Code\User\workspaceStorage\5ce6b2c550cb20e1329716f957589bd\redhat.java\jdt_ws\1BF24CS299JAVA_739a86e5\bin' 'MainShape'
Enter the dimensions of the rectangle (length and breadth):
4
5
Enter the dimensions of the triangle (base and height):
7
8
Enter the dimension of the circle (radius):
3
Area of Rectangle = 20.0
Area of Triangle = 28.0
Area of Circle = 28.278
PS C:\1BF24CS299JAVA>

```

Program 5: BANK ACCOUNT

CODE:

```
import java.util.Scanner;

// Base Class
class Account {
    String customerName;
    int accountNumber;
    String accountType;
    double balance;

    void getAccountDetails() {
        Scanner s = new Scanner(System.in);
        System.out.print("Enter customer name: ");
        customerName = s.next();
        System.out.print("Enter account Number: ");
        accountNumber = s.nextInt();
        System.out.print("Enter type of account (saving/current): ");
        accountType = s.next();
        balance = 0;
    }

    void display() {
        System.out.println("Customer name: " + customerName);
        System.out.println("Account number: " + accountNumber);
        System.out.println("Type of Account: " + accountType);
        System.out.println("Balance = " + balance);
    }
}

class Sav_acct extends Account {
    void deposit() {
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the deposit amount: ");
        double amount = s.nextDouble();
        balance += amount;
    }

    void withdraw() {
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the withdrawal amount: ");
        double amount = s.nextDouble();
        if (amount > balance) {
```

```

        System.out.println("Insufficient balance!");
    } else {
        balance -= amount;
    }
}

void computeInterest() {
    Scanner s = new Scanner(System.in);
    System.out.print("Enter the rate of interest: ");
    double rate = s.nextDouble();
    System.out.print("Enter the time period (years): ");
    int time = s.nextInt();

    double interest = balance * Math.pow((1 + rate / 100), time) - balance;
    balance += interest;
    System.out.println("Interest added = " + interest);
}
}

class Cur_acct extends Account {
    final double minBalance = 500;
    final double serviceCharge = 100;

    void deposit() {
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the deposit amount: ");
        double amount = s.nextDouble();
        balance += amount;
    }

    void withdraw() {
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the withdrawal amount: ");
        double amount = s.nextDouble();
        if (amount > balance) {
            System.out.println("Insufficient balance!");
        } else {
            balance -= amount;
            checkMinBalance();
        }
    }

    void checkMinBalance() {
        if (balance < minBalance) {
            balance -= serviceCharge;
            System.out.println("Balance below minimum! Service charge of Rs." + serviceCharge + "

```

```

imposed.");
        }
    }
}

public class MainBank {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        Sav_acct sav = new Sav_acct();
        Cur_acct cur = new Cur_acct();

        System.out.print("Enter customer name for savings account: ");
        sav.customerName = s.next();
        System.out.print("Enter account Number: ");
        sav.accountNumber = s.nextInt();
        sav.accountType = "saving";

        System.out.print("Enter customer name for current account: ");
        cur.customerName = s.next();
        System.out.print("Enter account Number: ");
        cur.accountNumber = s.nextInt();
        cur.accountType = "current";

        int choice;
        do {
            System.out.println("\n-----MENU-----");
            System.out.println("1. Deposit");
            System.out.println("2. Withdraw");
            System.out.println("3. Compute interest for SavingsAccount");
            System.out.println("4. Display account details");
            System.out.println("5. Exit");
            System.out.print("Enter your choice: ");
            choice = s.nextInt();

            switch (choice) {
                case 1:
                    System.out.print("Enter the type of account: ");
                    String type = s.next();
                    if (type.equalsIgnoreCase("saving"))
                        sav.deposit();
                    else
                        cur.deposit();
                    break;

                case 2:
                    System.out.print("Enter the type of account: ");

```

```
type = s.next();
if (type.equalsIgnoreCase("saving"))
    sav.withdraw();
else
    cur.withdraw();
break;

case 3:
    sav.computeInterest();
    break;

case 4:
    System.out.print("Enter the type of account: ");
    type = s.next();
    if (type.equalsIgnoreCase("saving"))
        sav.display();
    else
        cur.display();
    break;

case 5:
    System.out.println("Exiting...");
    break;

default:
    System.out.println("Invalid choice!");
}

} while (choice != 5);
}
```

OUTPUT:

```
PS C:\1BF24CS299JAVA> & 'C:\Program Files\Java\jdk-24\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:64875' '--XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\BMSCE\AppData\Roaming\Code\User\workspaceStorage\5ceeb2c558cb20e1329716f957589bd\redhat.java\jdt_ws\1BF24CS299JAVA_739a86e5\bin' 'MainBank'
Enter customer name for savings account: john
Enter account Number: 1
Enter customer name for current account: smith
Enter account Number: 2

-----MENU-----
1. Deposit
2. Withdraw
3. Compute interest for SavingsAccount
4. Display account details
5. Exit
Enter your choice: 1
Enter the type of account: saving
Enter the deposit amount: 1000

-----MENU-----
1. Deposit
2. Withdraw
3. Compute interest for SavingsAccount
4. Display account details
5. Exit
Enter your choice: 2
Enter the type of account: saving
Enter the withdrawal amount: 200

-----MENU-----
1. Deposit
2. Withdraw
3. Compute interest for SavingsAccount
4. Display account details
5. Exit
Enter your choice: 1
Enter the type of account: saving
Enter the deposit amount: 500

-----MENU-----
1. Deposit
2. Withdraw
3. Compute interest for SavingsAccount
4. Display account details
5. Exit
Enter your choice: 4
Enter the type of account: saving
Customer name: john
Account number: 1
Type of Account: saving
Balance = 1300.0
```

Program 6: FINAL SEE AND CIE MARKS

CODE:

```
package CIE;

public class Personal {
    public String usn, name;
    public int sem;

    public Personal(String usn, String name, int sem) {
        this.usn = usn;
        this.name = name;
        this.sem = sem;
    }
}

package CIE;

public class Internals {
    public int[] internalMarks = new int[5];
}

package SEE;

import CIE.Personal;

public class External extends Personal {
    public int[] seeMarks = new int[5];

    public External(String usn, String name, int sem) {
        super(usn, name, sem);
    }
}

// FinalMarks.java
import CIE.*;
import SEE.*;
import java.util.*;

public class FinalMarks {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of students: ");
        int n = sc.nextInt();
```

```

External[] students = new External[n];
Internals[] internals = new Internals[n];

for (int i = 0; i < n; i++) {
    System.out.println("\nEnter details for student " + (i + 1));
    System.out.print("USN: ");
    String usn = sc.next();
    System.out.print("Name: ");
    String name = sc.next();
    System.out.print("Semester: ");
    int sem = sc.nextInt();

    students[i] = new External(usn, name, sem);
    internals[i] = new Internals();

    System.out.println("Enter 5 internal marks:");
    for (int j = 0; j < 5; j++)
        internals[i].internalMarks[j] = sc.nextInt();

    System.out.println("Enter 5 SEE marks:");
    for (int j = 0; j < 5; j++)
        students[i].seeMarks[j] = sc.nextInt();
}

System.out.println("\n----- FINAL MARKS -----");
for (int i = 0; i < n; i++) {
    System.out.println("\nStudent " + (i + 1));
    System.out.println("USN: " + students[i].usn);
    System.out.println("Name: " + students[i].name);
    System.out.println("Semester: " + students[i].sem);

    System.out.print("Final Marks (per subject): ");
    for (int j = 0; j < 5; j++) {
        double finalMark = (internals[i].internalMarks[j] / 2.0)
            + (students[i].seeMarks[j] / 2.0);
        System.out.print(finalMark + " ");
    }
    System.out.println();
}
sc.close();
}
}

```

OUTPUT:

```
PS C:\1BF24CS299JAVA> & 'C:\Program Files\Java\jdk-23\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:65204' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\admin\AppData\Roaming\Code\User\workspaceStorage\4d139d9d9b5ae5fdc453010a3cab3160\redhat.java\jdt_ws\1BF24CS299JAVA_739a86e5\bin' 'FinalMarks'
Enter number of students: 2

Enter details for student 1
USN: 1BF24CS299
Name: sparsh
Semester: 3
Enter 5 internal marks:
98
97
96
95
94
Enter 5 SEE marks:
90
98
87
67
99

Enter details for student 2
USN: 1BF24CS303
Name: sudhanshu
Semester: 3
Enter 5 internal marks:
87
67
98
56
85
Enter 5 SEE marks:
65
87
92
56
87

----- FINAL MARKS -----

Student 1
USN: 1BF24CS299
Name: sparsh
Semester: 3
Final Marks (per subject): 94.0 97.5 91.5 81.0 96.5

Student 2
USN: 1BF24CS303
Name: sudhanshu
Semester: 3
Final Marks (per subject): 76.0 77.0 95.0 56.0 86.0
PS C:\1BF24CS299JAVA>
```

PROGRAM 7: WRONG AGE

CODE:

```
import java.util.Scanner;

class WrongAge extends Exception {

    WrongAge() {
        super("Age Error");
    }

    WrongAge(String msg) {
        super(msg);
    }
}

class InputScanner {
    Scanner s = new Scanner(System.in);
}

class Father extends InputScanner {
    int fatherAge;

    Father() throws WrongAge {
        System.out.print("Enter father's age: ");
        fatherAge = s.nextInt();

        if (fatherAge < 0) {
            throw new WrongAge("Father's age cannot be negative");
        }
    }

    void display() {
        System.out.println("Father's age: " + fatherAge);
    }
}

class Son extends Father {
```

```

int sonAge;

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

    if (sonAge >= fatherAge) {
        throw new WrongAge("Son's age cannot be greater than or equal to father's age");
    } else if (sonAge < 0) {
        throw new WrongAge("Son's age cannot be negative");
    }
}

void display() {
    super.display();
    System.out.println("Son's age: " + sonAge);
}

public class ExceptionHandling {
    public static void main(String[] args) {
        try {
            Son obj = new Son();
            obj.display();
        } catch (WrongAge e) {
            System.out.println("Exception: " + e.getMessage());
        }
    }
}

```

OUTPUT:

```
PS C:\1BF24CS299JAVA> & 'C:\Program Files\Java\jdk-23\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:51809' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\admin\AppData\Roaming\Code\User\workspaceStorage\4d139d9d9b5ae5fdc453010a3cab3160\redhat.java\jdt_ws\1BF24CS299JAVA_739a86e5\bin' 'Main'
Enter father's age: 45
Enter son's age: 18
Father's age: 45
Son's age: 18
PS C:\1BF24CS299JAVA> ^C
PS C:\1BF24CS299JAVA>
PS C:\1BF24CS299JAVA> c;; cd 'c:\1BF24CS299JAVA'; & 'C:\Program Files\Java\jdk-23\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:51822' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\admin\AppData\Roaming\Code\User\workspaceStorage\4d139d9d9b5ae5fdc453010a3cab3160\redhat.java\jdt_ws\1BF24CS299JAVA_739a86e5\bin' 'Main'
Enter father's age: 45
Enter son's age: 56
Exception: Son's age cannot be greater than or equal to father's age
PS C:\1BF24CS299JAVA> ^C
PS C:\1BF24CS299JAVA>
PS C:\1BF24CS299JAVA> c;; cd 'c:\1BF24CS299JAVA'; & 'C:\Program Files\Java\jdk-23\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:51832' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\admin\AppData\Roaming\Code\User\workspaceStorage\4d139d9d9b5ae5fdc453010a3cab3160\redhat.java\jdt_ws\1BF24CS299JAVA_739a86e5\bin' 'Main'
Enter father's age: -19
Exception: Father's age cannot be negative
PS C:\1BF24CS299JAVA> █
```

PROGRAM 8: MULTITHREADING

CODE:

```
class CollegeThread extends Thread {  
    public void run() {  
        try {  
            while (true) {  
                System.out.println("BMS College of Engineering");  
                Thread.sleep(10000); // 10 seconds  
            }  
        } catch (InterruptedException e) {  
            System.out.println("CollegeThread interrupted");  
        }  
    }  
}  
  
class CSEThread extends Thread {  
    public void run() {  
        try {  
            while (true) {  
                System.out.println("CSE");  
                Thread.sleep(2000); // 2 seconds  
            }  
        } catch (InterruptedException e) {  
            System.out.println("CSEThread interrupted");  
        }  
    }  
}  
  
public class MultiThreadDemo {  
    public static void main(String[] args) {  
        CollegeThread t1 = new CollegeThread();  
        CSEThread t2 = new CSEThread();  
  
        t1.start();  
        t2.start();  
    }  
}
```

OUTPUT:

```
PS C:\1BF24CS299]JAVA\labprogram8> & 'C:\Program Files\Java\jdk-23\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:56456' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\admin\AppData\Roaming\Code\User\workspaceStorage\ad54fee982299313f1d42fba839f15e\redhat.java\jdt_ws\labprogram8_1daa2a97\bin' 'MultiThreadDemo'
CSE
BMS College of Engineering
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BMS College of Engineering
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```


