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

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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 **Sonia S(1BF24CS297),** 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.

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Github Link:https://github.com/SoniaSandeep/Java/tree/main

Program 1

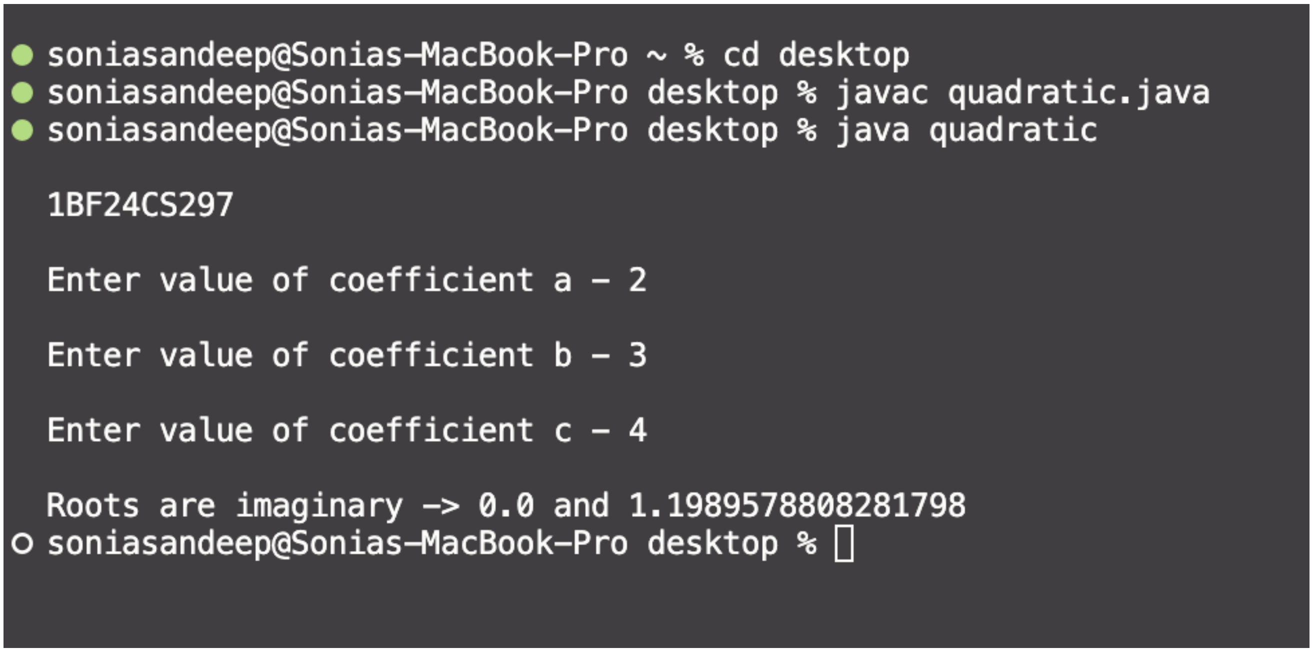
Implement Quadratic Equation

Code:

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

      int a,b,c,d;
      double r1,r2;
      System.out.println("\n1BF24CS297\n");
      Scanner in = new Scanner(System.in);

      System.out.print("Enter value of coefficient a - ");
      a = in.nextInt();
      System.out.println();

      System.out.print("Enter value of coefficient b - ");
      b = in.nextInt();
      System.out.println();

      System.out.print("Enter value of coefficient c - ");
      c = in.nextInt();
      System.out.println();

      if(a == 0)
      {
         System.out.println("Not a Quadratic Equation");
      }

      else
      {
         d= b*b - 4*a*c;

         if(d==0)
         {
            r1 = (-b)/(2*a);
            System.out.println("Roots are real and equal -> "+r1);
         }

         else if(d>0)
```

```
          {
             r1 = ((-b) + (Math.sqrt(d)))/(double)(2*a);
             r2 = ((-b) - (Math.sqrt(d)))/(double)(2*a);
             System.out.println("Roots are real and distinct-> "+r1+" and "+r2);
          }

          else
          {
          r1 = (-b)/(2*a);
          r2 = Math.sqrt(-d)/(2*a);
          System.out.println("Roots are imaginary -> "+r1+" and "+r2);
          }

          }
       }
    }
```

Output:



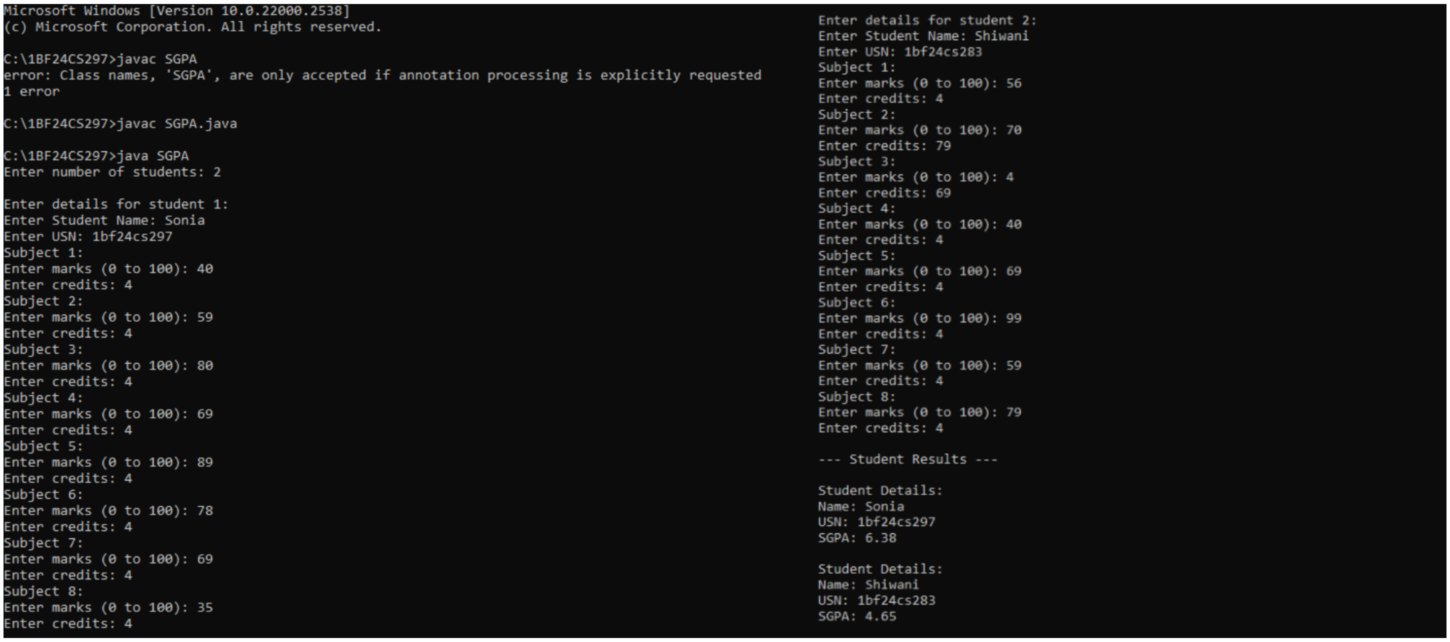
```
● soniasandeep@Sonias-MacBook-Pro ~ % cd desktop
● soniasandeep@Sonias-MacBook-Pro desktop % javac quadratic.java
● soniasandeep@Sonias-MacBook-Pro desktop % java quadratic

  1BF24CS297

  Enter value of coefficient a - 2

  Enter value of coefficient b - 3

  Enter value of coefficient c - 4

  Roots are imaginary -> 0.0 and 1.1989578808281798
○ soniasandeep@Sonias-MacBook-Pro desktop % □
```

Program 2: SGPA Calculator

Code:

```
import java.util.Scanner;

class Subject {
   int subjectMarks;
   int credits;
   int grade;
}

class Student {
   String name;
   String usn;
   double SGPA;
   Scanner s;
   Subject subject[];

   Student() {
      s = new Scanner(System.in);
      subject = new Subject[8];
      for (int i = 0; i < 8; i++) {
         subject[i] = new Subject();
      }
   }

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

   void getMarks() {
      for (int i = 0; i < 8; i++) {
         System.out.println("Subject " + (i+1) + ":");
         while (true) {
            System.out.print("Enter marks (0 to 100): ");
            subject[i].subjectMarks = s.nextInt();
            if (subject[i].subjectMarks > 100) {
               System.out.println("Marks cannot be more than 100.");
            } else if (subject[i].subjectMarks < 0) {
               System.out.println("Marks cannot be negative.");
            } else {
                    break;
                }
            }
            System.out.print("Enter credits: ");
            subject[i].credits = s.nextInt();

            subject[i].grade = (subject[i].subjectMarks / 10) + 1;

            if (subject[i].grade == 11) {
                subject[i].grade = 10;
            }
            if (subject[i].subjectMarks < 40) {
                subject[i].grade = 0;
            }
        }
        s.nextLine();
    }

    void computeSGPA() {
        int effectiveScore = 0;
        int 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 display() {
        System.out.println("\nStudent Details:");
        System.out.println("Name: " + name);
        System.out.println("USN: " + usn);
        System.out.printf("SGPA: %.2f\n", SGPA);
    }
}

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

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

        System.out.println("\n--- Student Results ---");
        for (int i = 0; i < n; i++) {
            students[i].display();
        }

        scanner.close();
    }
}
```

Output:

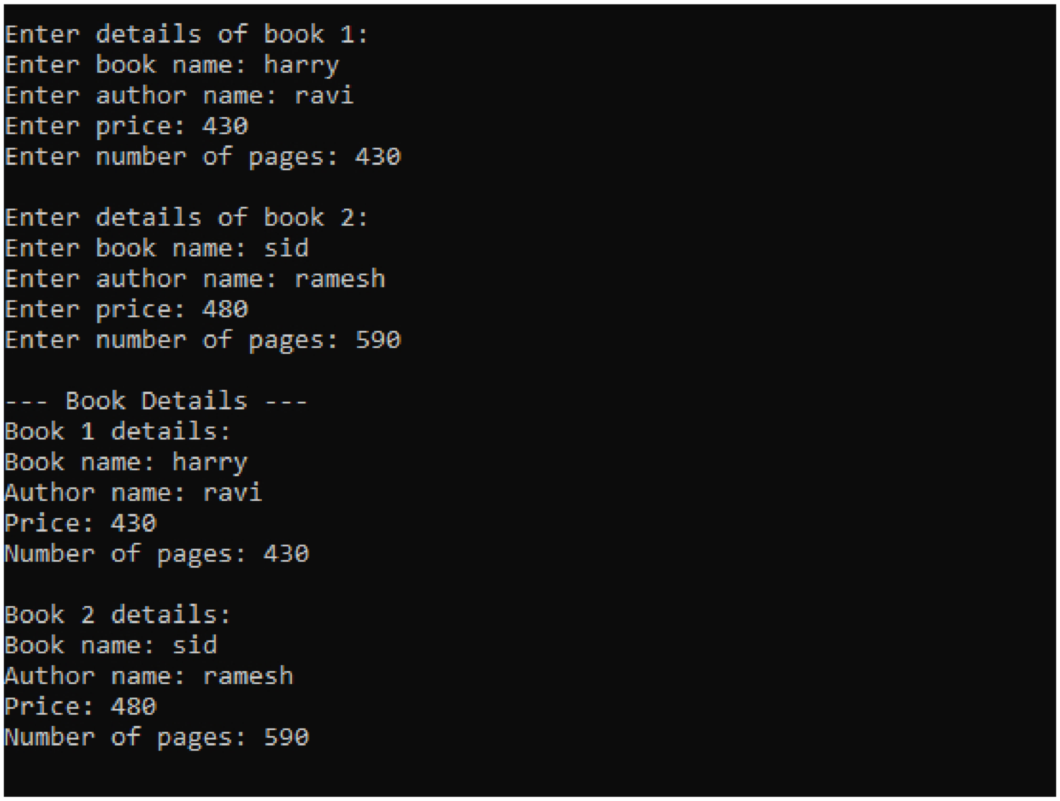


```
Microsoft Windows [Version 10.0.22000.2538]
(c) Microsoft Corporation. All rights reserved.

C:\1BF24CS297>javac SGPA
error: Class names, 'SGPA', are only accepted if annotation processing is explicitly requested
1 error

C:\1BF24CS297>javac SGPA.java

C:\1BF24CS297>java SGPA
Enter number of students: 2

Enter details for student 1:
Enter Student Name: Sonia
Enter USN: 1bf24cs297
Subject 1:
Enter marks (0 to 100): 40
Enter credits: 4
Subject 2:
Enter marks (0 to 100): 59
Enter credits: 4
Subject 3:
Enter marks (0 to 100): 80
Enter credits: 4
Subject 4:
Enter marks (0 to 100): 69
Enter credits: 4
Subject 5:
Enter marks (0 to 100): 89
Enter credits: 4
Subject 6:
Enter marks (0 to 100): 78
Enter credits: 4
Subject 7:
Enter marks (0 to 100): 69
Enter credits: 4
Subject 8:
Enter marks (0 to 100): 35
Enter credits: 4

Enter details for student 2:
Enter Student Name: Shiwani
Enter USN: 1bf24cs283
Subject 1:
Enter marks (0 to 100): 56
Enter credits: 4
Subject 2:
Enter marks (0 to 100): 70
Enter credits: 79
Subject 3:
Enter marks (0 to 100): 4
Enter credits: 69
Subject 4:
Enter marks (0 to 100): 40
Enter credits: 4
Subject 5:
Enter marks (0 to 100): 69
Enter credits: 4
Subject 6:
Enter marks (0 to 100): 99
Enter credits: 4
Subject 7:
Enter marks (0 to 100): 59
Enter credits: 4
Subject 8:
Enter marks (0 to 100): 79
Enter credits: 4

--- Student Results ---

Student Details:
Name: Sonia
USN: 1bf24cs297
SGPA: 6.38

Student Details:
Name: Shiwani
USN: 1bf24cs283
SGPA: 4.65
```

Program 3: Bookstore Program

Code:

```
import java.util.Scanner;

class Book {
    String name;
    String author;
    int price;
    int numPages;


    Book(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;
    }
}


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

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

        Book[] b = new Book[n];


        for (int i = 0; i < n; i++) {
            System.out.println("\nEnter details of book " + (i + 1) + ":");
            System.out.print("Enter book name: ");
            String name = s.next();

            System.out.print("Enter author name: ");
            String author = s.next();

            System.out.print("Enter price: ");
            int price = s.nextInt();

            System.out.print("Enter number of pages: ");
            int numPages = s.nextInt();

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


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

        s.close();
    }
}
```



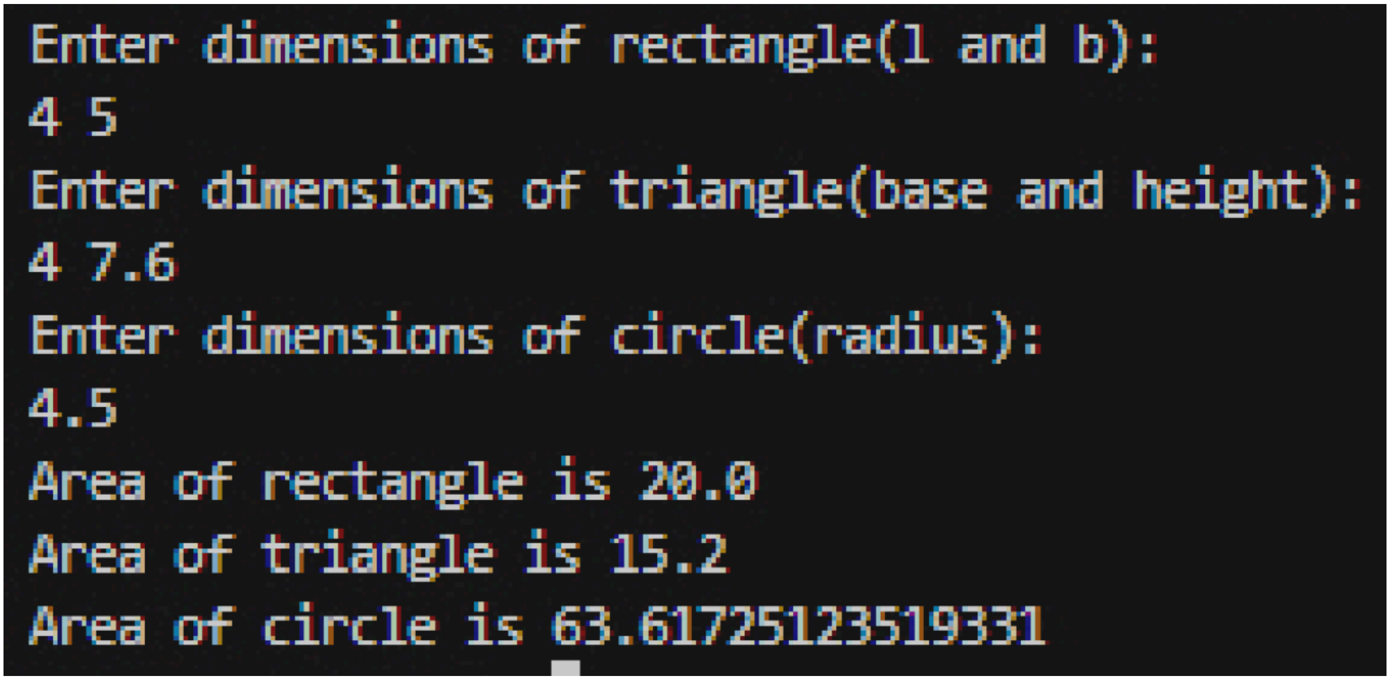
```
Enter details of book 1:
Enter book name: harry
Enter author name: ravi
Enter price: 430
Enter number of pages: 430

Enter details of book 2:
Enter book name: sid
Enter author name: ramesh
Enter price: 480
Enter number of pages: 590

--- Book Details ---
Book 1 details:
Book name: harry
Author name: ravi
Price: 430
Number of pages: 430

Book 2 details:
Book name: sid
Author name: ramesh
Price: 480
Number of pages: 590
```

Program 4: Shapes Program

Code:

```
import java.util.Scanner;

abstract  class Shape{
   int i;
   int j;
   double r;
   abstract double printArea();
}
class Rectangle extends Shape {
   public Rectangle(int l, int b) {
      this.i = l;
      this.j = b;
   }


   double printArea() {
      return i * j;
   }
}

class Triangle extends Shape{
   public Triangle(int i, double r) {
      this.i = i;
      this.r = r;
   }


   double printArea(){
      return 0.5*i*r;
   }
}
class Circle extends Shape{
   public Circle(double r) {
      this.r =r;
   }

   double printArea(){
      return Math.PI*(r*r);

   }
}
public class Shapes {
   public static void main(String[] args) {
      Scanner s = new Scanner(System.in);
      System.out.println("Enter dimensions of rectangle(l and b):");
      int l = s.nextInt();
      int b = s.nextInt();

      Shape r = new Rectangle(l,b);
      double area1;
      area1=r.printArea();

      System.out.println("Enter dimensions of triangle(base and height):");
      int i = s.nextInt();
      double he = s.nextDouble();
      Shape t = new Triangle(i,he);
      double area2;
      area2=t.printArea();

      System.out.println("Enter dimensions of circle(radius):");
      double ra = s.nextDouble();
      Shape c = new Circle(ra);
      double area3;
      area3=c.printArea();
      System.out.println("Area of rectangle is "+ area1);
      System.out.println("Area of triangle is "+ area2);
      System.out.println("Area of circle is "+ area3);

   }
}
```

Output:



```
Enter dimensions of rectangle(l and b):
4 5
Enter dimensions of triangle(base and height):
4 7.6
Enter dimensions of circle(radius):
4.5
Area of rectangle is 20.0
Area of triangle is 15.2
Area of circle is 63.61725123519331
```

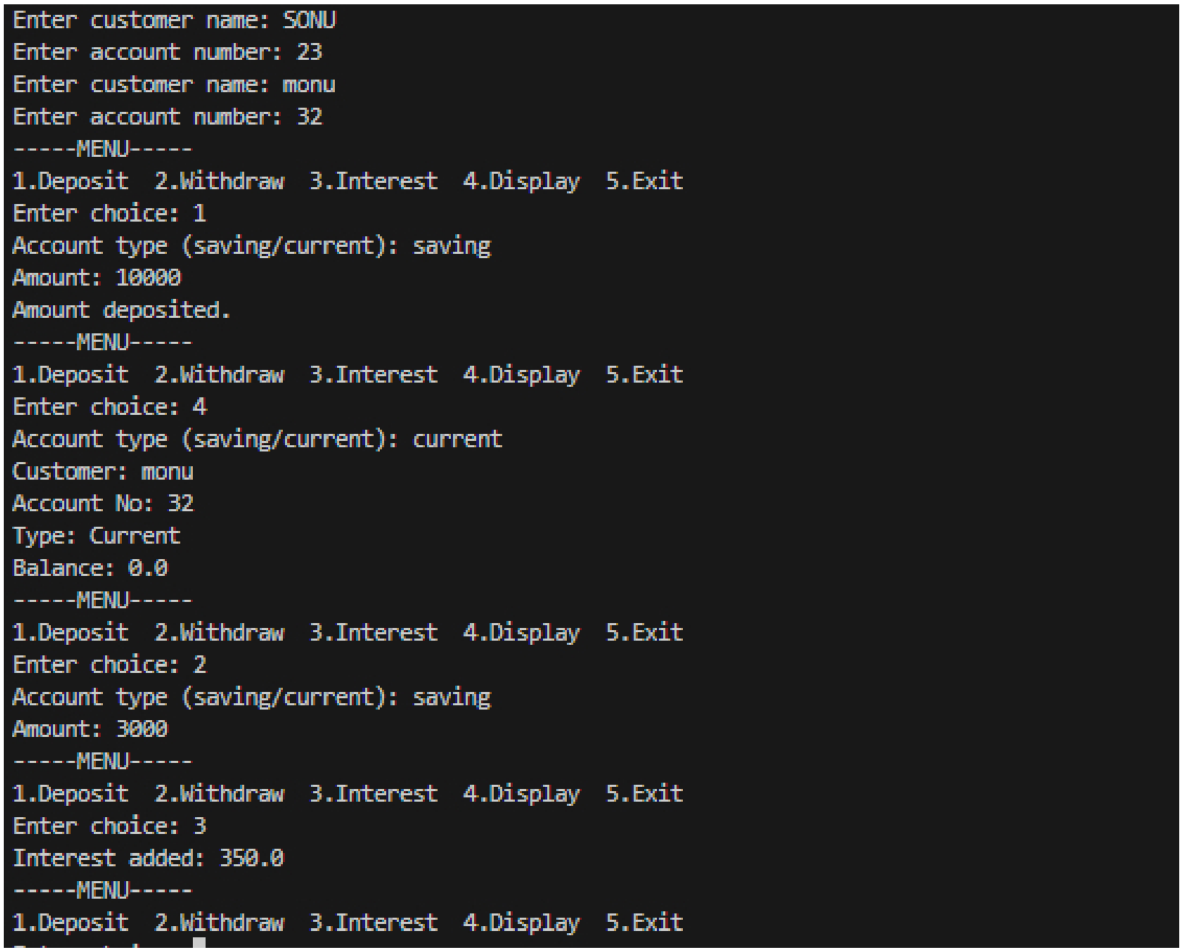
Program 5: Bank Program

Code:

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

class Account {
   String name, type;
   int accNo;
   double balance;

   void create(String n, int no, String t) {
      name = n; accNo = no; type = t; balance = 0.0;
   }

   void deposit(double amt) {
      balance += amt;
      System.out.println("Amount deposited.");
   }

   void display() {
      System.out.println("Customer: " + name);
      System.out.println("Account No: " + accNo);
      System.out.println("Type: " + type);
      System.out.println("Balance: " + balance);
   }
}

class Savings extends Account {
   void interest() {
      double i = balance * 0.05;
      balance += i;
      System.out.println("Interest added: " + i);
   }

   void withdraw(double amt) {
      if (amt <= balance) balance -= amt;
      else System.out.println("Insufficient balance!");
   }
}

class Current extends Account {
   void withdraw(double amt) {
      balance -= amt;
```

```
        if (balance < 500) {
            balance -= 50;
            System.out.println("Penalty imposed for low balance.");
        }
    }
}

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

        Savings s = new Savings();
        Current c = new Current();

        System.out.print("Enter customer name: ");
        String n1 = sc.next();
        System.out.print("Enter account number: ");
        int a1 = sc.nextInt();
        s.create(n1, a1, "Savings");

        System.out.print("Enter customer name: ");
        String n2 = sc.next();
        System.out.print("Enter account number: ");
        int a2 = sc.nextInt();
        c.create(n2, a2, "Current");

        int ch;
        do {
            System.out.println("-----MENU-----");
            System.out.println("1.Deposit  2.Withdraw  3.Interest  4.Display  5.Exit");
            System.out.print("Enter choice: ");
            ch = sc.nextInt();

            switch (ch) {
                case 1 -> {
                    System.out.print("Account type (saving/current): ");
                    String t = sc.next();
                    System.out.print("Amount: ");
                    double d = sc.nextDouble();
                    if (t.equalsIgnoreCase("saving")) s.deposit(d); else c.deposit(d);
                }
                case 2 -> {
                    System.out.print("Account type (saving/current): ");
                    String t = sc.next();
                    System.out.print("Amount: ");
                    double w = sc.nextDouble();
                    if (t.equalsIgnoreCase("saving")) s.withdraw(w); else c.withdraw(w);
                }
                case 3 -> s.interest();
                case 4 -> {
                    System.out.print("Account type (saving/current): ");
                    String t = sc.next();
                    if (t.equalsIgnoreCase("saving")) s.display(); else c.display();
                }
                case 5 -> System.out.println("Goodbye!");
                default -> System.out.println("Invalid choice!");
            }
        } while (ch != 5);

        sc.close();
    }
}
```

Output:



```
Enter customer name: SONU
Enter account number: 23
Enter customer name: monu
Enter account number: 32
-----MENU-----
1.Deposit  2.Withdraw  3.Interest  4.Display  5.Exit
Enter choice: 1
Account type (saving/current): saving
Amount: 10000
Amount deposited.
-----MENU-----
1.Deposit  2.Withdraw  3.Interest  4.Display  5.Exit
Enter choice: 4
Account type (saving/current): current
Customer: monu
Account No: 32
Type: Current
Balance: 0.0
-----MENU-----
1.Deposit  2.Withdraw  3.Interest  4.Display  5.Exit
Enter choice: 2
Account type (saving/current): saving
Amount: 3000
-----MENU-----
1.Deposit  2.Withdraw  3.Interest  4.Display  5.Exit
Enter choice: 3
Interest added: 350.0
-----MENU-----
1.Deposit  2.Withdraw  3.Interest  4.Display  5.Exit
Enter choice: 
```

Program 6: Packages

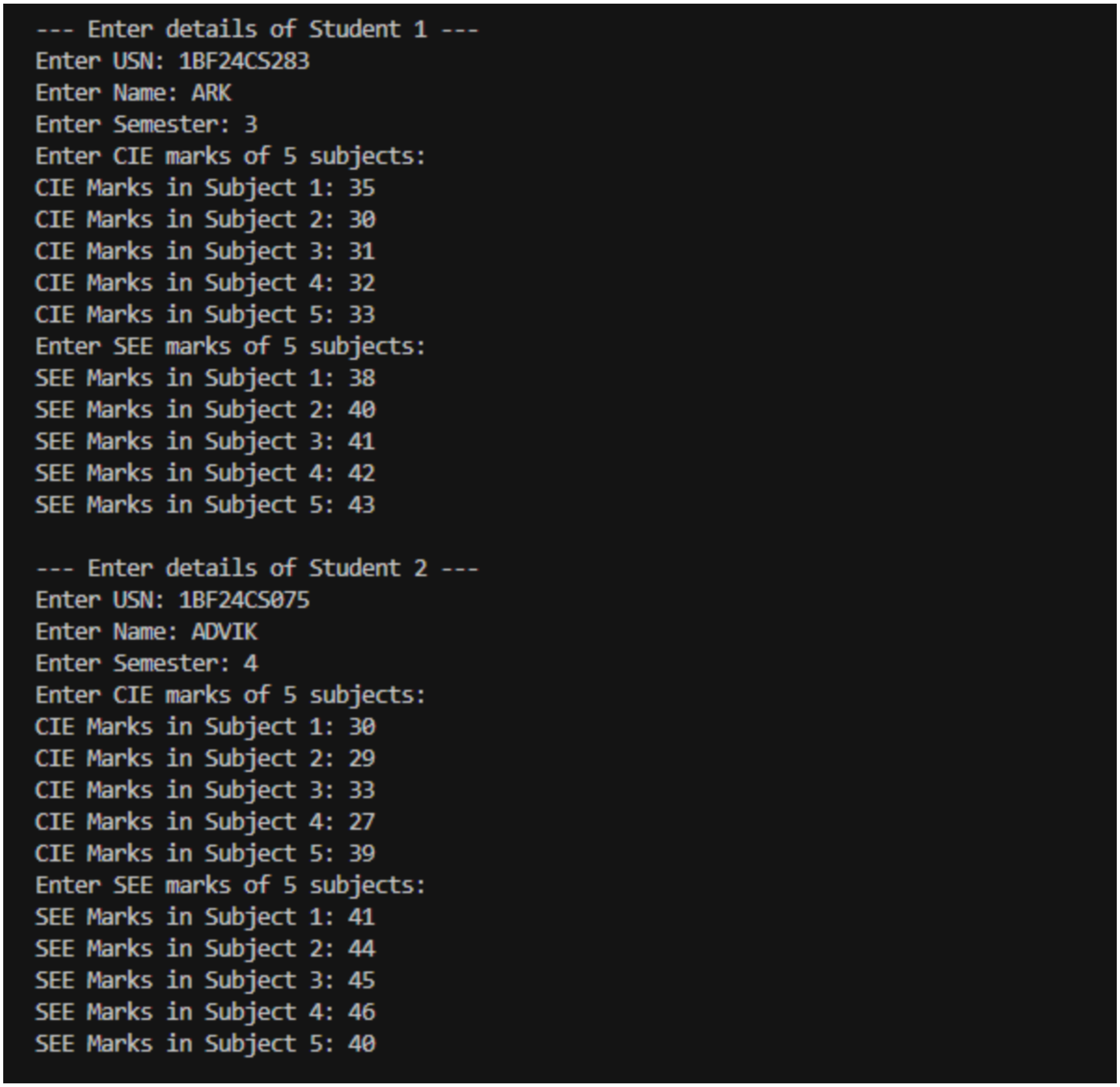
Code:

```
package CIE;
import java.util.Scanner;

public class Student {
   protected String usn;
   protected String name;
   protected int sem;

   public void inputStudentDetails() {
      Scanner s = new Scanner(System.in);
      System.out.print("Enter USN: ");
      usn = s.nextLine();

      System.out.print("Enter Name: ");
      name = s.nextLine();

      System.out.print("Enter Semester: ");
      sem = s.nextInt();
   }

   public void displayStudentDetails() {
      System.out.println("USN: " + usn);
      System.out.println("Name: " + name);
      System.out.println("Semester: " + sem);
   }
}

package CIE;
import java.util.Scanner;

public class Internals extends Student {

   protected int marks[] = new int[5];

   public void inputCIEmarks() {
      Scanner s = new Scanner(System.in);
      System.out.println("Enter 5 CIE marks: ");

      for (int i = 0; i < 5; i++) {
         System.out.print("CIE Mark in Subject " + (i + 1) + ": ");
         marks[i] = s.nextInt();
```

```
        }
    }
}
package SEE;

import CIE.Internals;
import java.util.Scanner;

public class Externals extends Internals {

    protected int marks[];
    protected int finalMarks[];

    public Externals() {
        marks = new int[5];
        finalMarks = new int[5];
    }

    public void inputSEEmarks() {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter 5 SEE marks: ");

        for (int i = 0; i < 5; i++) {
            System.out.print("SEE Mark in Subject " + (i + 1) + ": ");
            marks[i] = s.nextInt();
        }
    }

    public void calculateFinalMarks() {
        for (int i = 0; i < 5; i++) {
            finalMarks[i] = super.marks[i] + marks[i]/2;  // CIE + SEE
        }
    }

    public void displayFinalMarks() {
        System.out.println("\n--- Final Marks ---");
        displayStudentDetails();

        for (int i = 0; i < 5; i++) {
            System.out.println("Final Marks in Subject  " + (i + 1) + ": " + finalMarks[i]);
        }
    }
}
```

```
import SEE.Externals;

class Main {
   public static void main(String args[]) {

      Externals obj = new Externals();

      obj.inputStudentDetails();
      obj.inputCIEmarks();
      obj.inputSEEmarks();
      obj.calculateFinalMarks();
      obj.displayFinalMarks();
   }
}
```

Output:



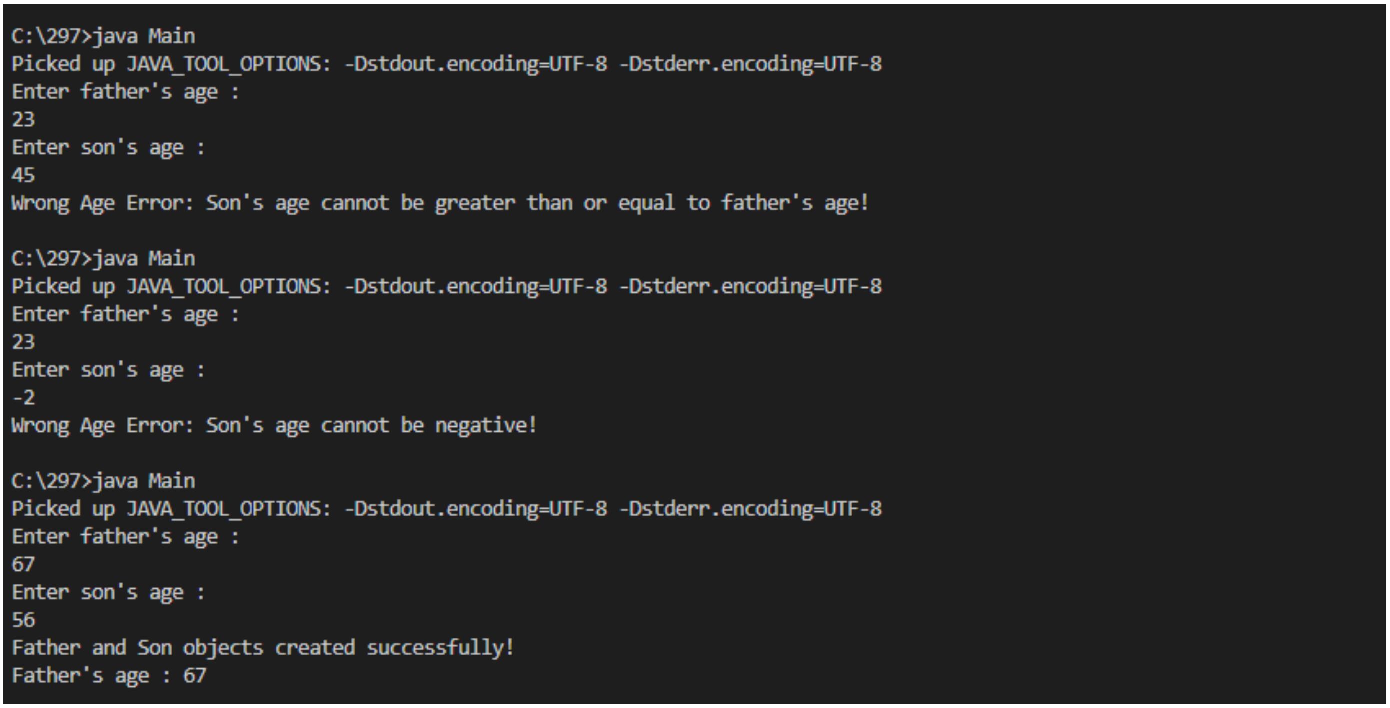
```
--- Enter details of Student 1 ---
Enter USN: 1BF24CS283
Enter Name: ARK
Enter Semester: 3
Enter CIE marks of 5 subjects:
CIE Marks in Subject 1: 35
CIE Marks in Subject 2: 30
CIE Marks in Subject 3: 31
CIE Marks in Subject 4: 32
CIE Marks in Subject 5: 33
Enter SEE marks of 5 subjects:
SEE Marks in Subject 1: 38
SEE Marks in Subject 2: 40
SEE Marks in Subject 3: 41
SEE Marks in Subject 4: 42
SEE Marks in Subject 5: 43

--- Enter details of Student 2 ---
Enter USN: 1BF24CS075
Enter Name: ADVIK
Enter Semester: 4
Enter CIE marks of 5 subjects:
CIE Marks in Subject 1: 30
CIE Marks in Subject 2: 29
CIE Marks in Subject 3: 33
CIE Marks in Subject 4: 27
CIE Marks in Subject 5: 39
Enter SEE marks of 5 subjects:
SEE Marks in Subject 1: 41
SEE Marks in Subject 2: 44
SEE Marks in Subject 3: 45
SEE Marks in Subject 4: 46
SEE Marks in Subject 5: 40
```

Program 7: Errors

Code:

```
import java.util.Scanner;

class WrongAge extends Exception
{
   public WrongAge(String message)
   {
      super(message);
   }
}

class Father
{
   int fatherAge;

   Father(int age) throws WrongAge
   {
      if (age<0)
      {
         throw new WrongAge("Father's age cannot be negative!");
      }
      this.fatherAge = age;
   }
   void display()
   {
      System.out.println("Father's age : "+fatherAge);
   }
}


class Son extends Father{
   int sonAge;

   Son(int fatherAge,int sonAge) throws WrongAge
   {
      super(fatherAge);

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

      if (sonAge<0)
      {
         throw new WrongAge("Son's age cannot be negative!");
      }

      this.sonAge=sonAge;
   }
}

public class Main
{
   public static void main(String[] args)
   {
      Scanner in = new Scanner(System.in);
      int s_age,f_age;
      System.out.println("Enter father's age : ");
      f_age = in.nextInt();
      System.out.println("Enter son's age : ");
      s_age = in.nextInt();
      try{
           Son s = new Son(f_age,s_age);
           System.out.println("Father and Son objects created successfully!");
           s.display();
      }
      catch(WrongAge e)
      {
         System.out.println("Wrong Age Error: " + e.getMessage());
      }
   }
}
```

Output:

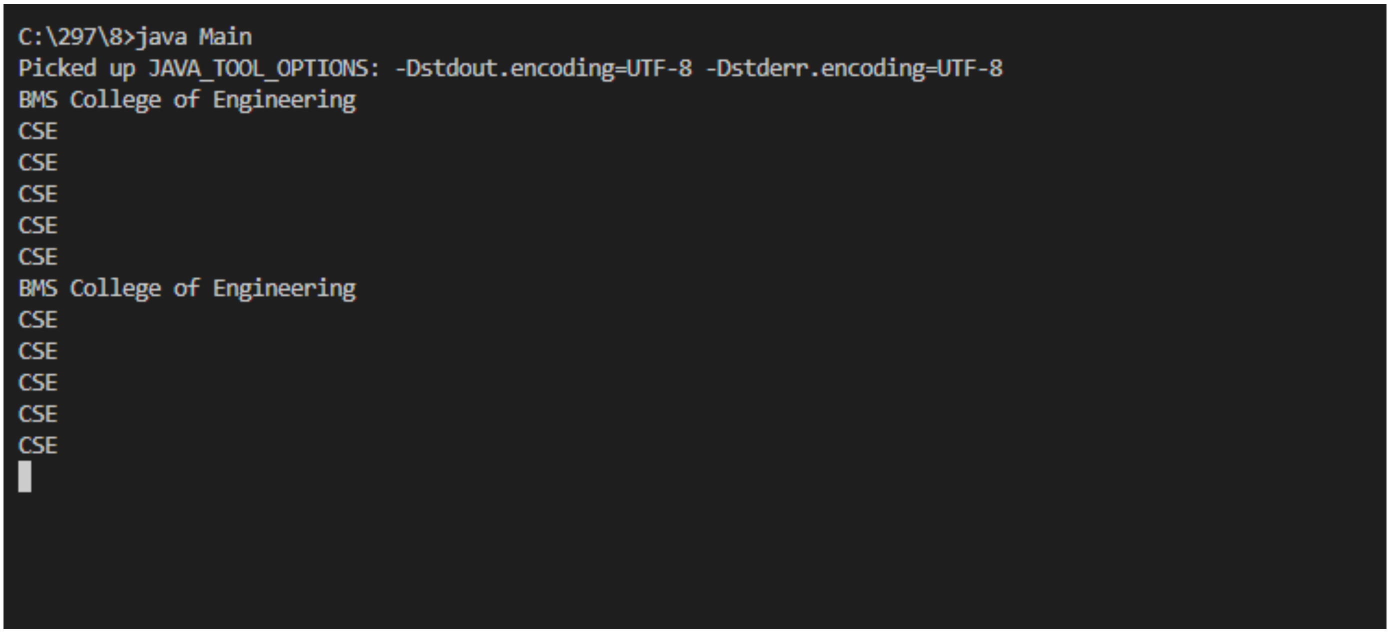


```
C:\297>java Main
Picked up JAVA_TOOL_OPTIONS: -Dstdout.encoding=UTF-8 -Dstderr.encoding=UTF-8
Enter father's age :
23
Enter son's age :
45
Wrong Age Error: Son's age cannot be greater than or equal to father's age!

C:\297>java Main
Picked up JAVA_TOOL_OPTIONS: -Dstdout.encoding=UTF-8 -Dstderr.encoding=UTF-8
Enter father's age :
23
Enter son's age :
-2
Wrong Age Error: Son's age cannot be negative!

C:\297>java Main
Picked up JAVA_TOOL_OPTIONS: -Dstdout.encoding=UTF-8 -Dstderr.encoding=UTF-8
Enter father's age :
67
Enter son's age :
56
Father and Son objects created successfully!
Father's age : 67
```

Program 8: Multi Threading

Code:

```
class MessageThread extends Thread {
    private String message;
    private int interval;

    MessageThread(String message, int interval) {
        this.message = message;
        this.interval = interval;
    }

    public void run() {
        try {
            while (true) {
                System.out.println(message);
                Thread.sleep(interval);
            }
        } catch (InterruptedException e) {
            System.out.println("Thread interrupted.");
        }
    }
}

public class Main {
    public static void main(String[] args) {
        MessageThread t1 = new MessageThread("BMS College of Engineering", 10000);
        MessageThread t2 = new MessageThread("CSE", 2000);

        t1.start();
        t2.start();
    }
}
```



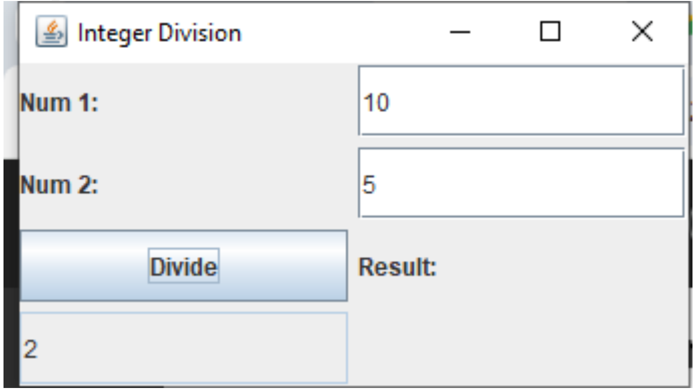
```
C:\297\8>java Main
Picked up JAVA_TOOL_OPTIONS: -Dstdout.encoding=UTF-8 -Dstderr.encoding=UTF-8
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
```

Program 9: Open Ended Question 1

Code:

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

public class DivisionUI {
   public static void main(String[] args) {

      JFrame frame = new JFrame("Integer Division");
      frame.setSize(350, 200);
      frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      frame.setLayout(new GridLayout(4, 2));

      JLabel l1 = new JLabel("Num1:");
      JTextField t1 = new JTextField();

      JLabel l2 = new JLabel("Num2:");
      JTextField t2 = new JTextField();

      JLabel l3 = new JLabel("Result:");
      JTextField result = new JTextField();
      result.setEditable(false);

      JButton divideBtn = new JButton("Divide");

      divideBtn.addActionListener(new ActionListener() {
         public void actionPerformed(ActionEvent e) {
            try {
               int num1 = Integer.parseInt(t1.getText());
               int num2 = Integer.parseInt(t2.getText());

               int res = num1 / num2;
               result.setText(Integer.toString(res));
            }
            catch (NumberFormatException ex) {
               JOptionPane.showMessageDialog(frame,
                     "Please enter valid integers!",
                     "Number Format Error",
                     JOptionPane.ERROR_MESSAGE);
            }
            catch (ArithmeticException ex) {
               JOptionPane.showMessageDialog(frame,
                     "Division by zero is not allowed!",
                    "Arithmetic Error",
                    JOptionPane.ERROR_MESSAGE);
            }
          }
        });

        frame.add(l1); frame.add(t1);
        frame.add(l2); frame.add(t2);
        frame.add(l3); frame.add(result);
        frame.add(divideBtn);

        frame.setVisible(true);
    }
}
```

Output:



Num 1: 10

Num 2: 5

Result: 2

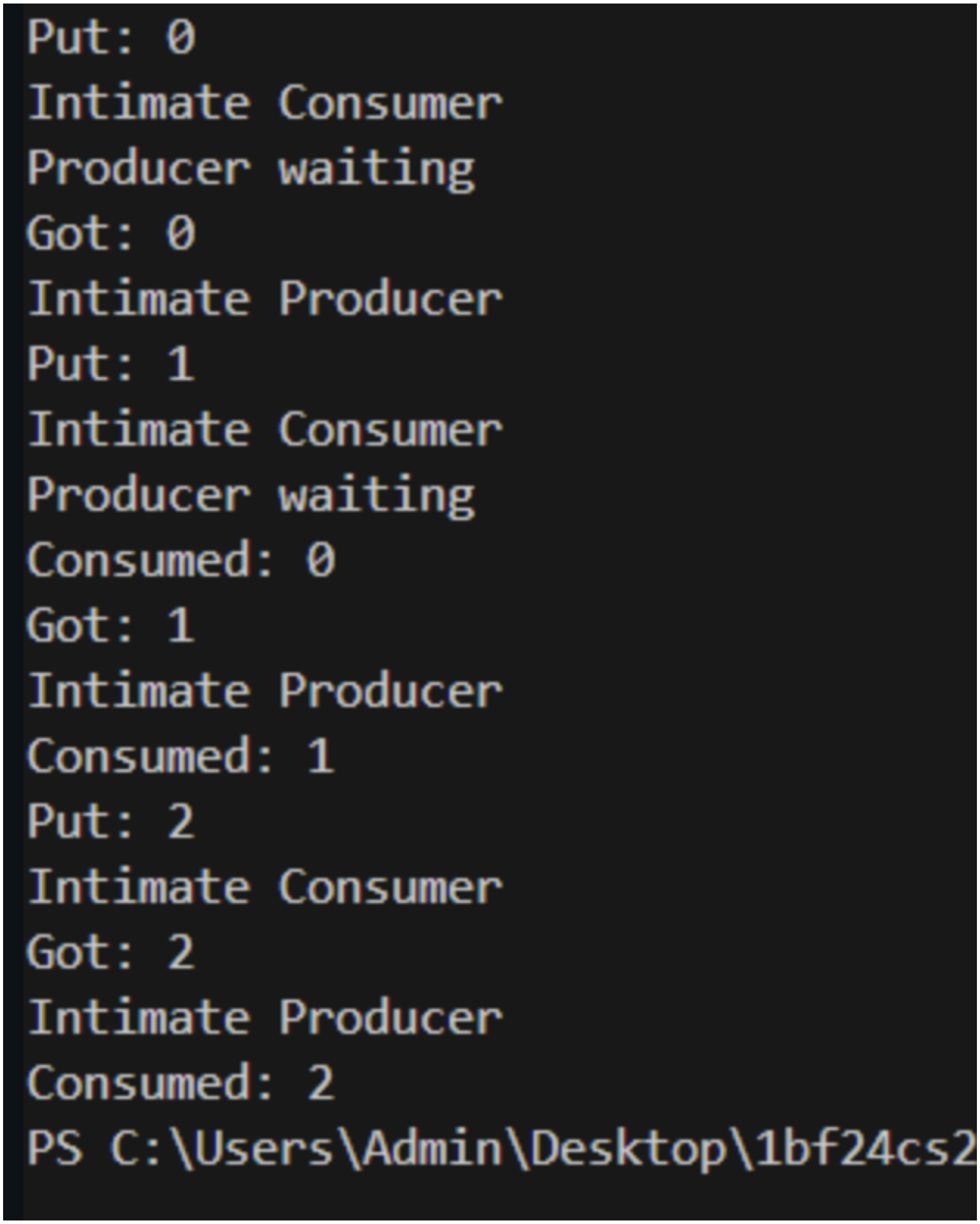
Program 10: Open Ended Question 2

Code:

```
class Q {
   int n;
   boolean valueSet = false;

   synchronized int get() {
      while (!valueSet) {
         try {
            System.out.println("  Consumer waiting");
            wait();
         } catch (InterruptedException e) {
            System.out.println("InterruptedException caught");
         }
      }

      System.out.println("Got: " + n);
      valueSet = false;

      System.out.println("Intimate Producer");
      notify();
      return n;
   }

   synchronized void put(int n) {
      while (valueSet) {
         try {
            System.out.println("Producer waiting");
            wait();
         } catch (InterruptedException e) {
            System.out.println("InterruptedException caught");
         }
      }

      this.n = n;
      valueSet = true;

      System.out.println("Put: " + n);
      System.out.println("Intimate Consumer");
      notify();
   }
}
```

```
class Producer implements Runnable {
    Q q;

    Producer(Q q) {
        this.q = q;
        new Thread(this, "Producer").start();
    }

    public void run() {
        int i = 0;
        while (i < 3) {
            q.put(i++);
        }
    }
}

class Consumer implements Runnable {
    Q q;

    Consumer(Q q) {
        this.q = q;
        new Thread(this, "Consumer").start();
    }

    public void run() {
        int i = 0;
        while (i < 3) {
            int r = q.get();
            System.out.println("Consumed: " + r);
            i++;
        }
    }
}

public class Main {
    public static void main(String[] args) {
        Q q = new Q();
        new Producer(q);
        new Consumer(q);
    }
}
```

Output:



```
Put: 0
Intimate Consumer
Producer waiting
Got: 0
Intimate Producer
Put: 1
Intimate Consumer
Producer waiting
Consumed: 0
Got: 1
Intimate Producer
Consumed: 1
Put: 2
Intimate Consumer
Got: 2
Intimate Producer
Consumed: 2
PS C:\Users\Admin\Desktop\1bf24cs2
```