CORE JAVA JOURNAL

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BATCH 2

all files

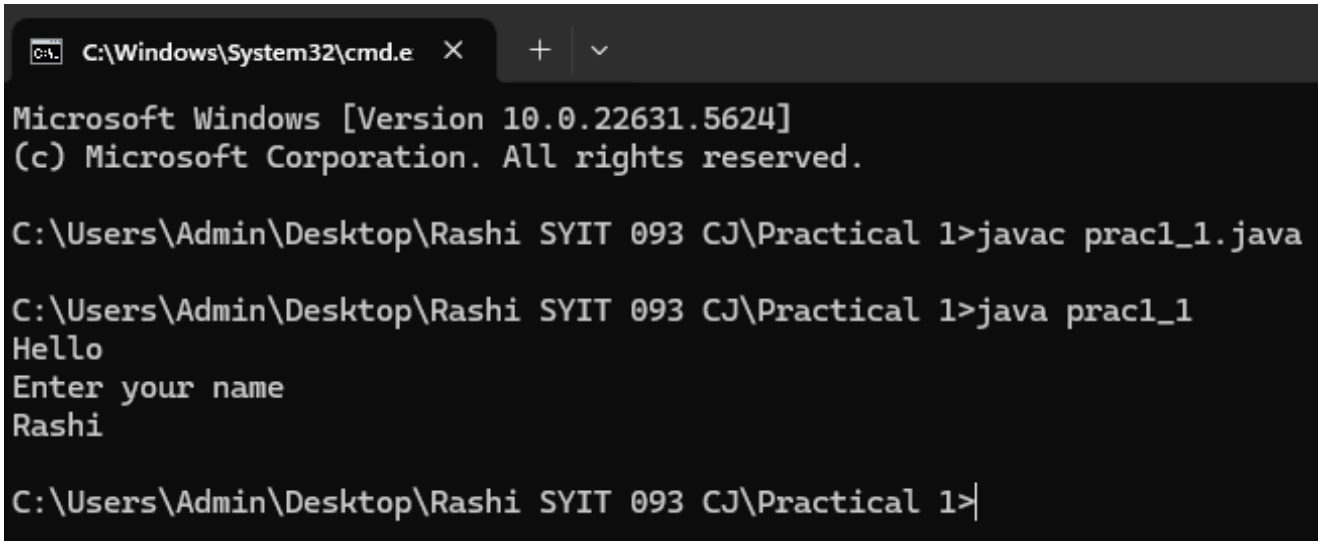
PRACTICAL 1

Q1.Write a program in java to print “Hello”on the screen and then print your name on a separate line

Source Code:

```
import java.util.*;
class prac1_1
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Hello");
		System.out.println("Enter your name");
		String name = sc.next();
	}
}
```

Output:

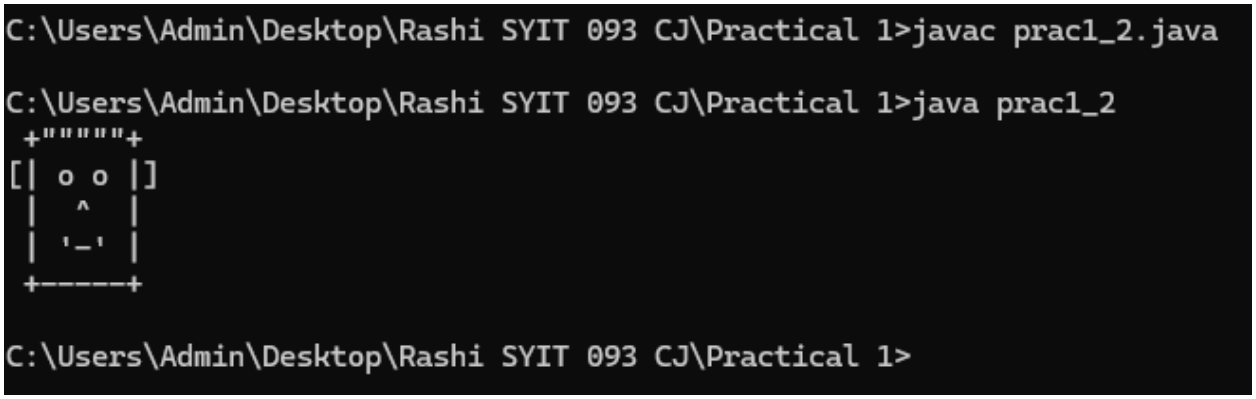


Q2.Write a program in Java to draw a face pattern.

Source Code:

```
class prac1_2
{
	public static void main(String args[])
	{
		System.out.println(" +\"\"\"\"\"+");
		System.out.println("[| o o |]");
		System.out.println(" |  ^  | ");
		System.out.println(" | '-' |");
		System.out.println(" +-----+");
	}
}
```

Output:



Q3.Write a java program to print the area and perimeter of the circle.

Source Code:

```
import java.util.*;
class prac1_3
{
	public static void main(String args[])
	{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter Radius");
	int r = sc.nextInt();
	double pi = 3.14;
	double area=pi*r*r;
	double perimeter=2*pi*r;
	System.out.println("Enter Area:" + area);
	System.out.println("Enter Perimeter:" + perimeter);
	}
}
```

Output:

```
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>javac prac1_3.java

C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>java prac1_3
Enter Radius
5
Enter Area:78.5
Enter Perimeter:31.400000000000002

C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>
```

Q4.Write a program in Java to convert hours to minutes.

Source Code:

```
import java.util.*;
class sample
{
	public static void main(String args[])
	{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter Time in Hours");
	int t = sc.nextInt();
	double Min=t*60;
	System.out.println("The Time in Minutes:" + Min);
	}
}
```

Output:

```
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>javac prac1_4.java

C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>java prac1_4
Enter Time in Hours
6
The Time in Minutes:360.0

C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>
```

Q5.A certain amount is invested at the rate of 10% per annum for 3 years. Find the difference between compound interest (CI) and Simple interest (SI). Write a program to take an amount as an input. (Math.pow(base.power)

Hint: SI=(P*R*T)/100 A=P*(1+(R/100))T CI=A-P

{Math.pow(1+(R/100).T))}

Source Code:

```
import java.util.*;
class prac1_5
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter Principal invested");
		int P= sc.nextInt();
		double R = 10;
		double T = 3;
		double A = P*(1+(R/100))*T;
		double SI = (P*R*T)/100;
		double CI = A - P;
		double Diff= CI-SI;
		System.out.println("The difference between Compound Interest
and Simple interest is:" +Diff);
	}

}
```

Output:

```
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>javac prac1_5.java

C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>java prac1_5
Enter Principal invested
52400
The difference between Compound Interest and Simple interest is:104800.00000000003

C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>
```

Q6.Write a program to perform implicit type casting byte variable to 100 and convert byte to int, int to long, long to float and float to double.

Source Code:

```
class prac1_6 {
    public static void main(String args[]) {
        byte b = 100;
        int i = b;
        long l = i;
        float f = l;
        double d = f;

        System.out.println("byte value: " + b);
        System.out.println("byte to int: " + i);
        System.out.println("int to long: " + l);
        System.out.println("long to float: " + f);
        System.out.println("float to double: " + d);
    }
}
```

Output:

```
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>javac prac1_6.java

C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>java prac1_6
byte value: 100
byte to int: 100
int to long: 100
long to float: 100.0
float to double: 100.0

C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 1>
```

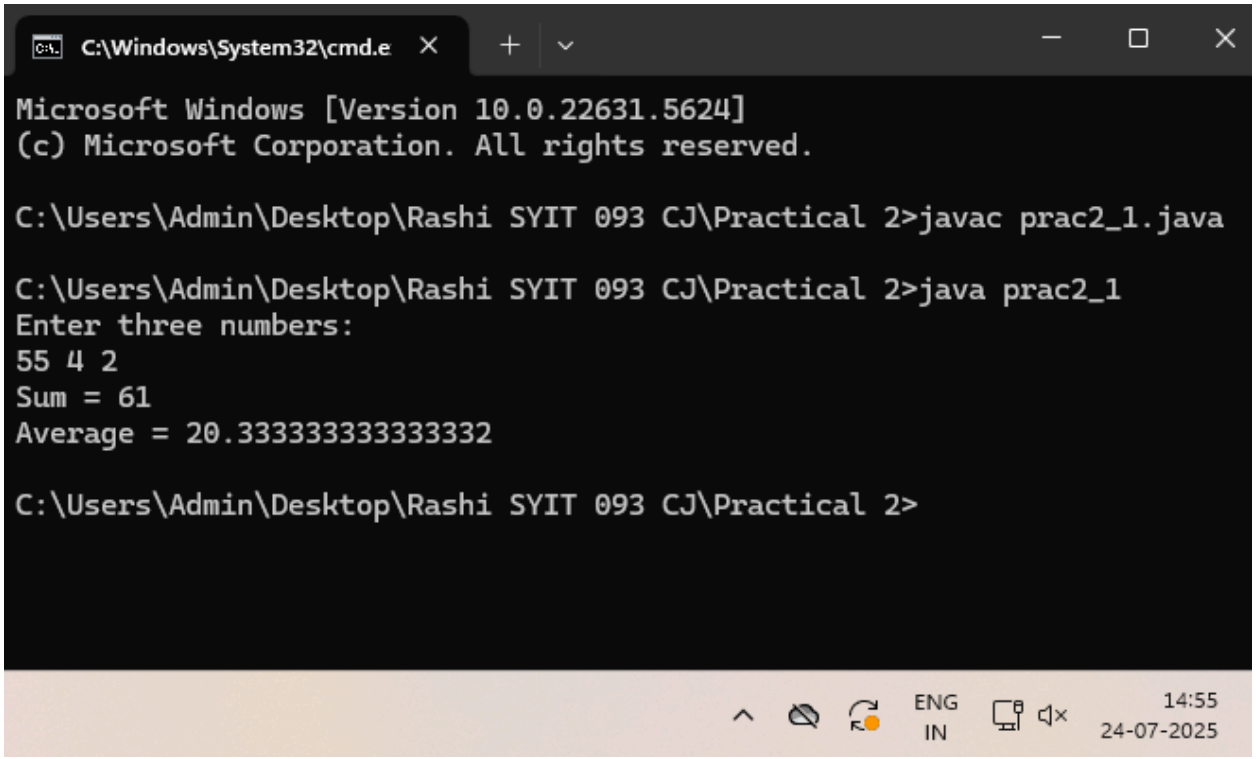
PRACTICAL 2

Q1.Write a program to enter 3 numbers from the user and calculate the sum and the average.

Source Code:

```
import java.util.*;
class prac2_1 {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter three numbers:");
        int n1 = sc.nextInt();
        int n2 = sc.nextInt();
        int n3 = sc.nextInt();

        int sum = n1 + n2 + n3;
        double avg = sum / 3.0;

        System.out.println("Sum = " + sum);
        System.out.println("Average = " + avg);
    }
}
```

Output:



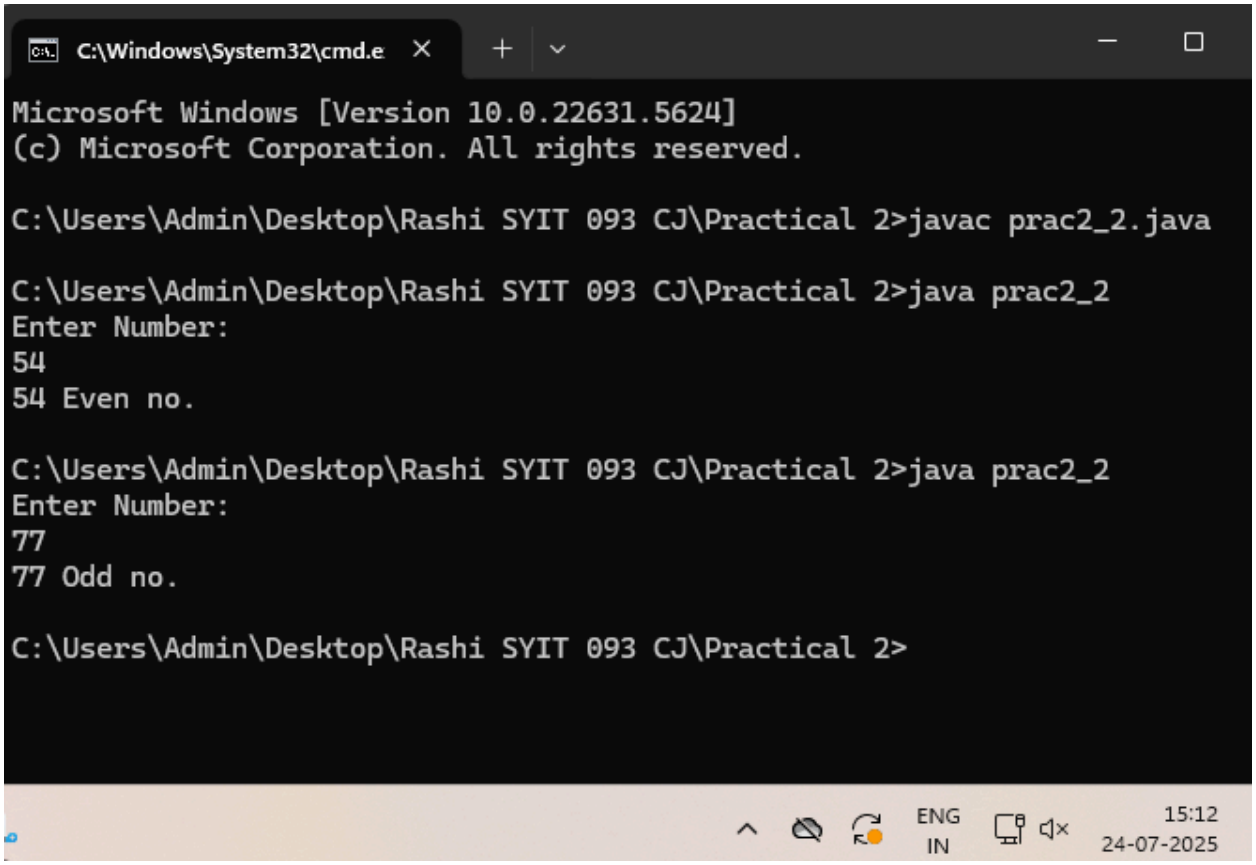
Q2.Write a program in java to enter a number from the user and check whether it is odd or even. Print appropriate message.

Source Code:

```
import java.util.*;
class prac2_2
{
public static void main(String ar[]){
Scanner sc=new Scanner(System.in);
System.out.println("Enter Number:");
int num = sc.nextInt();
if(num%2==0){
System.out.println(num + " Even no.");
} else {
```

```
System.out.println(num +" Odd no.");
}
}
}
```

Output:

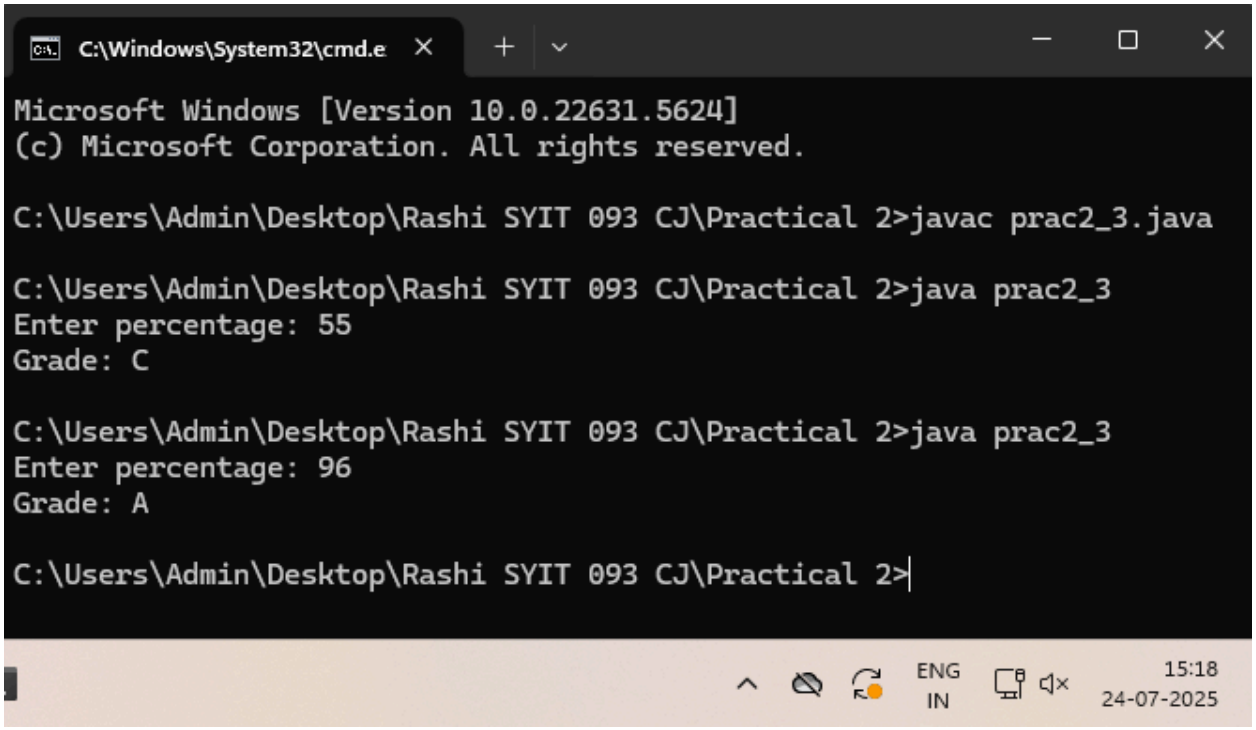


Q3.Enter a program in java to display grades for the following (else if ladder) marks<40 F marks greater than equal to 40 and less than 60 B marks greater than and equal to 60 and less than 80 A greater than and equal to 80 and less than 100 O. (Use logical operators)

Source Code:

```
import java.util.Scanner;
public class prac2_3 {
      public static void main(String[] args) {
          Scanner sc = new Scanner(System.in);
          System.out.print("Enter percentage: ");
double marks = sc.nextDouble();
if (marks < 40) {
     System.out.println("Grade: F");
} else if (marks >= 40 && marks < 60) {
  System.out.println("Grade: C");
} else if (marks >= 60 && marks < 80) {
   System.out.println("Grade: B");
} else if (marks >= 80 && marks <= 100) {
   System.out.println("Grade: A");
} else {
  System.out.println("Invalid percentage entered!");
}
}
}
```

Output:


C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.22631.5624]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 2>javac prac2_3.java
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 2>java prac2_3
Enter percentage: 55
Grade: C
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 2>java prac2_3
Enter percentage: 96
Grade: A
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ\Practical 2>
ENG
IN
15:18
24-07-2025

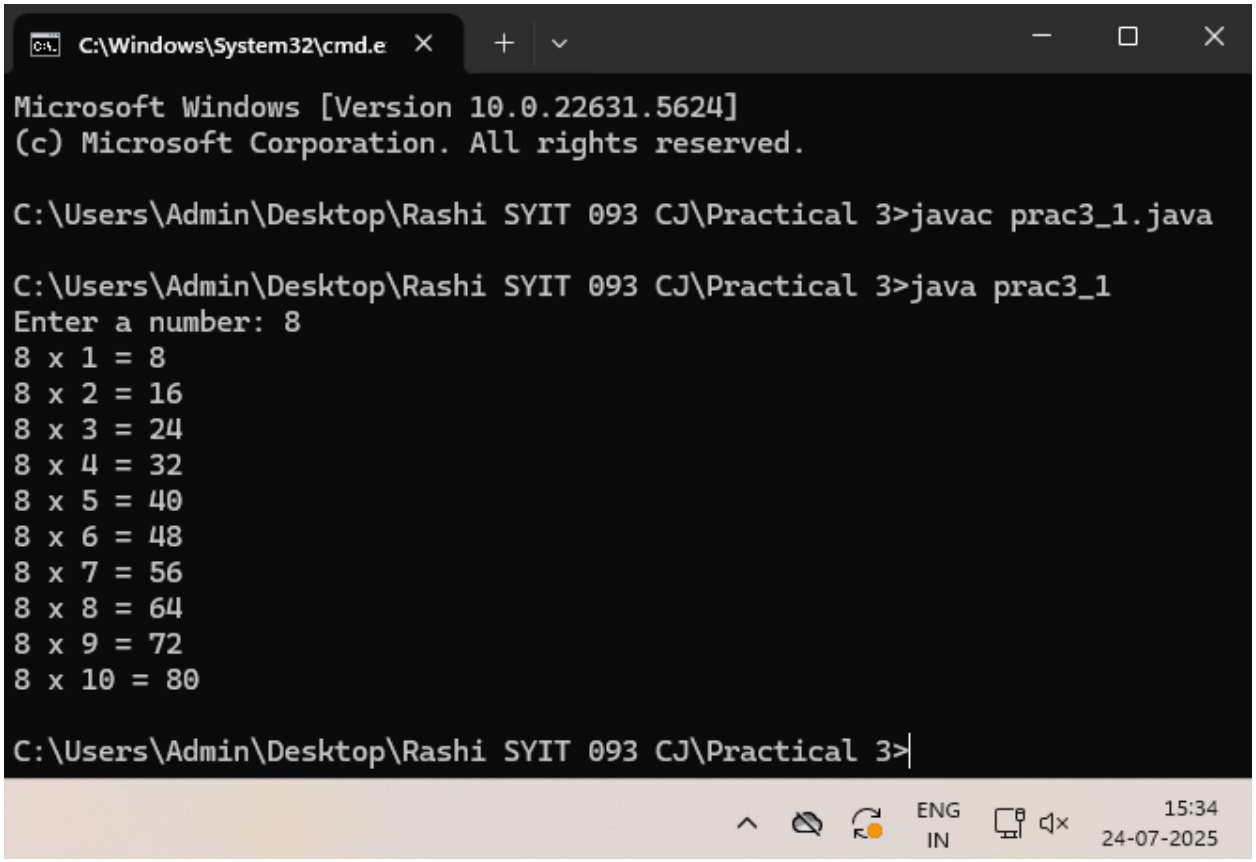
PRACTICAL 3

Q1.Write a program in Java to accept numbers from users and print Multiplication tables(use a while loop).

Source Code:

```
import java.util.Scanner;

public class prac3_1 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();

        int i = 1;
        while (i <= 10) {
            System.out.println(num + " x " + i + " = " + (num * i));
            i++;
        }
    }
}
```

Output:



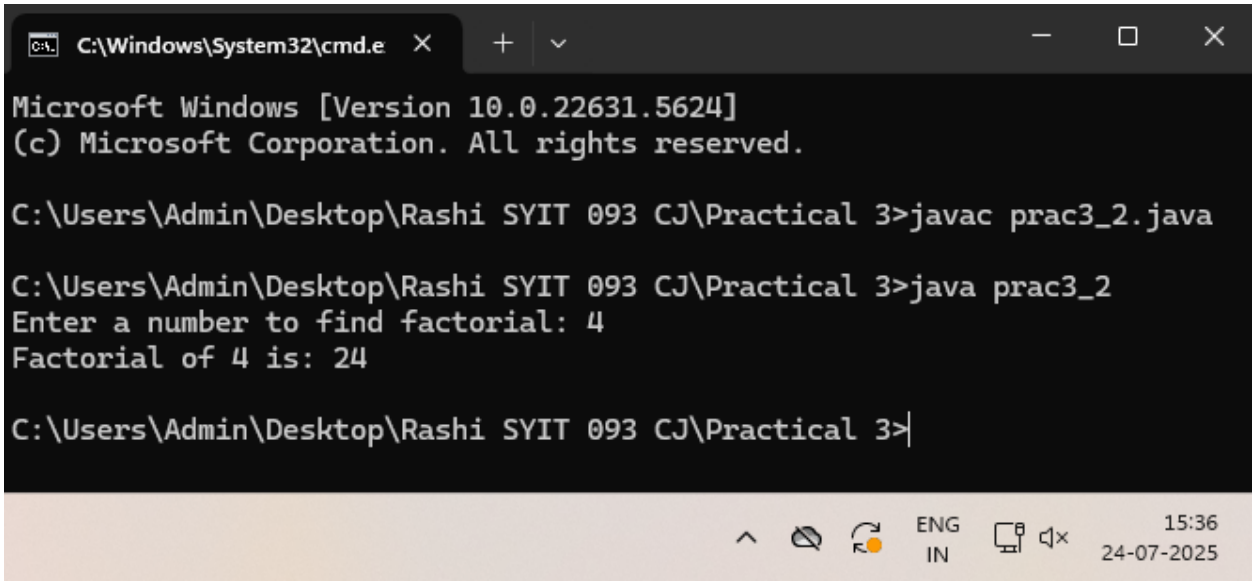
Q2.Write a program in Java to write numbers from the user and calculate the factorial of any number (use for loop).

Source Code:

```
import java.util.Scanner;

public class prac3_2 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number to find factorial: ");
        int num = sc.nextInt();

        long factorial = 1;
```

```
        for (int i = 1; i <= num; i++) {
            factorial *= i;
        }

        System.out.println("Factorial of " + num + " is: " + factorial);
    }
}
```

Output:



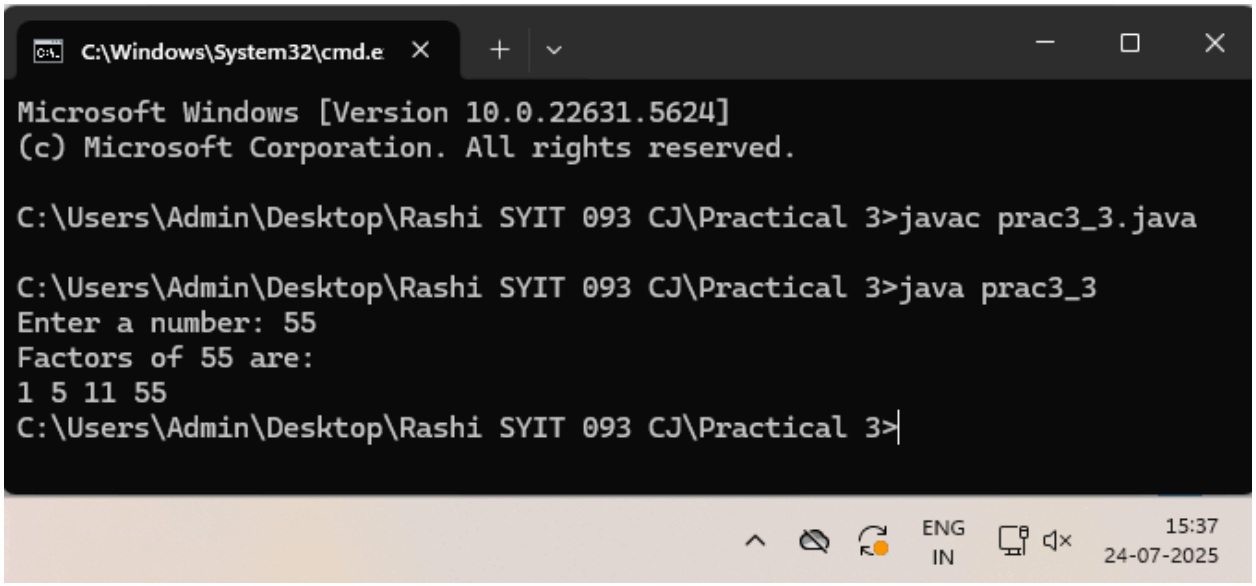
Q3.Write a program in Java to accept numbers from users and display factors of that number (use any loop).

Source Code:

```
import java.util.Scanner;

public class prac3_3 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();
```

```
        System.out.println("Factors of " + num + " are:");
        for (int i = 1; i <= num; i++) {
            if (num % i == 0) {
                System.out.print(i + " ");
            }
        }
    }
}
```

Output:



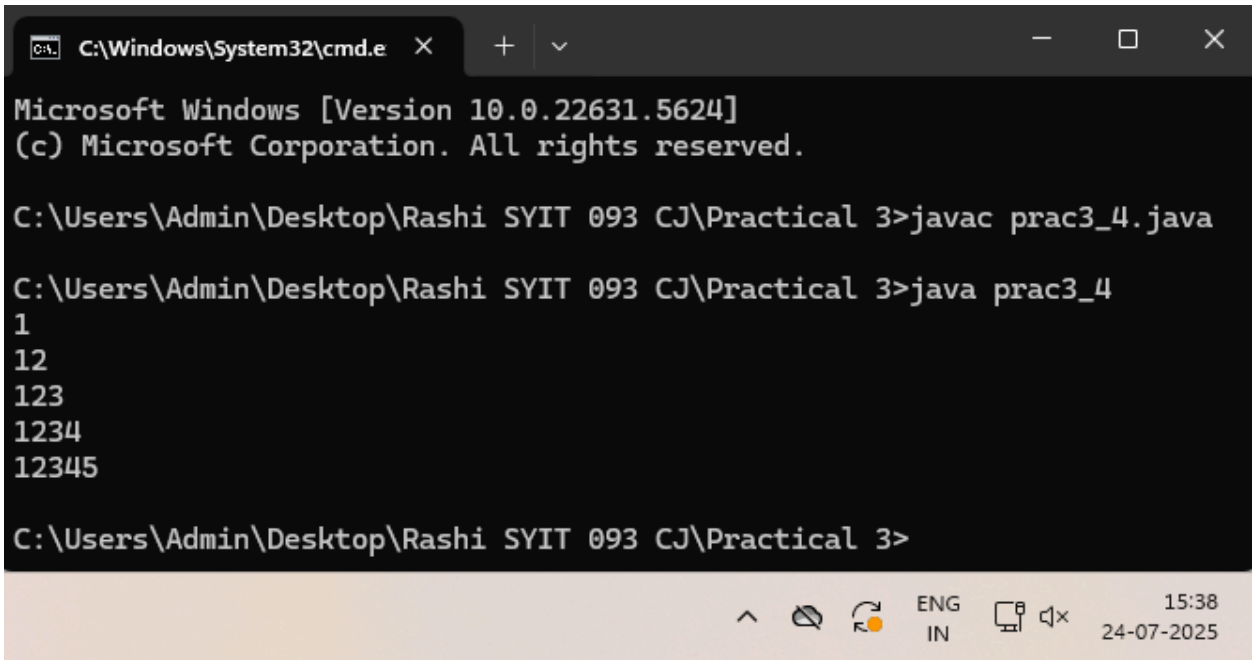
Q4.Write a program in Java to print number patterns.

Source Code:

```
public class prac3_4 {
    public static void main(String[] args) {
        int i, j;
        for(i = 1; i <= 5; i++) {
            for(j = 1; j <= i; j++) {
                System.out.print(j);
            }
```

```
            System.out.println();
        }
    }
}
```

Output:



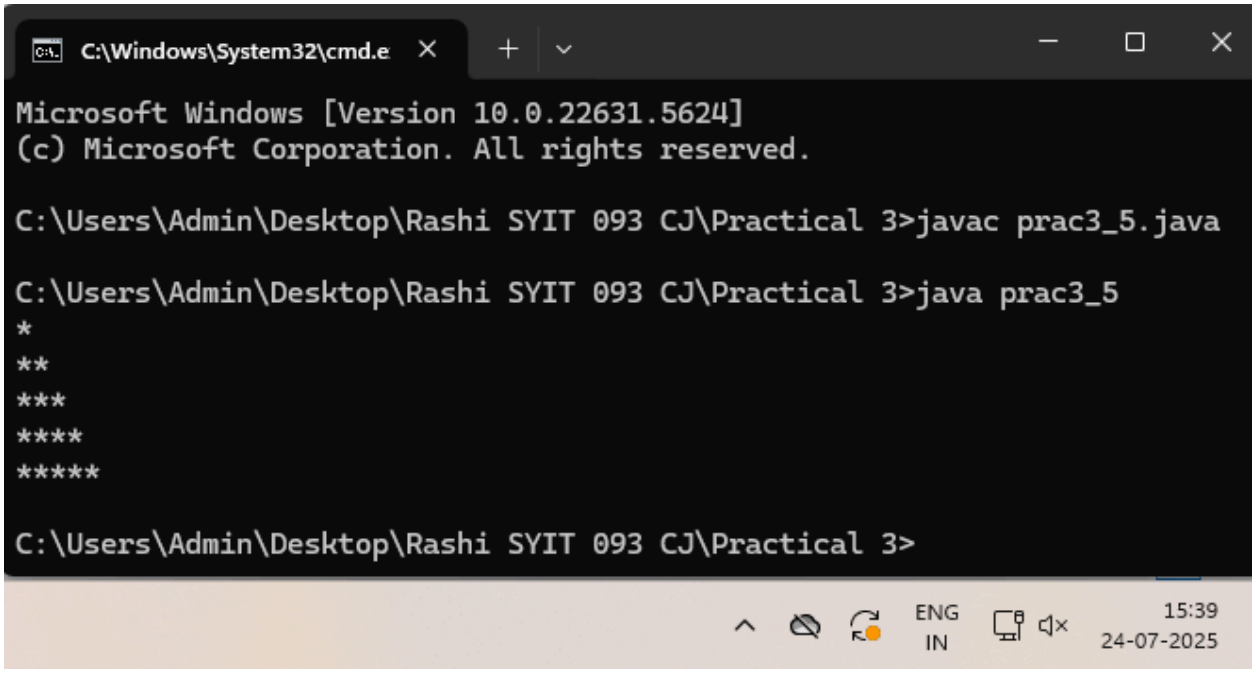
Q5.Write a program in Java to print star patterns.

Source Code:

```
public class prac3_5 {
    public static void main(String[] args) {
        int i, j;
        for(i = 1; i <= 5; i++) {
            for(j = 1; j <= i; j++) {
                System.out.print("*");
```

```
        }
        System.out.println();
    }
  }
}
```

Output:



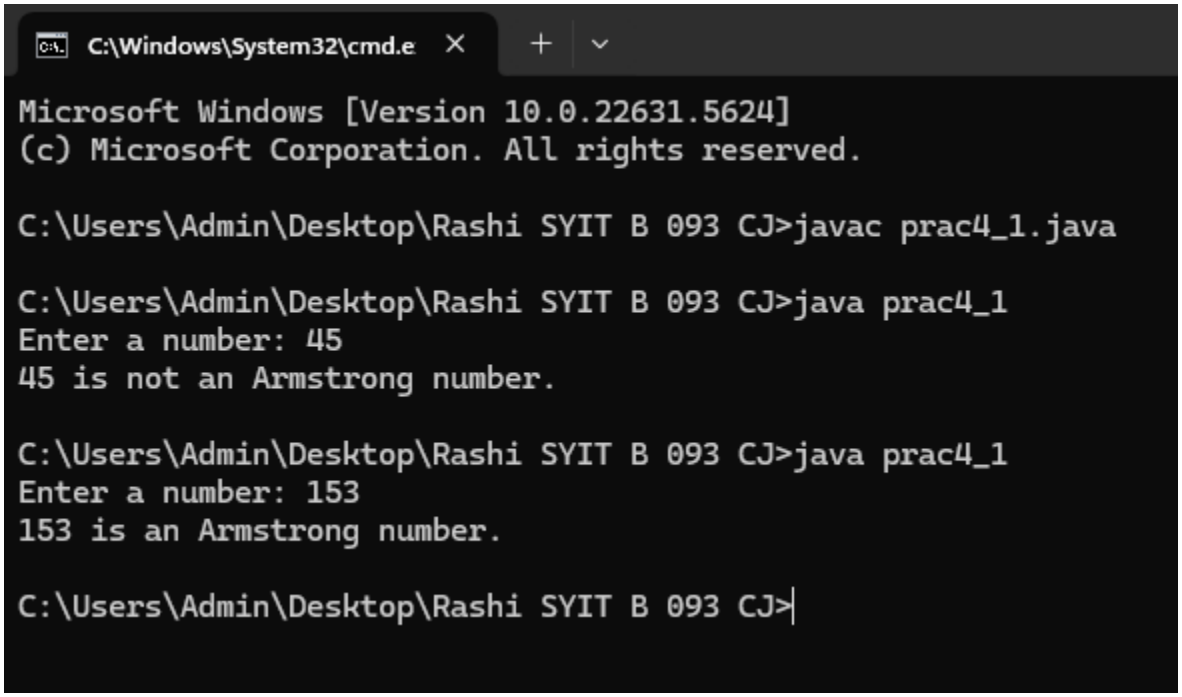
PRACTICAL 4

Q1.Write a program in java to enter a number from the user and check whether the number is Armstrong or not.

Source Code:

```
import java.util.Scanner;

public class prac4_1 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();
        int original = num, sum = 0;

        while (num > 0) {
            int digit = num % 10;
            sum += digit * digit * digit;
            num /= 10;
        }

        if (sum == original)
            System.out.println(original + " is an Armstrong number.");
        else
            System.out.println(original + " is not an Armstrong number.");
    }
}
```

Output:



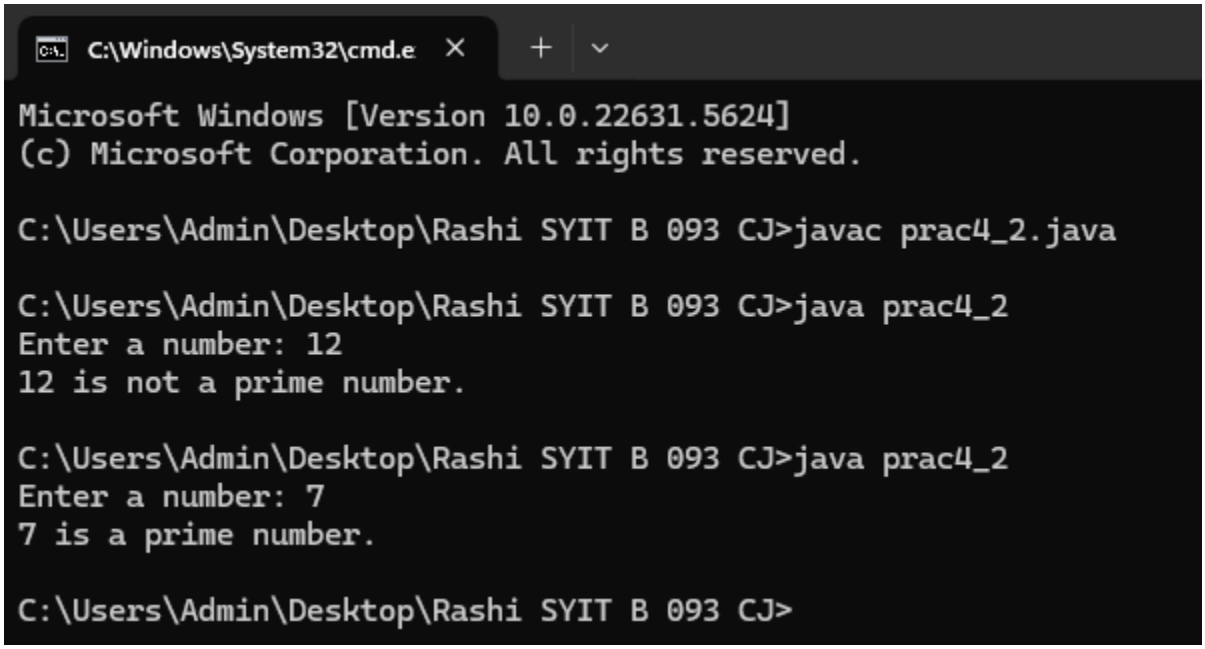
Q2.Write a program in java to enter a number from the user and check whether the number is a prime number or not. Print appropriate message(Enter number from user).

Source Code:

```
import java.util.Scanner;

public class prac4_2 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();
        boolean isPrime = true;

        if (num <= 1)
            isPrime = false;
        else {
```

```
            for (int i = 2; i <= num / 2; i++) {
                if (num % i == 0) {
                    isPrime = false;
                    break;
                }
            }
        }

        if (isPrime)
            System.out.println(num + " is a prime number.");
        else
            System.out.println(num + " is not a prime number.");
    }
}
```

Output:

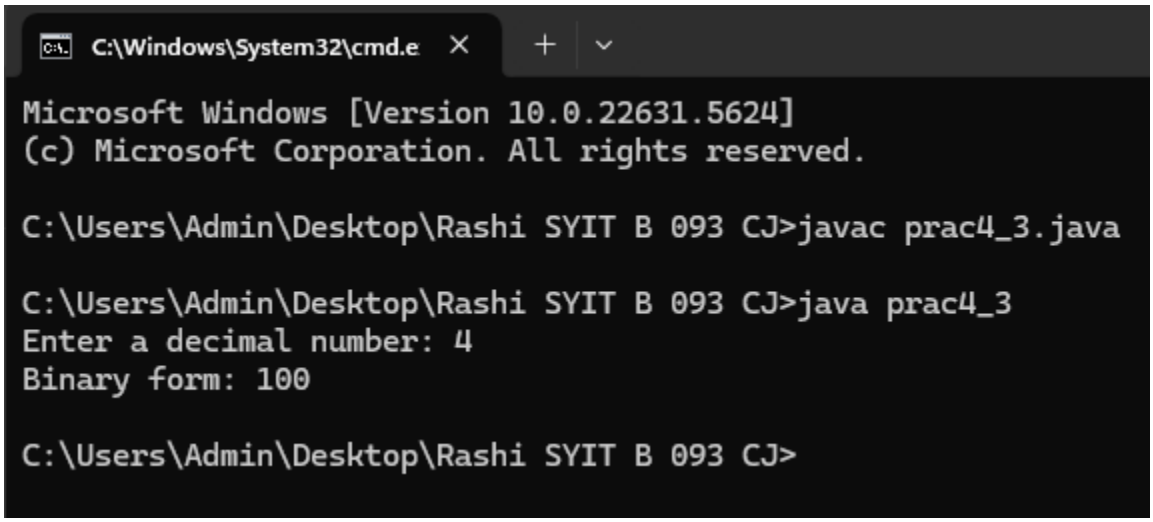


Q3.Write a program in java to enter a decimal number from the user and convert it into binary form (without array).

Source Code:

```
import java.util.Scanner;

public class prac4_3 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a decimal number: ");
        int num = sc.nextInt();
        int binary = 0, place = 1;

        while (num > 0) {
            int rem = num % 2;
            binary += rem * place;
            place *= 10;
            num /= 2;
        }

        System.out.println("Binary form: " + binary);
    }
}
```

Output:



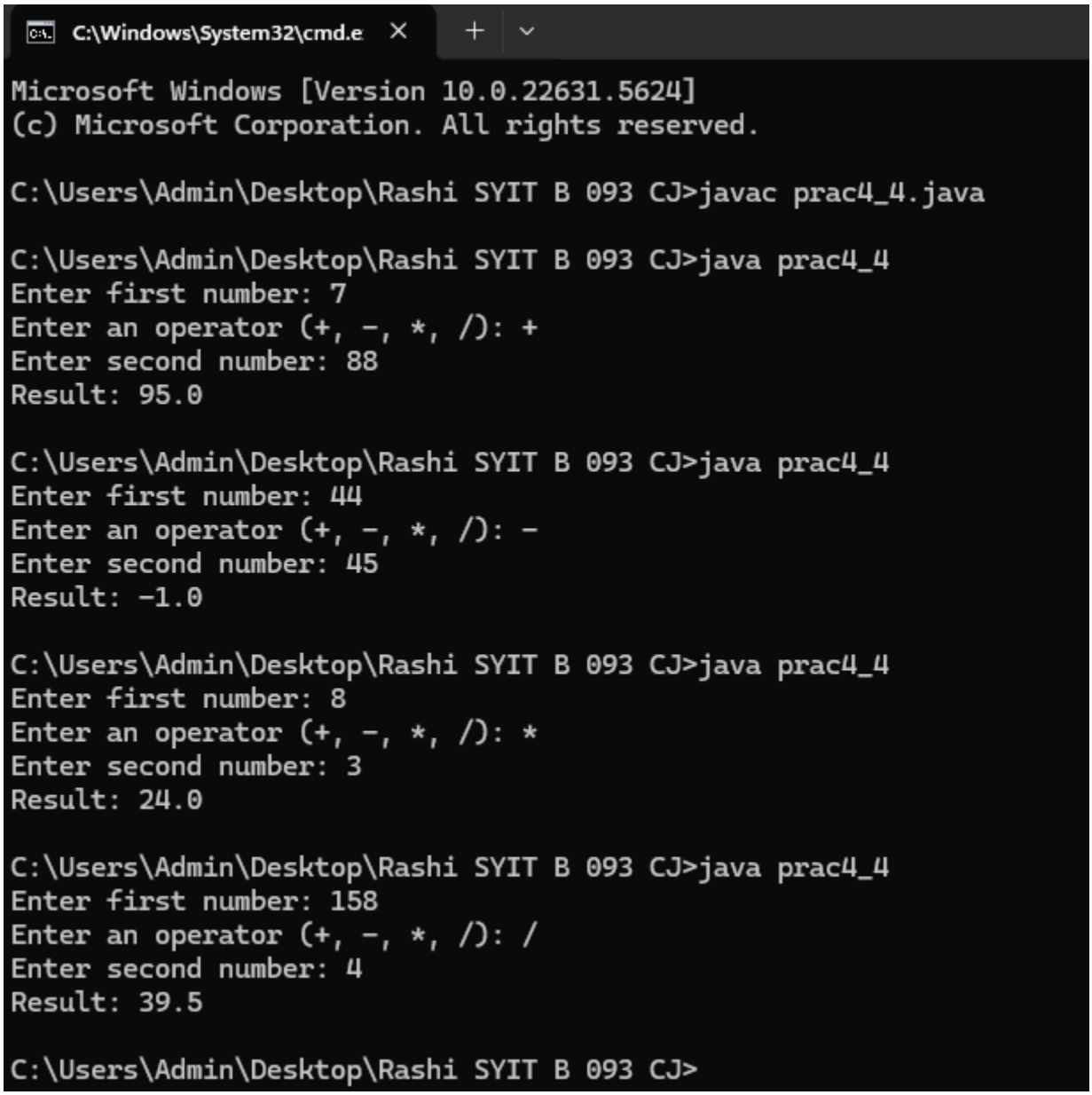
Q4.Write a program in java to enter operator from user and perform calculation (use switch case).

Source Code:

```
import java.util.Scanner;

public class prac4_4 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter first number: ");
        double a = sc.nextDouble();

        System.out.print("Enter an operator (+, -, *, /): ");
        char op = sc.next().charAt(0);

        System.out.print("Enter second number: ");
        double b = sc.nextDouble();

        switch (op) {
            case '+':
                System.out.println("Result: " + (a + b));
```

```
            break;
        case '-':
            System.out.println("Result: " + (a - b));
            break;
        case '*':
            System.out.println("Result: " + (a * b));
            break;
        case '/':
            if (b != 0)
                System.out.println("Result: " + (a / b));
            else
                System.out.println("Cannot divide by zero.");
            break;
        default:
            System.out.println("Invalid operator.");
    }
  }
}
```

Output:


C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.22631.5624]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>javac prac4_4.java
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>java prac4_4
Enter first number: 7
Enter an operator (+, -, *, /): +
Enter second number: 88
Result: 95.0
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>java prac4_4
Enter first number: 44
Enter an operator (+, -, *, /): -
Enter second number: 45
Result: -1.0
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>java prac4_4
Enter first number: 8
Enter an operator (+, -, *, /): *
Enter second number: 3
Result: 24.0
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>java prac4_4
Enter first number: 158
Enter an operator (+, -, *, /): /
Enter second number: 4
Result: 39.5
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>

PRACTICAL 5

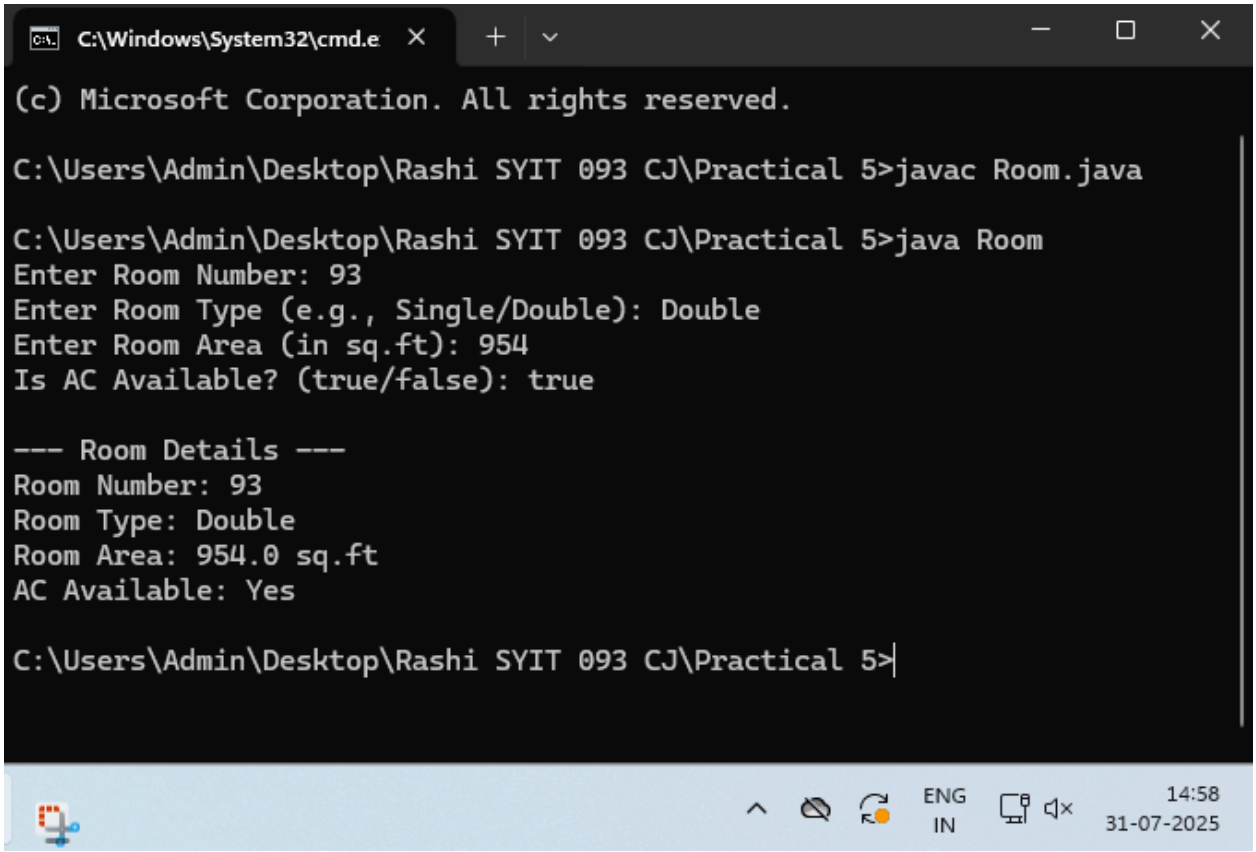
Q1. Write a program to create a room class. The attributes of this class are room no, roomtype, roomarea and AC machine. In the class the member functions are setdata and display data.

Source Code:

```
import java.util.Scanner;

class Room {

int roomNo;
String roomType;
float roomArea;
boolean ACmachine;


public void setData(int roomNo, String roomType, float roomArea, boolean
ACmachine) {
this.roomNo = roomNo;
this.roomType = roomType;
this.roomArea = roomArea;
this.ACmachine = ACmachine;
}


public void displayData() {
System.out.println("Room Number: " + roomNo);
System.out.println("Room Type: " + roomType);
System.out.println("Room Area: " + roomArea + " sq.ft");
System.out.println("AC Available: " + (ACmachine ? "Yes" : "No"));
}
```

```
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
Room myRoom = new Room();


System.out.print("Enter Room Number: ");
int number = sc.nextInt();
sc.nextLine();

System.out.print("Enter Room Type (e.g., Single/Double): ");
String type = sc.nextLine();

System.out.print("Enter Room Area (in sq.ft): ");
float area = sc.nextFloat();

System.out.print("Is AC Available? (true/false): ");
boolean ac = sc.nextBoolean();


myRoom.setData(number, type, area, ac);
System.out.println("\n--- Room Details ---");
myRoom.displayData();
}
}
```

Output:



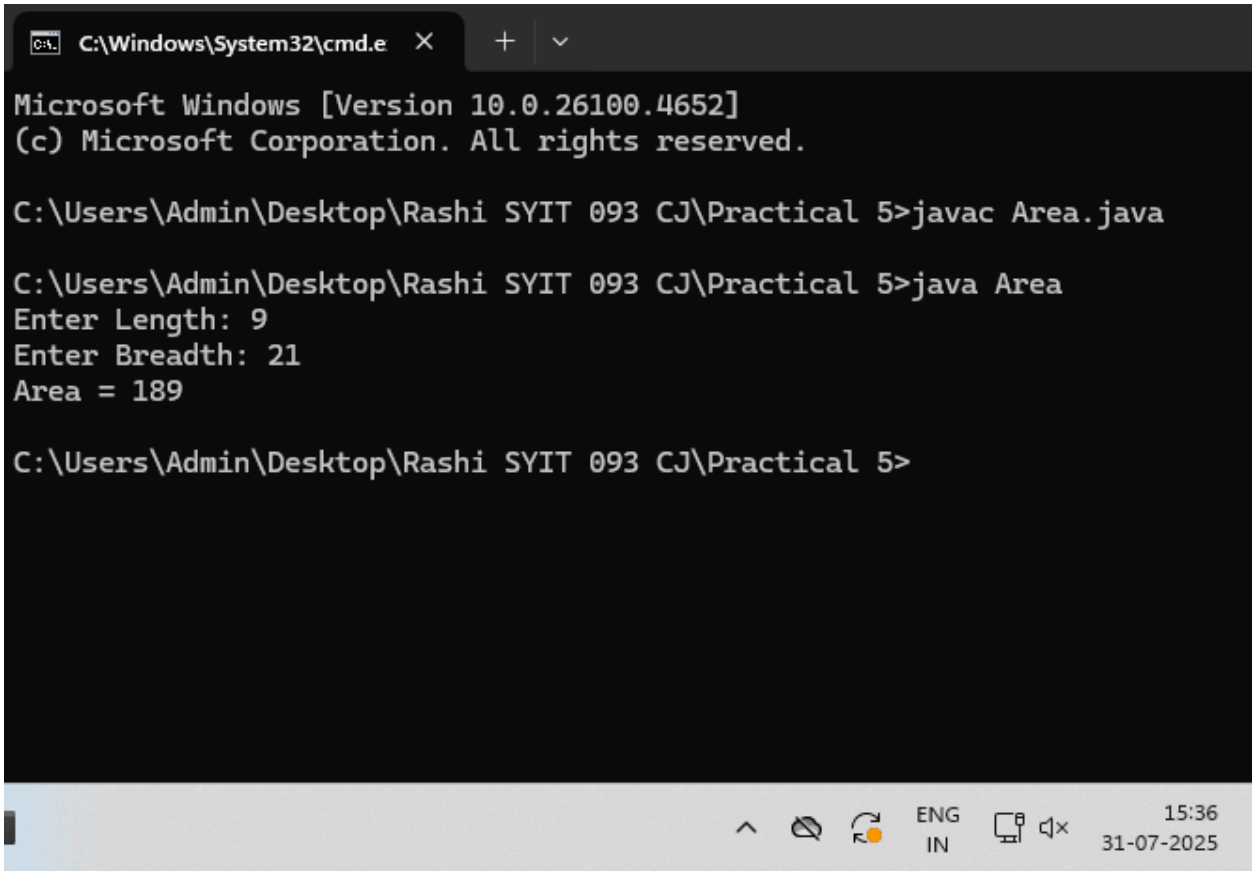
Q2.Write a program in Java to print an area of a rectangle by creating a class named 'area' having two methods. The first method named as setDim takes length and breadth of the rectangle as parameters and the second method named getarea returns the area of the rectangle. Length and breadth of the rectangle enter through the keyboard.

Source Code:

```
import java.util.Scanner;

class Area {
int length, breadth;
```

```
void setDim(int l, int b) {
length = l;
breadth = b;
}

int getArea() {
return length * breadth;
}

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

System.out.print("Enter Length: ");
int l = sc.nextInt();
System.out.print("Enter Breadth: ");
int b = sc.nextInt();

rect.setDim(l, b);
System.out.println("Area = " + rect.getArea());
}
}
```

Output:



Q3.Write a program in Java to create a method get Data() with attributes bank holder name, account number and minimum balance. Create a function withdraw which will ask the user to enter the withdrawal amount and deduct the amount from the balance. Create a function deposit which will ask the user to enter the deposit amount and add the amount to the main balance. Create a function display which will display all the details. Use Switch case and concept of method and object.

Source Code:

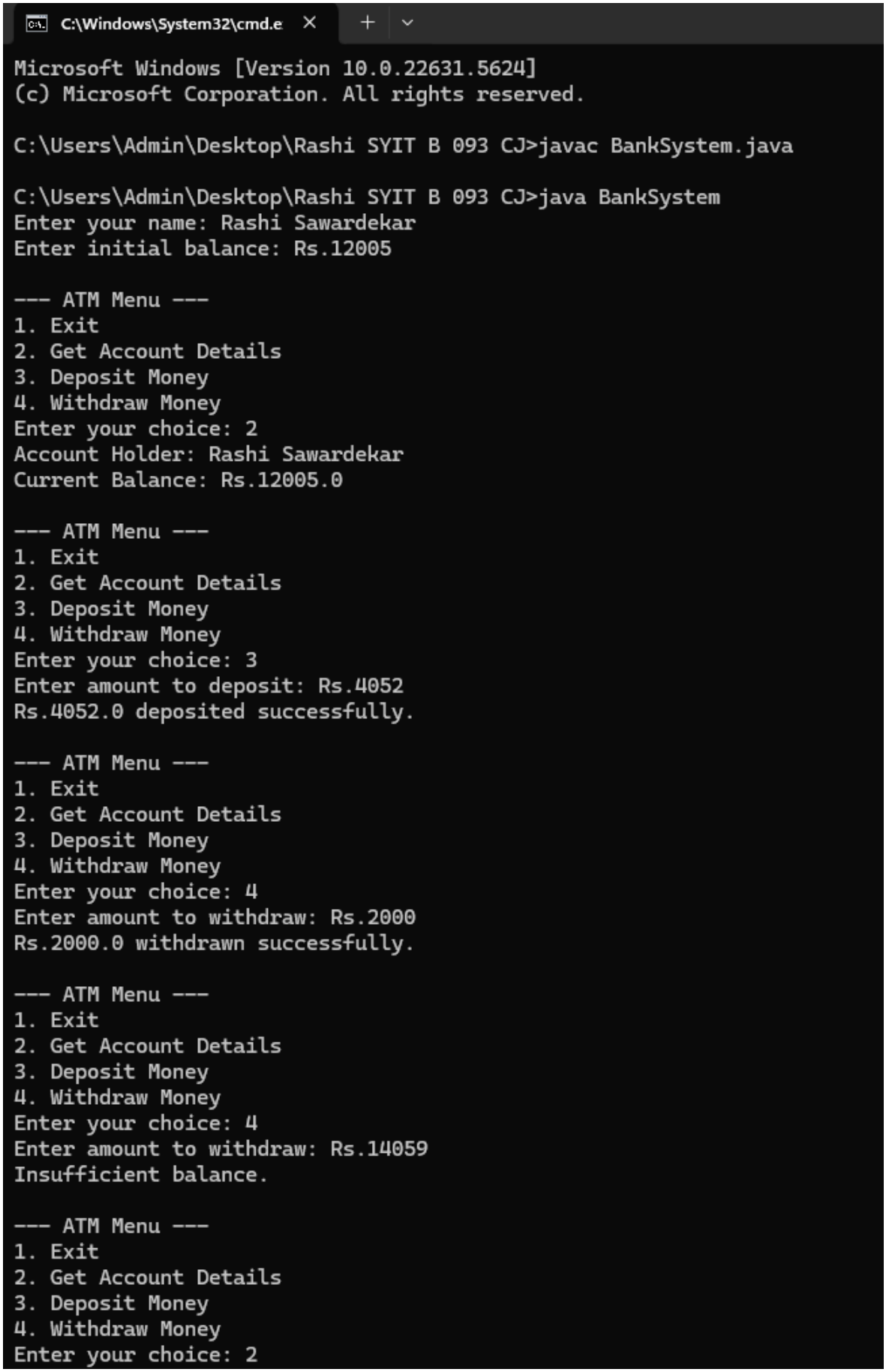
```
import java.util.Scanner;

class BankAccount {
float balance;
```

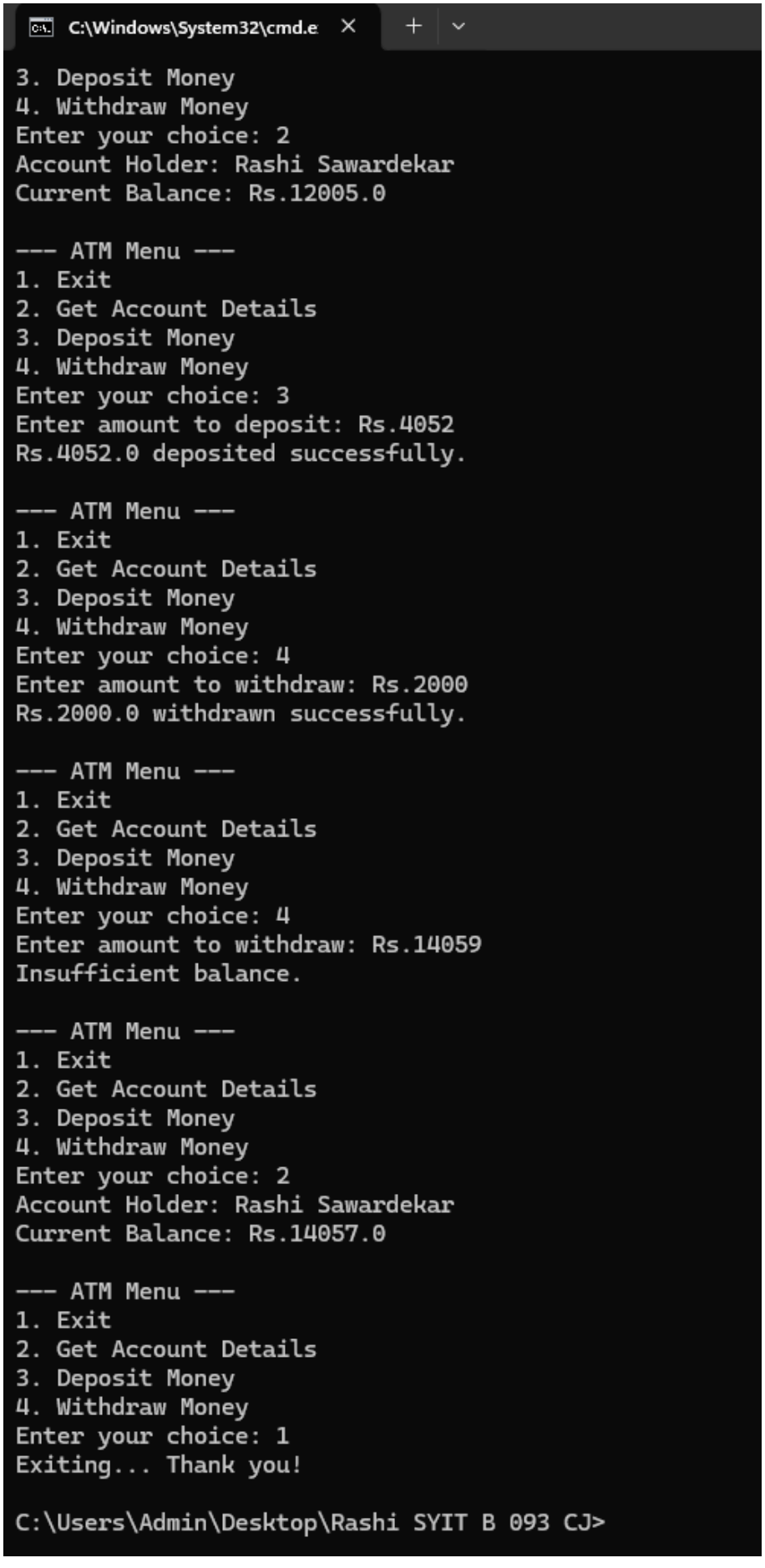
```
String name;


void getDetails() {
System.out.println("Account Holder: " + name);
System.out.println("Current Balance: Rs." + balance);
}


void deposit(float amount) {
balance += amount;
System.out.println("Rs." + amount + " deposited successfully.");
}


void withdraw(float amount) {
if (amount <= balance) {
balance -= amount;
System.out.println("Rs." + amount + " withdrawn successfully.");
} else {
System.out.println("Insufficient balance.");
}
}
}

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


System.out.print("Enter your name: ");
account.name = sc.nextLine();
System.out.print("Enter initial balance: Rs.");
account.balance = sc.nextFloat();
```

```
int choice;
do {

System.out.println("\n--- ATM Menu ---");
System.out.println("1. Exit");
System.out.println("2. Get Account Details");
System.out.println("3. Deposit Money");
System.out.println("4. Withdraw Money");
System.out.print("Enter your choice: ");
choice = sc.nextInt();

switch (choice) {
case 1:
System.out.println("Exiting... Thank you!");
break;

case 2:
account.getDetails();
break;

case 3:
System.out.print("Enter amount to deposit: Rs.");
float depositAmount = sc.nextFloat();
account.deposit(depositAmount);
break;

case 4:
System.out.print("Enter amount to withdraw: Rs.");
float withdrawAmount = sc.nextFloat();
account.withdraw(withdrawAmount);
break;

default:
System.out.println("Invalid choice. Please try again.");
```

```
}

} while (choice != 1);
}
}
```

Output:


C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.22631.5624]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>javac BankSystem.java
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>java BankSystem
Enter your name: Rashi Sawardekar
Enter initial balance: Rs.12005
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 2
Account Holder: Rashi Sawardekar
Current Balance: Rs.12005.0
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 3
Enter amount to deposit: Rs.4052
Rs.4052.0 deposited successfully.
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 4
Enter amount to withdraw: Rs.2000
Rs.2000.0 withdrawn successfully.
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 4
Enter amount to withdraw: Rs.14059
Insufficient balance.
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 2


C:\Windows\System32\cmd.e
3. Deposit Money
4. Withdraw Money
Enter your choice: 2
Account Holder: Rashi Sawardekar
Current Balance: Rs.12005.0
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 3
Enter amount to deposit: Rs.4052
Rs.4052.0 deposited successfully.
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 4
Enter amount to withdraw: Rs.2000
Rs.2000.0 withdrawn successfully.
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 4
Enter amount to withdraw: Rs.14059
Insufficient balance.
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 2
Account Holder: Rashi Sawardekar
Current Balance: Rs.14057.0
--- ATM Menu ---
1. Exit
2. Get Account Details
3. Deposit Money
4. Withdraw Money
Enter your choice: 1
Exiting... Thank you!
C:\Users\Admin\Desktop\Rashi SYIT B 093 CJ>

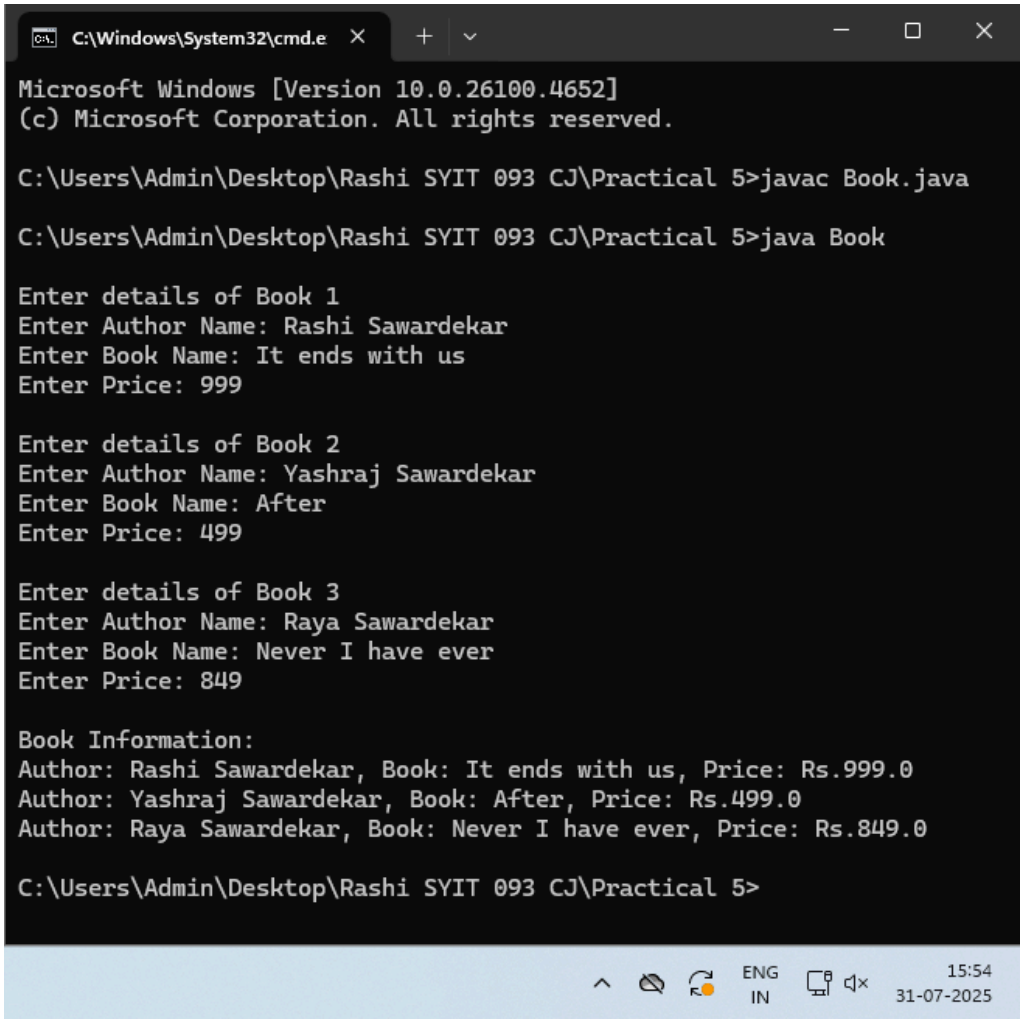
Q4.Write a program in Java to accept the author's name, book name and price of the book from the user and display the same. Use class and object. Accept at least 3 books of information (use object as array).

Source Code:

```
import java.util.Scanner;

class Book {
    String author, name;
    float price;

    void getDetails(Scanner sc) {
        System.out.print("Enter Author Name: ");
        author = sc.nextLine();
        System.out.print("Enter Book Name: ");
        name = sc.nextLine();
        System.out.print("Enter Price: ");
        price = sc.nextFloat();
        sc.nextLine();  // consume leftover newline after reading float
    }

    void displayDetails() {
        System.out.println("Author: " + author + ", Book: " + name + ", Price:
Rs." + price);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        Book[] books = new Book[3];

        for (int i = 0; i < 3; i++) {
            books[i] = new Book();
            System.out.println("\nEnter details of Book " + (i + 1));
```

```
            books[i].getDetails(sc);
        }

        System.out.println("\nBook Information:");
        for (int i = 0; i < 3; i++) {
            books[i].displayDetails();
        }
        sc.close();
    }
}
```

Output:



PRACTICAL 6

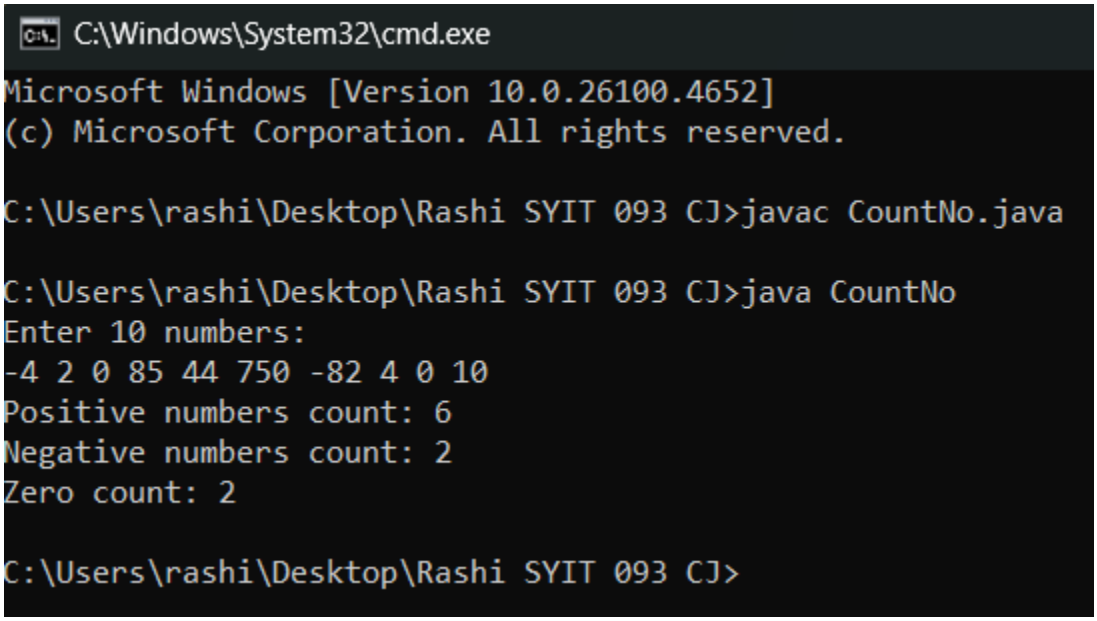
Q1.Accept input as 10 numbers in an array and find count of positive, negative and zero.

Source Code:

```
import java.util.Scanner;

public class CountNo {
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
int[] numbers = new int[10];

System.out.println("Enter 10 numbers:");
for (int i = 0; i < 10; i++) {
numbers[i] = sc.nextInt();
}

int positiveCount = 0;
int negativeCount = 0;
int zeroCount = 0;

for (int num : numbers) {
if (num > 0) {
positiveCount++;
} else if (num < 0) {
negativeCount++;
} else {
zeroCount++;
}
}

System.out.println("Positive numbers count: " +
positiveCount);
```

```
System.out.println("Negative numbers count: " +
negativeCount);
System.out.println("Zero count: " + zeroCount);

sc.close();
}
}
```

Output:



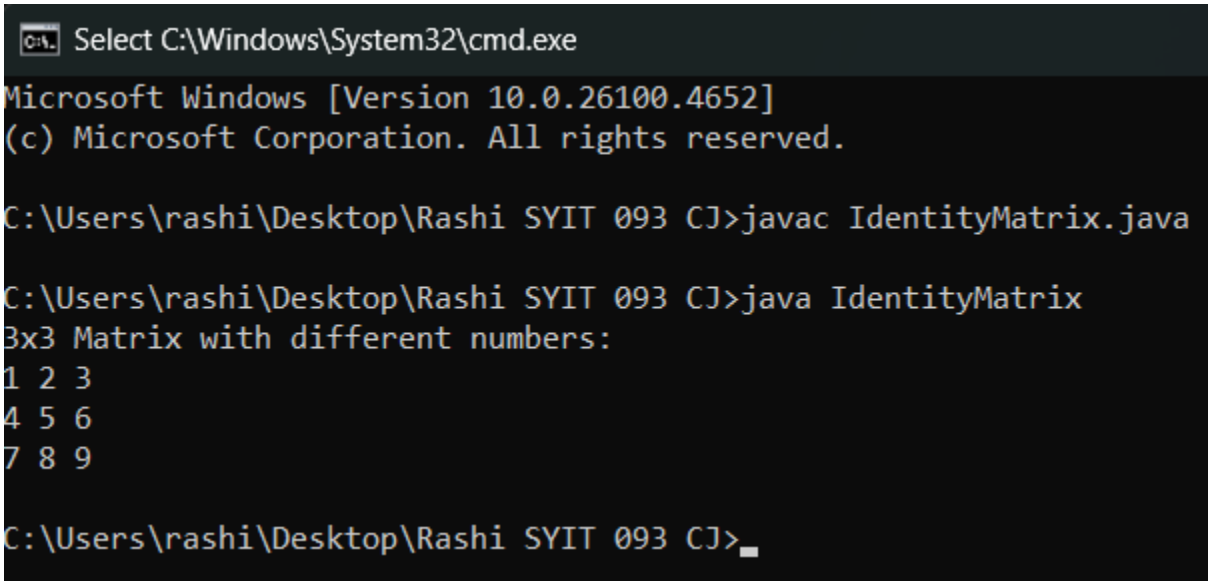
Q2.Write a program in Java to create an identity matrix of size 3X3 and display the same.

Source Code:

```
public class IdentityMatrix {
public static void main(String[] args) {
int size = 3;
int[][] matrix = new int[size][size];
int num = 1; // start number

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

```
for (int j = 0; j < size; j++) {
matrix[i][j] = num++;
}
}

System.out.println("3x3 Matrix with different numbers:");
for (int i = 0; i < size; i++) {
for (int j = 0; j < size; j++) {
System.out.print(matrix[i][j] + " ");
}
System.out.println();
}
}
}
```

Output:



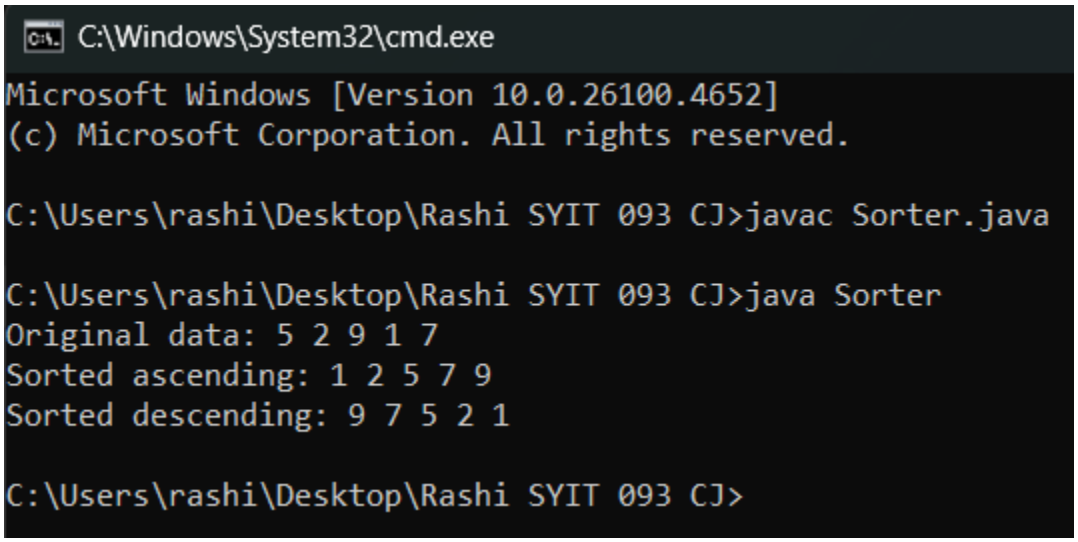
Q3.Design a java class to sort data that contains the method asec() and desc() order.

Source Code:

```
import java.util.Arrays;
import java.util.Collections;

public class Sorter {
private Integer[] data;

public Sorter(Integer[] data) {
this.data = data;
}

public void asec() {
Arrays.sort(data);
}

public void desc() {
Arrays.sort(data, Collections.reverseOrder());
}

public void display() {
for (int num : data) {
System.out.print(num + " ");
}
System.out.println();
}

public static void main(String[] args) {
Integer[] numbers = {5, 2, 9, 1, 7};

Sorter sorter = new Sorter(numbers);
```

```
System.out.print("Original data: ");
sorter.display();

sorter.asec();
System.out.print("Sorted ascending: ");
sorter.display();

sorter.desc();
System.out.print("Sorted descending: ");
sorter.display();
}
}
```

Output:



PRACTICAL 7

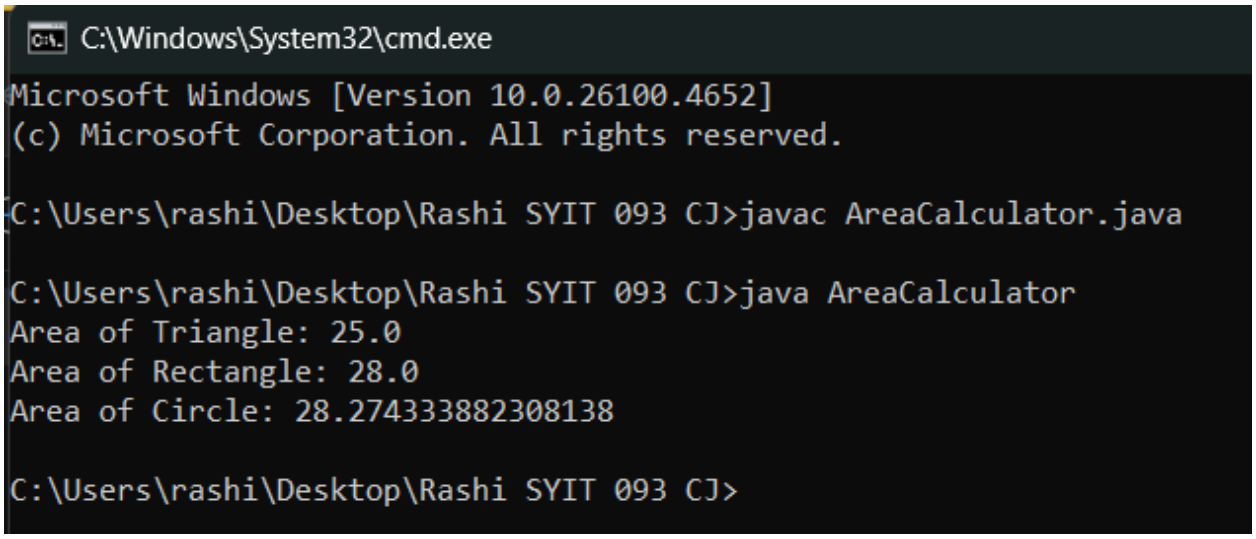
Q1.Write a program in Java to perform method overloading. Calculate area of triangle, area of rectangle and area of circle.

Source Code:

```
public class AreaCalculator {

public double area(double base, double height) {
return 0.5 * base * height;
}

public double area(double length, double width,
boolean isRectangle) {
return length * width;
}

public double area(double radius) {
return Math.PI * radius * radius;
}

public static void main(String[] args) {
AreaCalculator calculator = new AreaCalculator();

double triangleArea = calculator.area(5, 10);
double rectangleArea = calculator.area(7, 4, true);
double circleArea = calculator.area(3);

System.out.println("Area of Triangle: " +
triangleArea);
System.out.println("Area of Rectangle: " +
rectangleArea);

System.out.println("Area of Circle: " + circleArea);
```

```
}
}
```

Output:



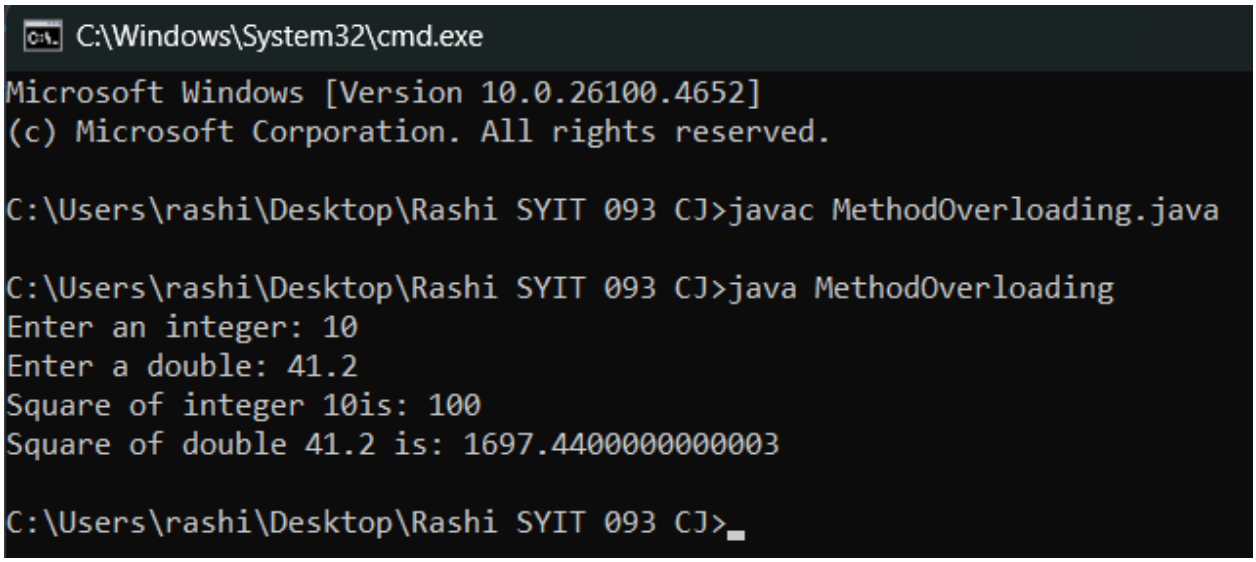
Q2.Write a program in Java to perform method overloading. Create two methods of the same name “Square” to calculate the square of an integer and double.

Source Code:

```
import java.util.Scanner;

public class MethodOverloading {

public static int square(int num) {
return num * num;
}

public static double square(double num) {
return num * num;
}

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

```
System.out.print("Enter an integer: ");
int intNum = scanner.nextInt();

System.out.print("Enter a double: ");
double doubleNum = scanner.nextDouble();

System.out.println("Square of integer " + intNum + "is: " + square(intNum));
System.out.println("Square of double " + doubleNum + " is: " +
square(doubleNum));

scanner.close();
}

}
```

Output:

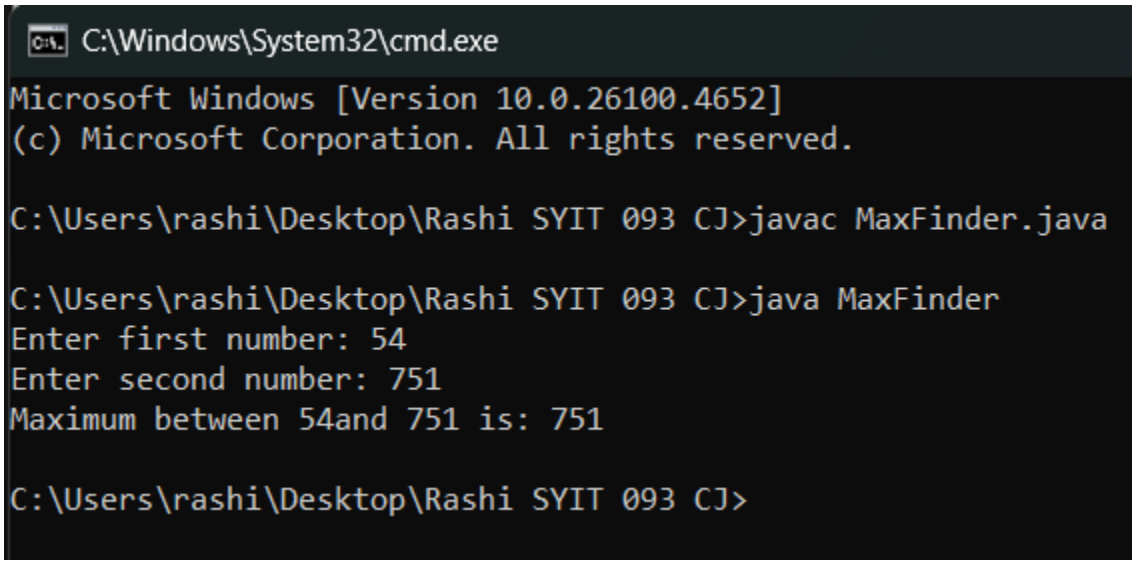


Q3.Write a program in Java to create a static method to find the maximum between two numbers.

Source Code:

```
import java.util.Scanner;

public class MaxFinder {

public static int max(int a, int b) {
return (a > b) ? a : b;
}

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

System.out.print("Enter first number: ");
int num1 = scanner.nextInt();

System.out.print("Enter second number: ");
int num2 = scanner.nextInt();

int maximum = max(num1, num2);
System.out.println("Maximum between " + num1 + "
and " + num2 + " is: " + maximum);

scanner.close();
}
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.4652]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac MaxFinder.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java MaxFinder
Enter first number: 54
Enter second number: 751
Maximum between 54and 751 is: 751
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>

PRACTICAL 8

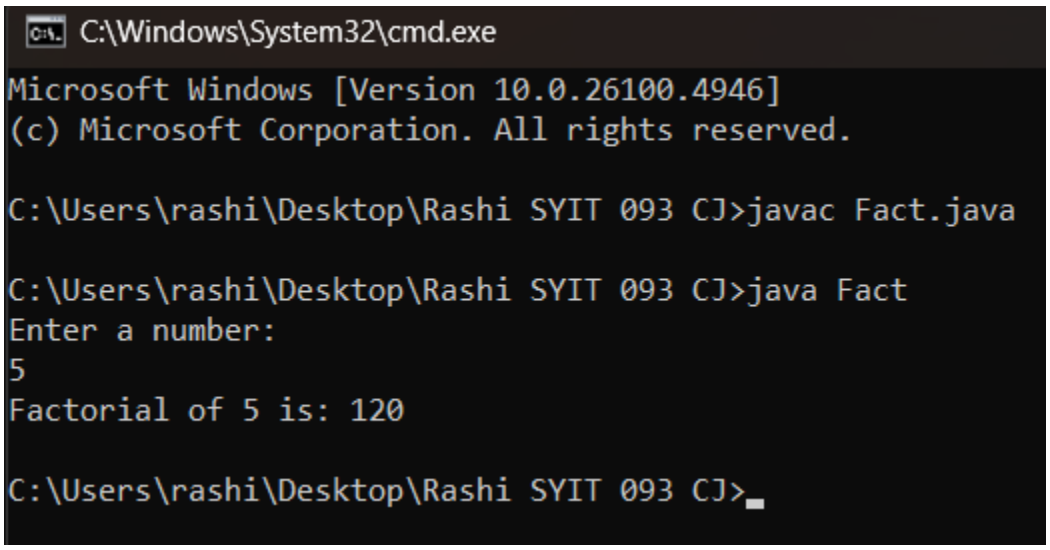
Q1.Write a program in java to create parametrized constructor fact. Create method display which will return value as factorial of number an display the same.

Source Code:

```
import java.util.*;
class Fact
{
    int number;
   Fact(int num) {
       number = num;
    }

    int display() {
        int fact = 1;
        for (int i = 1; i <= number; i++) {
            fact *= i;
        }
        return fact;
    }


         public static void main(String[] arr) {
                Scanner sc = new Scanner(System.in);
                System.out.println("Enter a number: ");
                int num=sc.nextInt();
                Fact f=new Fact(num);
                System.out.println("Factorial of " + num + " is: " + f.display());

         }
```

```
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.4946]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac Fact.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java Fact
Enter a number:
5
Factorial of 5 is: 120
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>

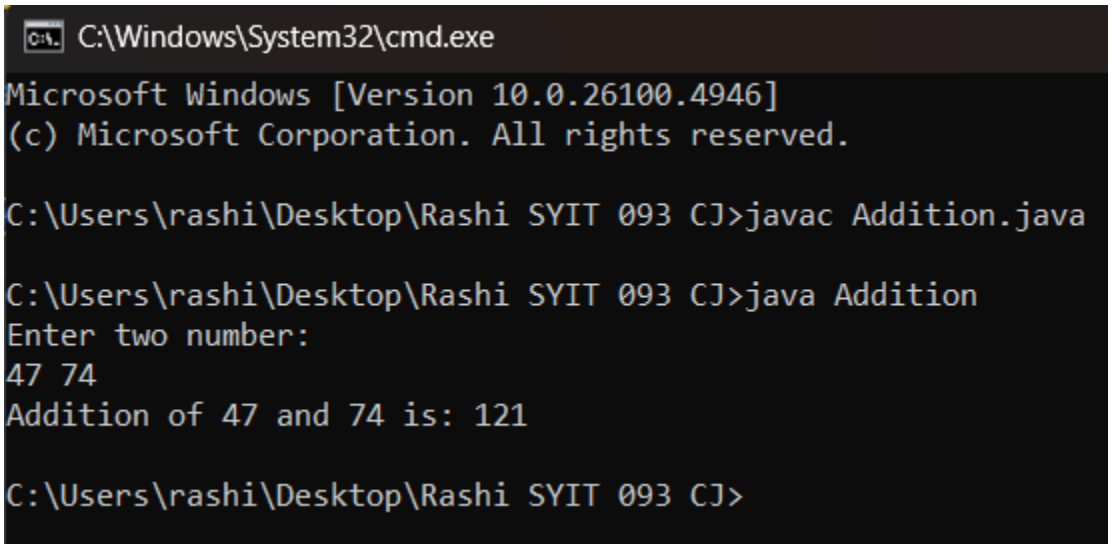
Q2.Write a program in java to create default constructor add which will initialize two integer variable values. Create method display which will perform and display addition of two variables.

Source Code:

```
import java.util.*;
class Addition {
    int a, b;

    Addition(int a, int b) {
        this.a = a;
        this.b = b;
    }

    int add() {
        return a + b;
    }

    void display() {
        int result = add();
        System.out.println("Addition of " + a + " and " + b + " is: " + result);
    }


    public static void main(String[] args) {
         Scanner sc = new Scanner(System.in);
         System.out.println("Enter two number: ");
         int num1=sc.nextInt();
         int num2=sc.nextInt();
        Addition obj = new Addition(num1,num2);
        obj.display();
    }
```

```
}
```

Output:

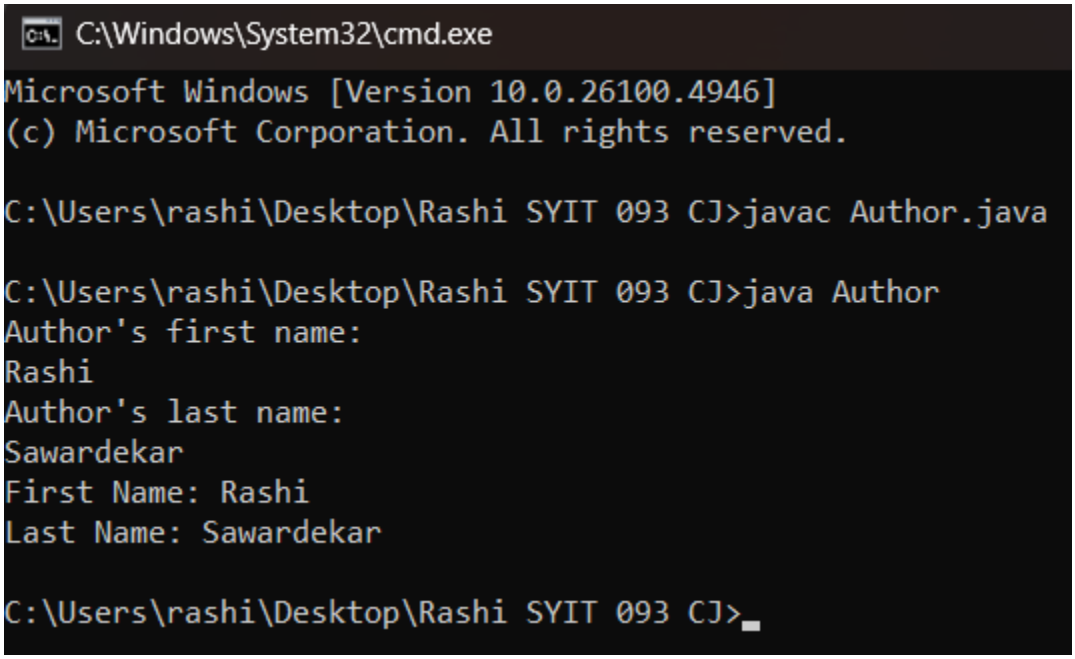


Q3.Write a Java class Author with following features.
Instances variables:
firstName for the author's first name of type string.
lastName for the author's last name of type string.
Constructor:
Public Author(String firstName, String lastName): A constructor with parameters, it creates the Author object by setting two fields to the passed values.
Instance methods:
getFirstNamel): This method returns the first name of the author.
getlastName): This method returns the last name of the author.

Source Code:

```
import java.util.*;
class Author {
     String firstName;
     String lastName;

    Author(String firstName, String lastName) {
        this.firstName = firstName;
        this.lastName = lastName;
    }

    String getFirstName() {
        return firstName;
    }

    String getLastName() {
        return lastName;
    }

    public static void main(String[] args) {
         Scanner sc = new Scanner(System.in);
          System.out.println("Author's first game:");
          String fn=sc.next();
          System.out.println("Author's last game:");
         String ln=sc.next();
        Author a= new Author(fn,ln);
        System.out.println("First Name: " + a.getFirstName());
        System.out.println("Last Name: " + a.getLastName());
    }
}
```

Output:



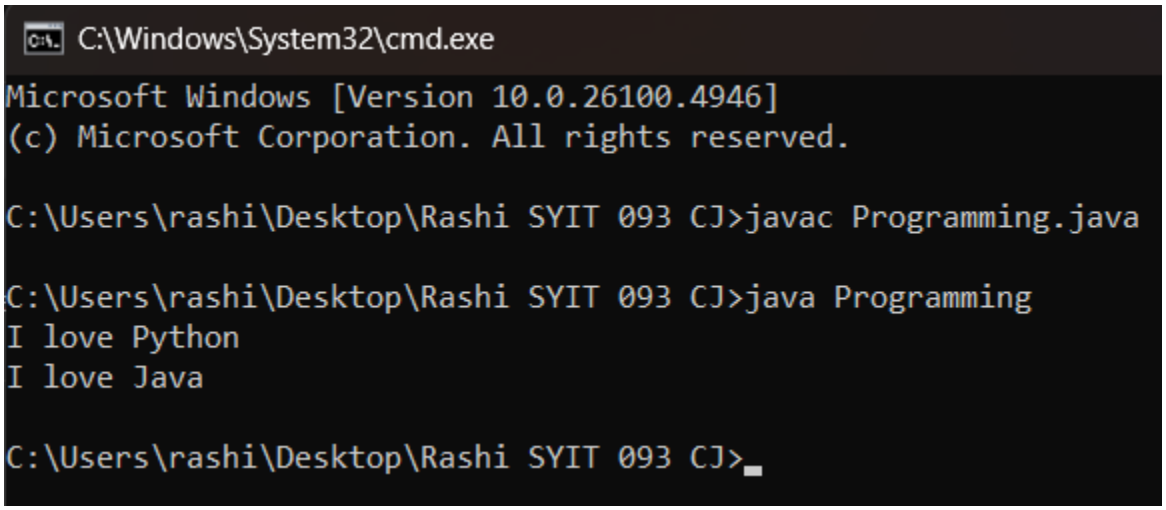
Q4.Write a program in java to create class with the name programming. While creating the object of the class if nothing is passed to then display "I Love Java. If some string (programming language) is passed then display the name of the string. Perform constructor overloading. (example if We pass string as PYTHON, then display I love Python).

Source Code:

```
class Programming {

    Programming(String language) {
        System.out.println("I love " + language);
    }
    Programming() {
        System.out.println("I love Java");
    }
```

```
    public static void main(String[] ar) {
        Programming p1 = new Programming("Python");
        Programming p2 = new Programming();
    }
}
```

Output:



PRACTICAL 9

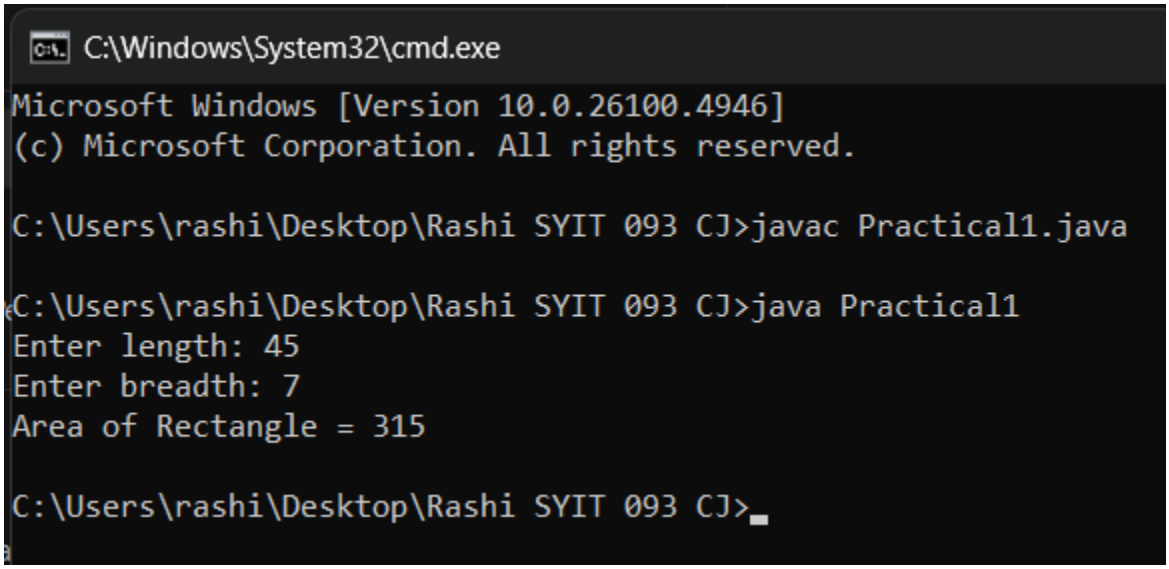
Q1.Write a program in java to create class number. Create proper method to accept length and breadth from user. Create another class area which inherits class number. Create proper method to calculate area of rectangle.

Source Code:

```
import java.util.Scanner;

class Number {
    int length, breadth;

    void accept() {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter length: ");
        length = sc.nextInt();
        System.out.print("Enter breadth: ");
        breadth = sc.nextInt();
    }
}

class Area extends Number {
    void calculate() {
        int area = length * breadth;
        System.out.println("Area of Rectangle = " + area);
    }
}

public class Practical1 {
    public static void main(String[] args) {
        Area obj = new Area();
        obj.accept();
        obj.calculate();
```

```
    }
}
```

Output:



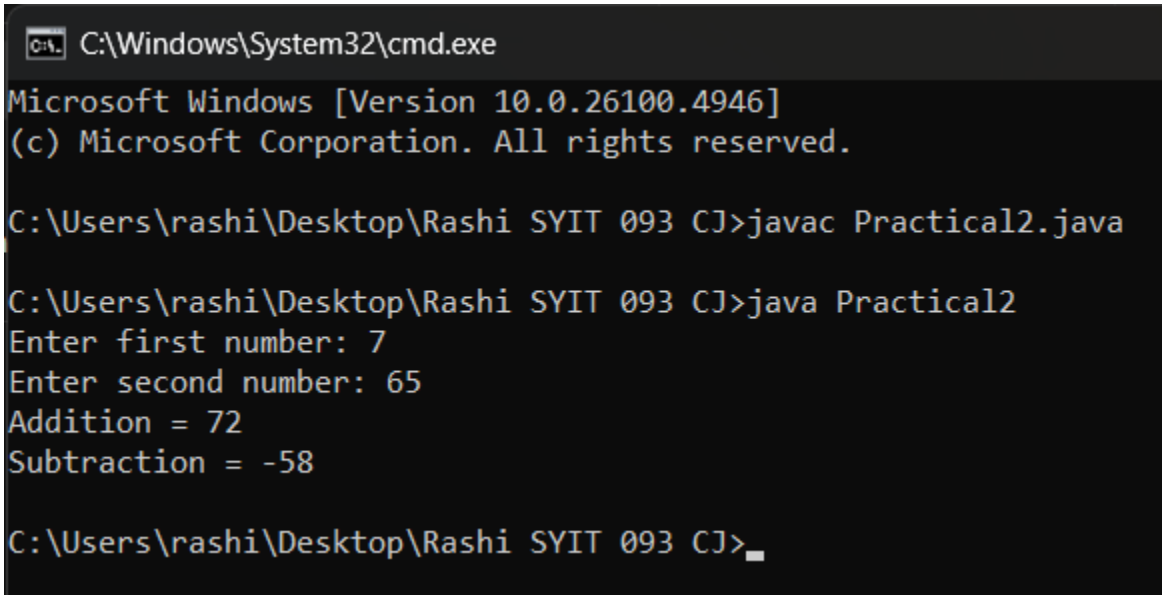
Q2.Write a program in java to perform multilevel inheritance. Create class number which will accept 2 numbers from user. Create another class CAdd which will have method add that perform addition of 2 number. Create another class Sub which will have method sub that perform subtraction of 2 number.
Perform multilevel inheritance.

Source Code:

```
import java.util.Scanner;

class Number {
    int a, b;

    void accept() {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter first number: ");
```

```
        a = sc.nextInt();
        System.out.print("Enter second number: ");
        b = sc.nextInt();
    }
}

class CAdd extends Number {
    void add() {
        System.out.println("Addition = " + (a + b));
    }
}

class Sub extends CAdd {
    void sub() {
        System.out.println("Subtraction = " + (a - b));
    }
}

public class Practical2 {
    public static void main(String[] args) {
        Sub obj = new Sub();
        obj.accept();
        obj.add();
        obj.sub();
    }
}
```

Output:



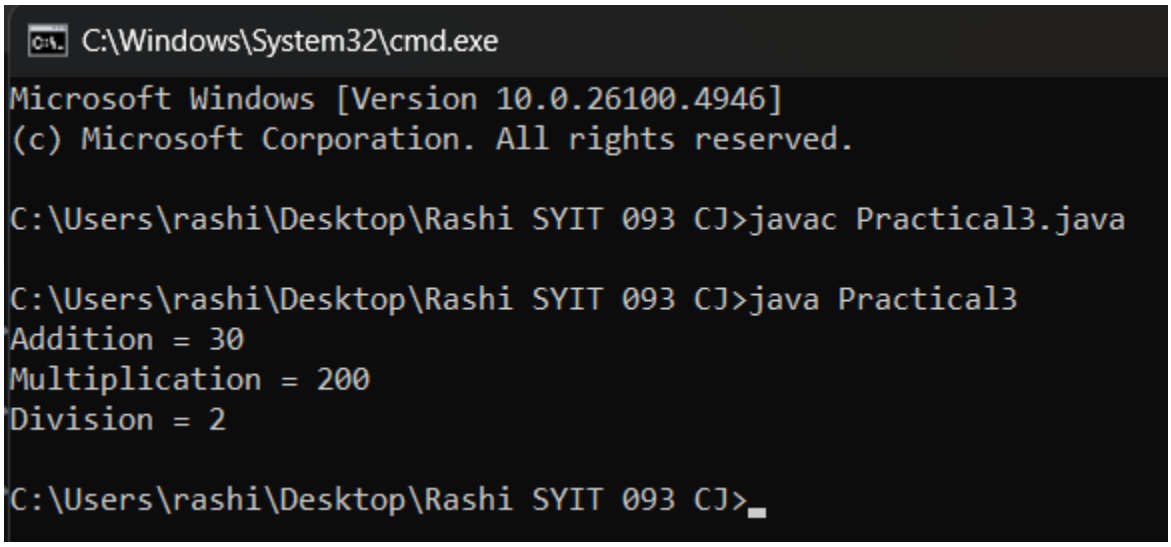
Q3.Write a program in java to create class Add with one method getResult with two integer parameters which will perform addition and display the result. Create another class Multiply which inherit class Add which contain method getResult with same parameter, which will perform multiplication of two numbers. Create another class divide which inherit class Multiply with same method which will perform division of two integer numbers. Perform method overriding to calculate and display addition, division.

Source Code:

```
class Add {
    void getResult(int x, int y) {
        System.out.println("Addition = " + (x + y));
    }
}

class Multiply extends Add {
    @Override
    void getResult(int x, int y) {
        System.out.println("Multiplication = " + (x * y));
```

```
    }
}

class Divide extends Multiply {
    @Override
    void getResult(int x, int y) {
        if (y != 0)
            System.out.println("Division = " + (x / y));
        else
            System.out.println("Division by zero not possible.");
    }
}

public class Practical3 {
    public static void main(String[] args) {
        Add a = new Add();
        a.getResult(20, 10);

        Multiply m = new Multiply();
        m.getResult(20, 10);

        Divide d = new Divide();
        d.getResult(20, 10);
    }
}
```

Output:



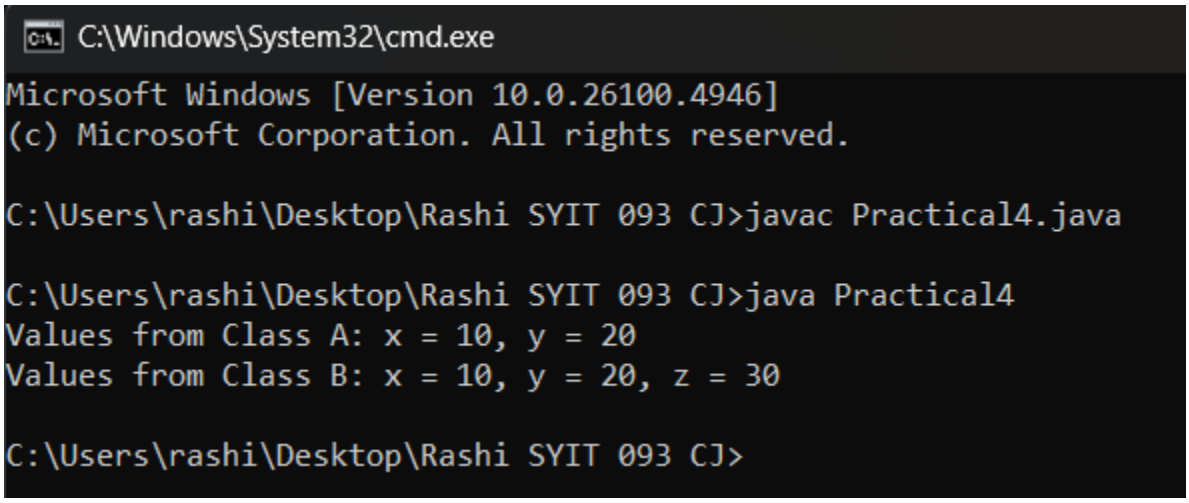
Q4.Write a program in java to display integer number using method overriding. Create class A with parameterized constructor, Create one method display which will display 2 integer value. Create class B with constructor having 3 parameters from which 2 are from class A, create method display which will display all three values. Perform method overriding.

Source Code:

```
class A {
    int x, y;

    A(int a, int b) {
        x = a;
        y = b;
    }

    void display() {
        System.out.println("Values from Class A: x = " + x + ", y = " + y);
    }
}
```

```
class B extends A {
    int z;

    B(int a, int b, int c) {
        super(a, b);
        z = c;
    }

    @Override
    void display() {
        System.out.println("Values from Class B: x = " + x + ", y = " + y + ", z =
" + z);
    }
}

public class Practical4 {
    public static void main(String[] args) {
        A obj1 = new A(10, 20);
        obj1.display();

        B obj2 = new B(10, 20, 30);
        obj2.display();
    }
}
```

Output:



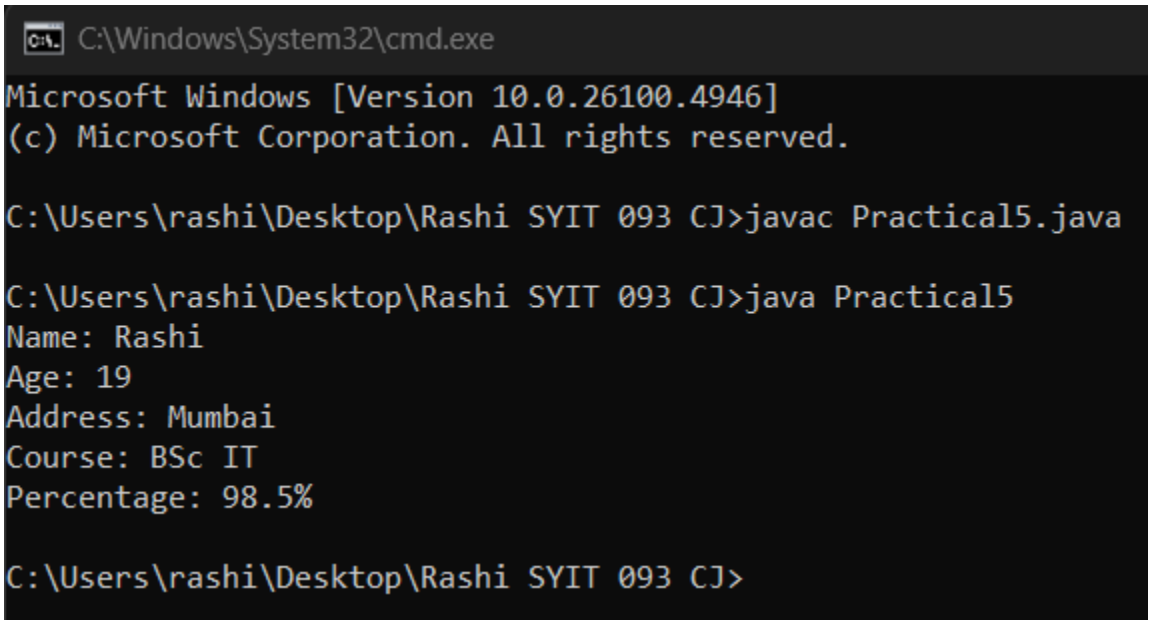
Q5.Write a Java program for creating one base class for student personal details and inherit those details into the sub class of student educational details to display complete student information.

Source Code:

```
class StudentPersonal {
    String name;
    int age;
    String address;

    StudentPersonal(String n, int a, String addr) {
        name = n;
        age = a;
        address = addr;
    }

    void displayPersonal() {
        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Address: " + address);
    }
}
```

```
class StudentEducational extends StudentPersonal {
    String course;
    double percentage;

    StudentEducational(String n, int a, String addr, String c, double p) {
        super(n, a, addr);
        course = c;
        percentage = p;
    }

    void displayEducational() {
        displayPersonal();
        System.out.println("Course: " + course);
        System.out.println("Percentage: " + percentage + "%");
    }
}

public class Practical5 {
    public static void main(String[] args) {
        StudentEducational s = new StudentEducational("Rashi", 19,
"Mumbai", "BSc IT", 98.5);
        s.displayEducational();
    }
}
```

Output:



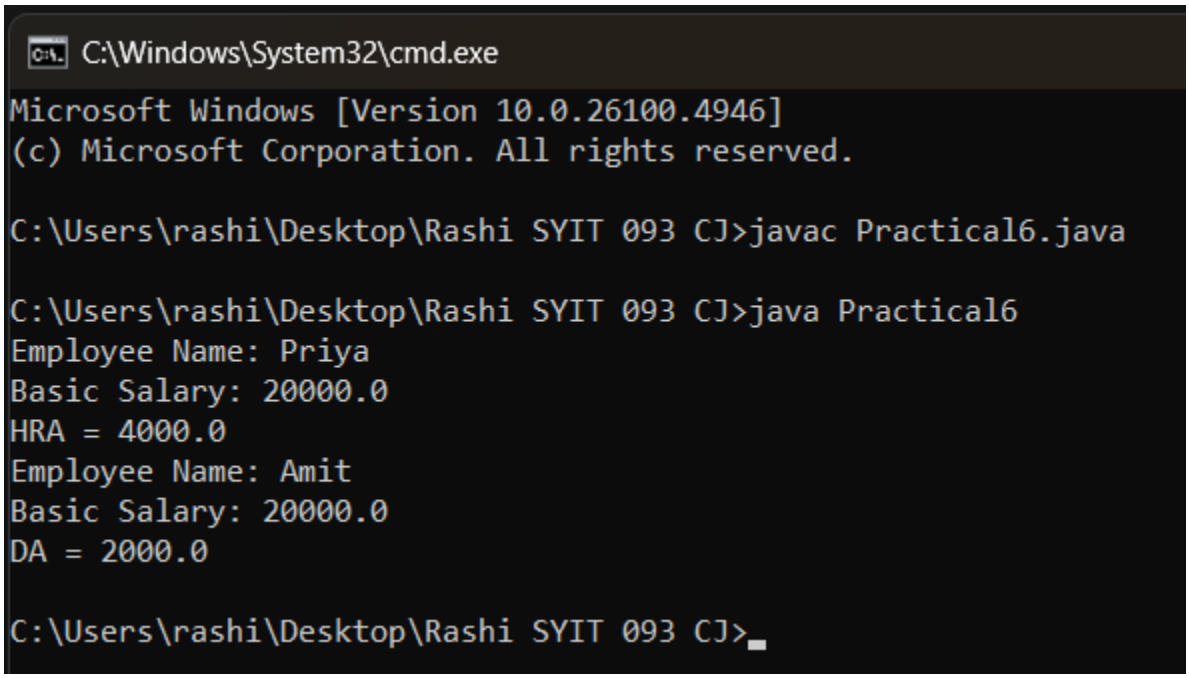
Q6. Java Program to calculate salary of an Employee using Hierarchical Inheritance.

Source Code:

```
class Employee {
    String name;
    double basic;

    Employee(String n, double b) {
        name = n;
        basic = b;
    }

    void display() {
        System.out.println("Employee Name: " + name);
        System.out.println("Basic Salary: " + basic);
    }
}
```

```
class HRA extends Employee {
    HRA(String n, double b) {
        super(n, b);
    }

    void calculateHRA() {
        double hra = 0.2 * basic;
        System.out.println("HRA = " + hra);
    }
}

class DA extends Employee {
    DA(String n, double b) {
        super(n, b);
    }

    void calculateDA() {
        double da = 0.1 * basic;
        System.out.println("DA = " + da);
    }
}

public class Practical6 {
    public static void main(String[] args) {
        HRA e1 = new HRA("Priya", 20000);
        e1.display();
        e1.calculateHRA();

        DA e2 = new DA("Amit", 20000);
        e2.display();
        e2.calculateDA();
    }
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.4946]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac Practical6.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java Practical6
Employee Name: Priya
Basic Salary: 20000.0
HRA = 4000.0
Employee Name: Amit
Basic Salary: 20000.0
DA = 2000.0
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>

PRACTICAL 10

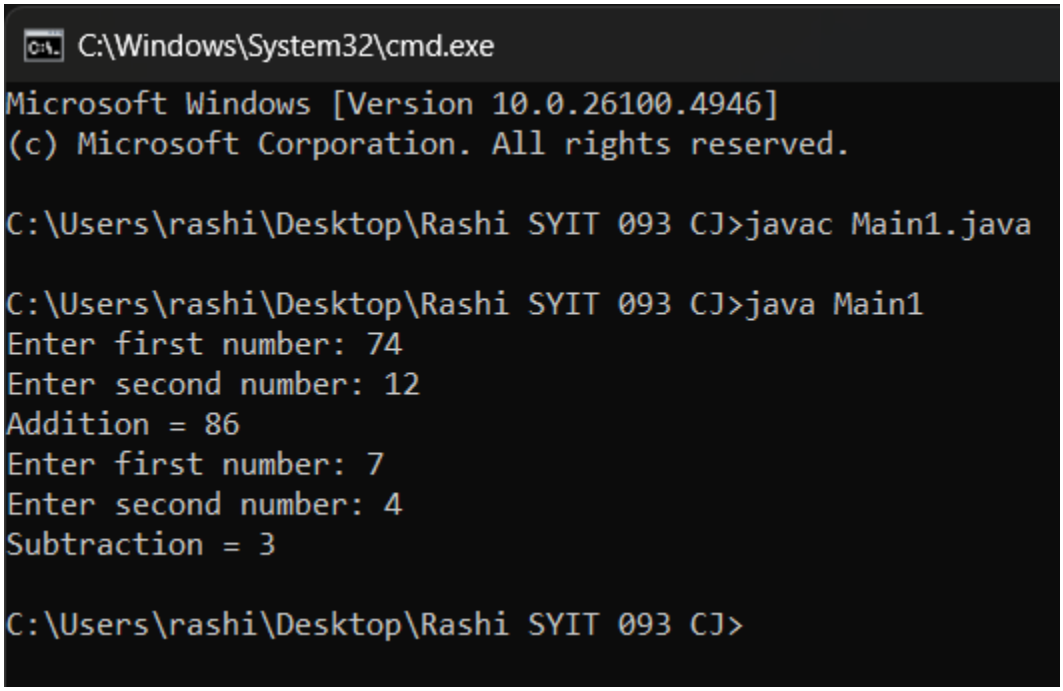
Q1.Write a program in java to create abstract class number. create proper method to accept 2 number. Create abstract method calculate. Create 2 class add and sub which will perform addition and subtraction of 2 numbers.

Source Code:

```
import java.util.Scanner;

abstract class Number {
    int a, b;

    void acceptNumbers() {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter first number: ");
        a = sc.nextInt();
        System.out.print("Enter second number: ");
        b = sc.nextInt();
    }

    abstract void calculate();
}

class Add extends Number {
    void calculate() {
        System.out.println("Addition = " + (a + b));
    }
}

class Sub extends Number {
    void calculate() {
        System.out.println("Subtraction = " + (a - b));
    }
```

```
}

public class Main1 {
    public static void main(String[] args) {
        Add addObj = new Add();
        addObj.acceptNumbers();
        addObj.calculate();

        Sub subObj = new Sub();
        subObj.acceptNumbers();
        subObj.calculate();
    }
}
```

Output:



Q2.

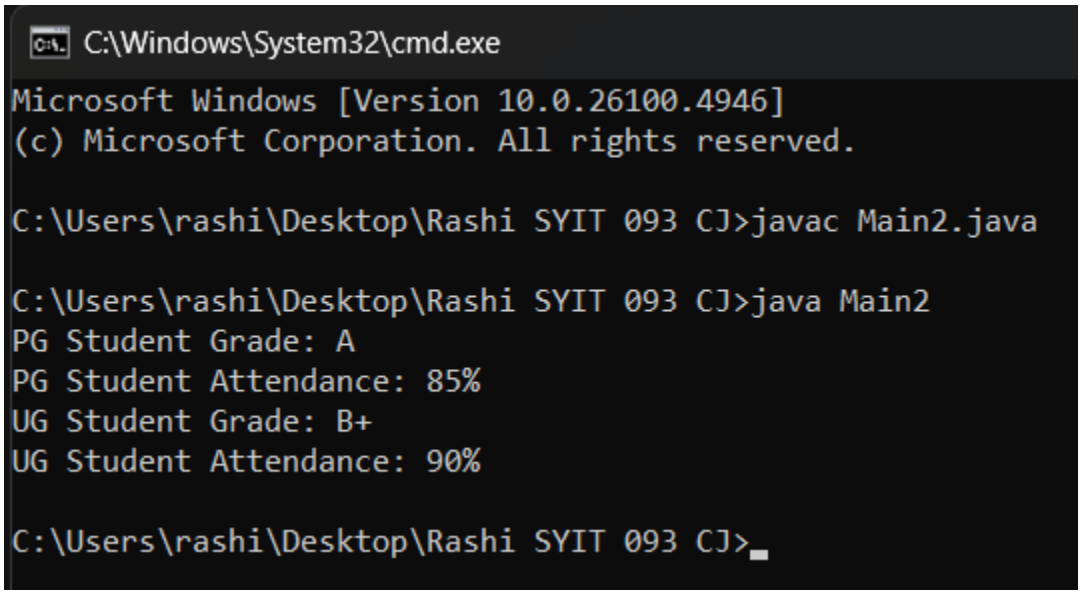
Write a program in java which implement interface Student which has two methods Display_Grade and Attendance for PG_Students and UG_ Students PG_Students and UG_Students are two different classes for Post Graduate and Under Graduate students respectively).

Source Code:

```
interface Student {
    void Display_Grade();
    void Attendance();
}

class PG_Students implements Student {
    public void Display_Grade() {
        System.out.println("PG Student Grade: A");
    }
    public void Attendance() {
        System.out.println("PG Student Attendance: 85%");
    }
}

class UG_Students implements Student {
    public void Display_Grade() {
        System.out.println("UG Student Grade: B+");
    }
    public void Attendance() {
        System.out.println("UG Student Attendance: 90%");
    }
}

public class Main2 {
    public static void main(String[] args) {
        Student pg = new PG_Students();
        Student ug = new UG_Students();
```

```
        pg.Display_Grade();
        pg.Attendance();

        ug.Display_Grade();
        ug.Attendance();
    }
}
```

Output:



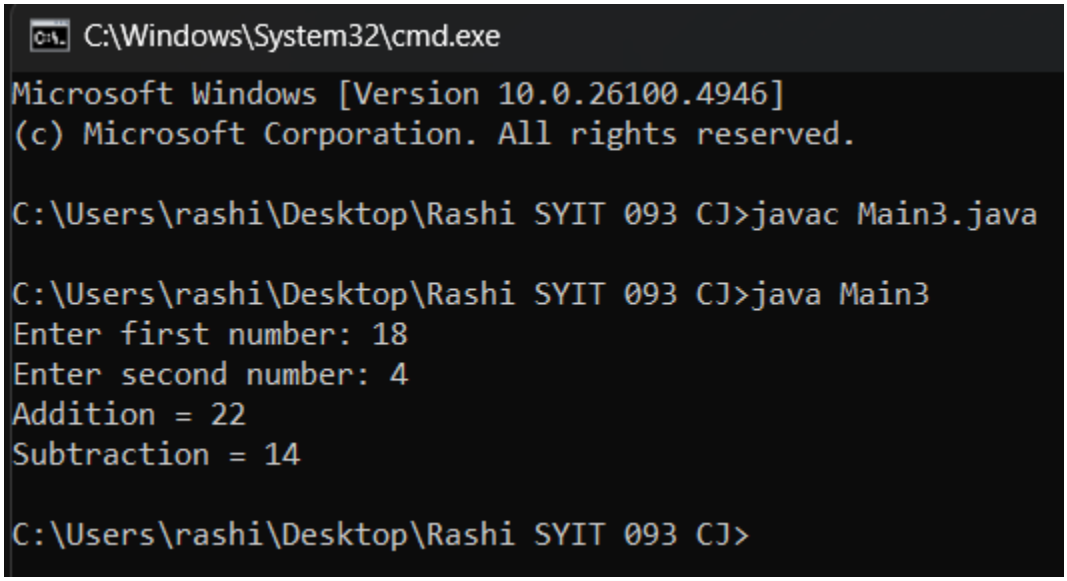
Q3.Write a program to create class number with method getdata which will accept two number from user. Create interface Arithmetic with two methods add and sub. create main class which will inherit both class and interface to perform addition and subtraction of two numbers

Source Code:

```
import java.util.Scanner;

class Number {
    int a, b;
    void getData() {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter first number: ");
        a = sc.nextInt();
        System.out.print("Enter second number: ");
        b = sc.nextInt();
    }
}

interface Arithmetic {
    void add();
    void sub();
}

class Calculation extends Number implements Arithmetic {
    public void add() {
        System.out.println("Addition = " + (a + b));
    }
    public void sub() {
        System.out.println("Subtraction = " + (a - b));
    }
}
```

```
public class Main3 {
    public static void main(String[] args) {
        Calculation calc = new Calculation();
        calc.getData();
        calc.add();
        calc.sub();
    }
}
```

Output:



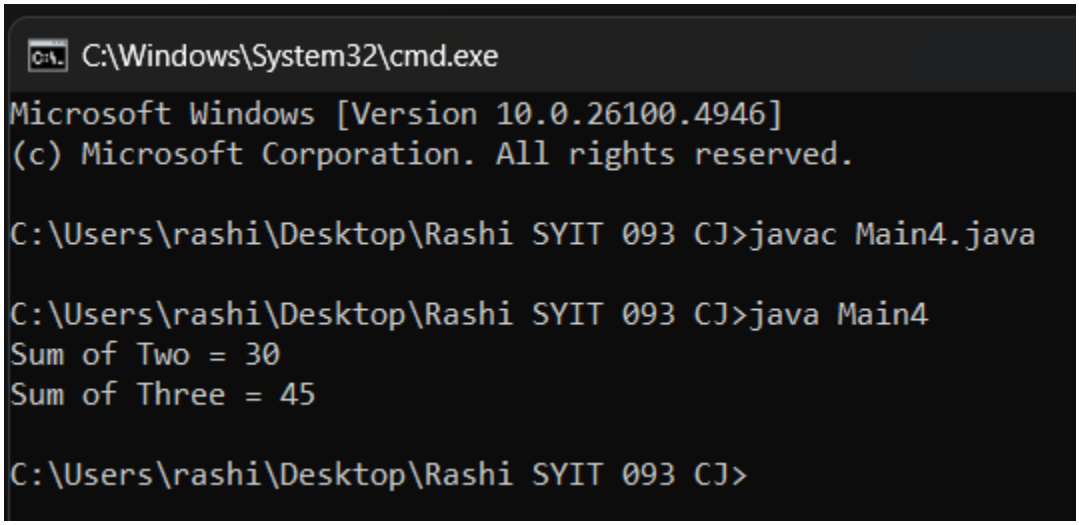
Q4.

Write a program in java to create abstract class sum with two abstract methods sumofTwo, sumof Three which will perform addition of two and three integer numbers respectively. Create another class which inherit class sum for calculating and displaying addition of two and three integer numbers.

Source Code:

```
abstract class Sum {
    abstract void sumOfTwo(int a, int b);
    abstract void sumOfThree(int a, int b, int c);
}

class Calculate extends Sum {
    void sumOfTwo(int a, int b) {
        System.out.println("Sum of Two = " + (a + b));
    }
    void sumOfThree(int a, int b, int c) {
        System.out.println("Sum of Three = " + (a + b + c));
    }
}

public class Main4 {
    public static void main(String[] args) {
        Calculate obj = new Calculate();
        obj.sumOfTwo(10, 20);
        obj.sumOfThree(5, 15, 25);
    }
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.4946]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac Main4.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java Main4
Sum of Two = 30
Sum of Three = 45
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>

PRACTICAL 11

Q1.

Write a program to create package factor. create method which will display calculate and display factorial of any number

Folder Structure:

factor/Factorial.java
TestFactorial.java

Source Code:

factor/Factorial.java

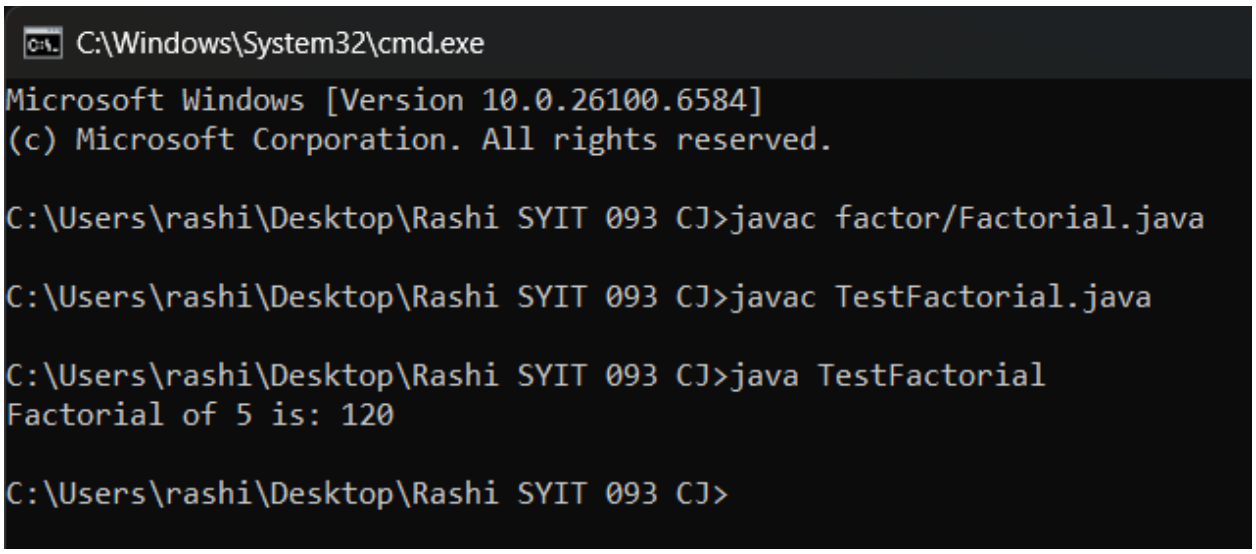
```
// Save inside folder 'factor'
package factor;

public class Factorial {
    // Method to calculate and display factorial
    public void calculateFactorial(int n) {
        long fact = 1;
        for (int i = 1; i <= n; i++) {
            fact *= i;
        }
        System.out.println("Factorial of " + n + " is: " + fact);
    }
}
```

TestFactorial.java

```
import factor.Factorial;   // importing the package

public class TestFactorial {
    public static void main(String[] args) {
        Factorial f = new Factorial();
        f.calculateFactorial(5);   // Example: Factorial of 5
    }
```

}

Output:



Q2.Write a program in java to create package shapeArea. Create class triangle rectangle in package, Create method to calculate area of rectangle and triangle.

Folder Structure:

shapeArea/Triangle.java
shapeArea/Rectangle.java
TestShapeArea.java

Source Code:

shapeArea/Triangle.java

```
// Save inside folder 'shapeArea'
package shapeArea;

public class Triangle {
    // Method to calculate area of triangle
    public double area(double base, double height) {
```

```
        return 0.5 * base * height;
    }
}
```

shapeArea/Rectangle.java

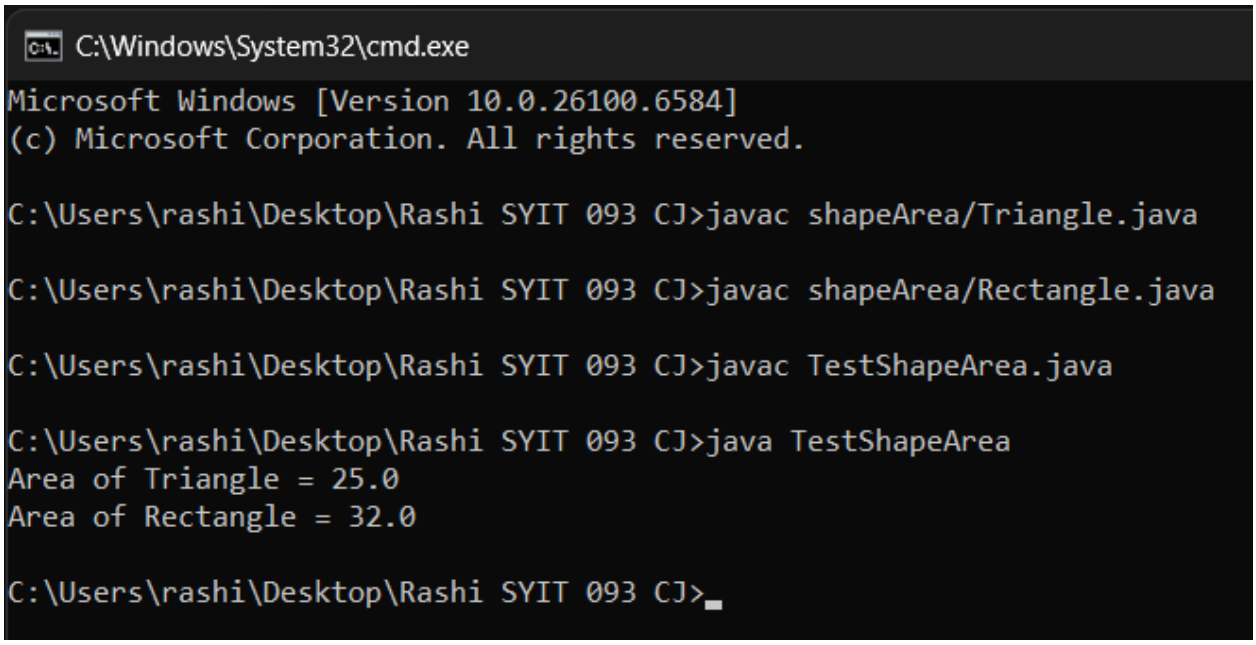
```
// Save inside folder 'shapeArea'
package shapeArea;

public class Rectangle {
    // Method to calculate area of rectangle
    public double area(double length, double breadth) {
        return length * breadth;
    }
}
```

TestShapeArea.java

```
import shapeArea.Triangle;
import shapeArea.Rectangle;

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

        double triangleArea = t.area(10, 5);   // base=10, height=5
        double rectangleArea = r.area(8, 4);   // length=8, breadth=4

        System.out.println("Area of Triangle = " + triangleArea);
        System.out.println("Area of Rectangle = " + rectangleArea);
    }
```

}

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac shapeArea/Triangle.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac shapeArea/Rectangle.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac TestShapeArea.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java TestShapeArea
Area of Triangle = 25.0
Area of Rectangle = 32.0
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>

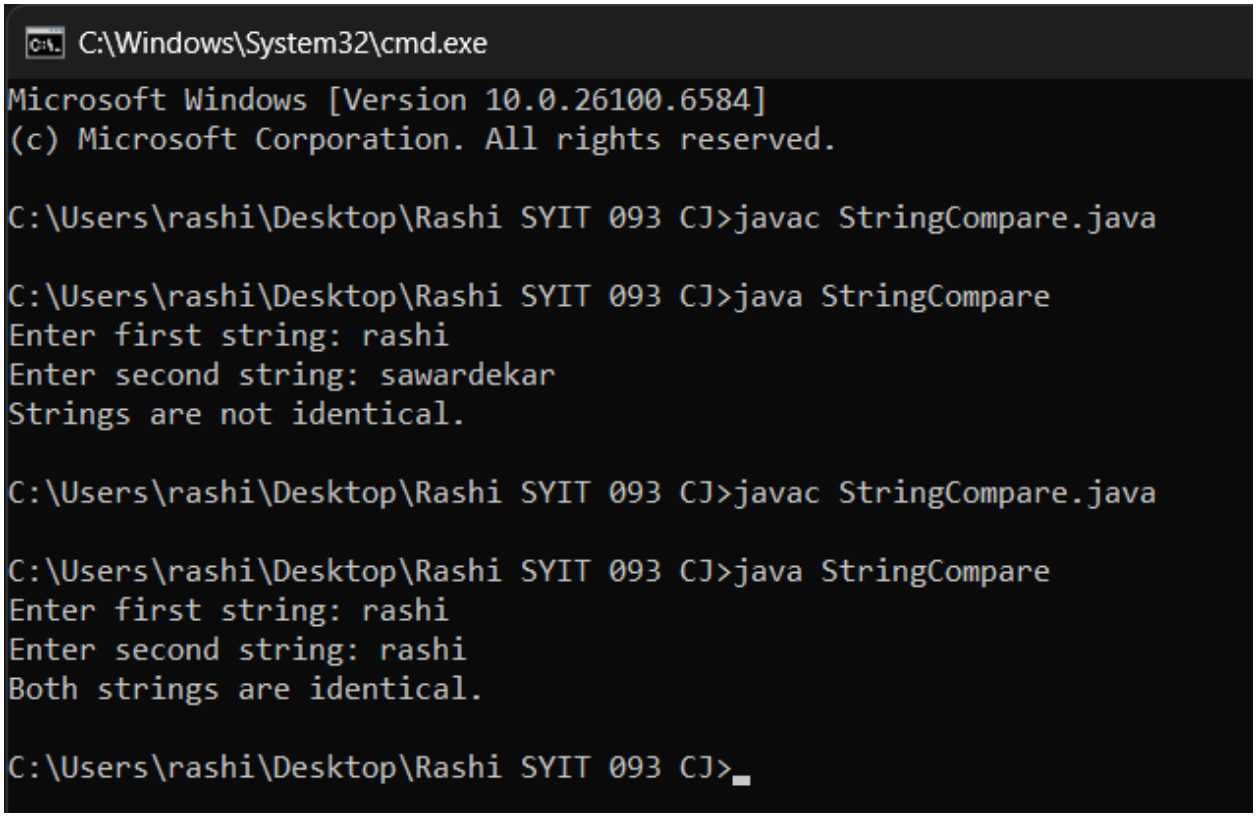
PRACTICAL 12

Q1.Write a program in java to enter two strings from user and check whether they are identical or not. Print appropriate msg.

Source Code:

```
import java.util.Scanner;

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

        System.out.print("Enter first string: ");
        String str1 = sc.nextLine();

        System.out.print("Enter second string: ");
        String str2 = sc.nextLine();

        if(str1.equals(str2)) {
            System.out.println("Both strings are identical.");
        } else {
            System.out.println("Strings are not identical.");
        }
    }
}
```

Output:



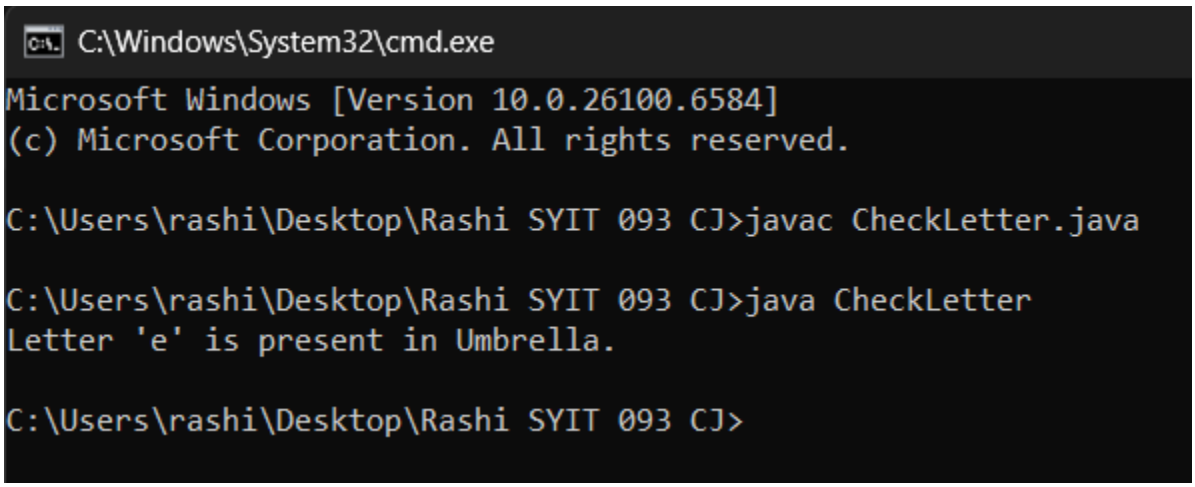
Q2.Write a program to check if the letter'e' is present in the word 'Umbrella'

Source Code:

```
class CheckLetter {
    public static void main(String[] args) {
        String word = "Umbrella";

        if(word.toLowerCase().contains("e")) {
            System.out.println("Letter 'e' is present in Umbrella.");
        } else {
            System.out.println("Letter 'e' is not present in Umbrella.");
        }
```

```
    }
}
```

Output:



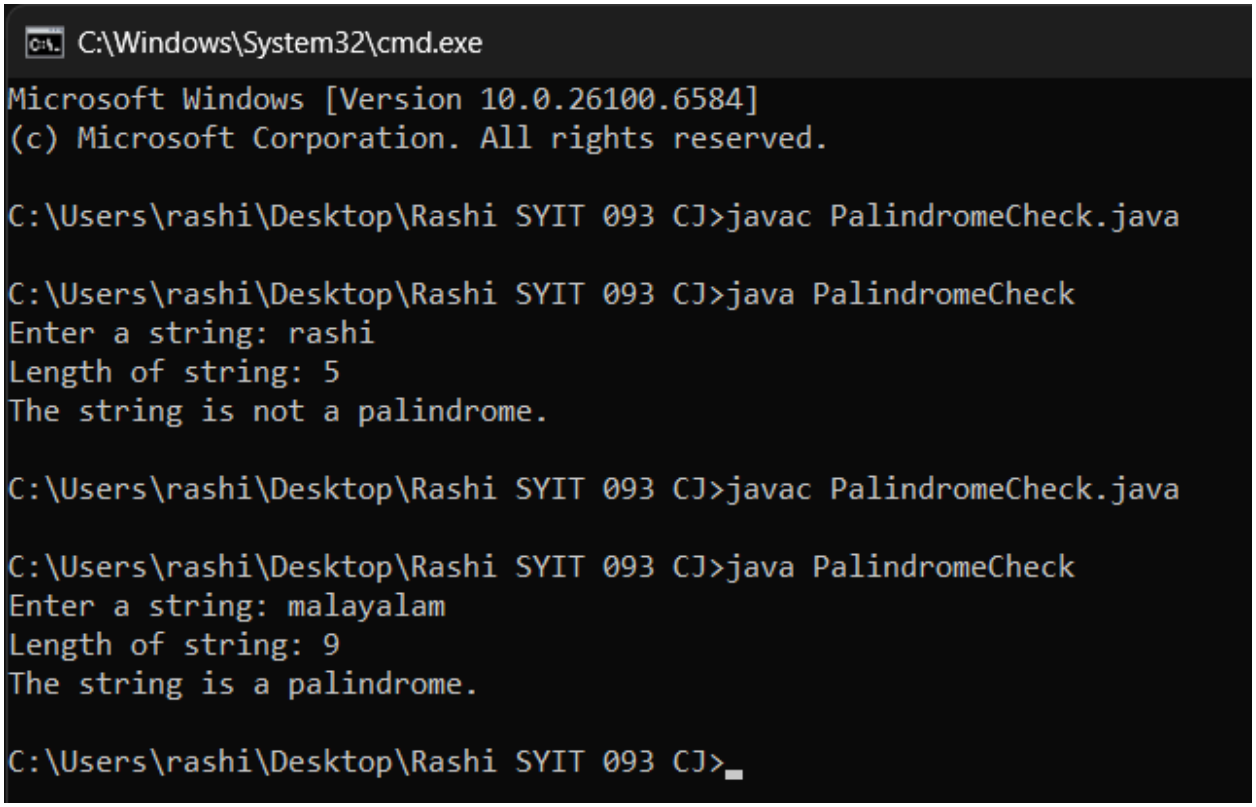
Q3.Write a program to find the length of the string and check whether string is palindrome or not

Source Code:

```
import java.util.Scanner;

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

        System.out.print("Enter a string: ");
        String str = sc.nextLine();

        System.out.println("Length of string: " + str.length());

        String rev = new StringBuilder(str).reverse().toString();

        if(str.equalsIgnoreCase(rev)) {
            System.out.println("The string is a palindrome.");
```

```
        } else {
            System.out.println("The string is not a palindrome.");
        }
    }
}
```

Output:



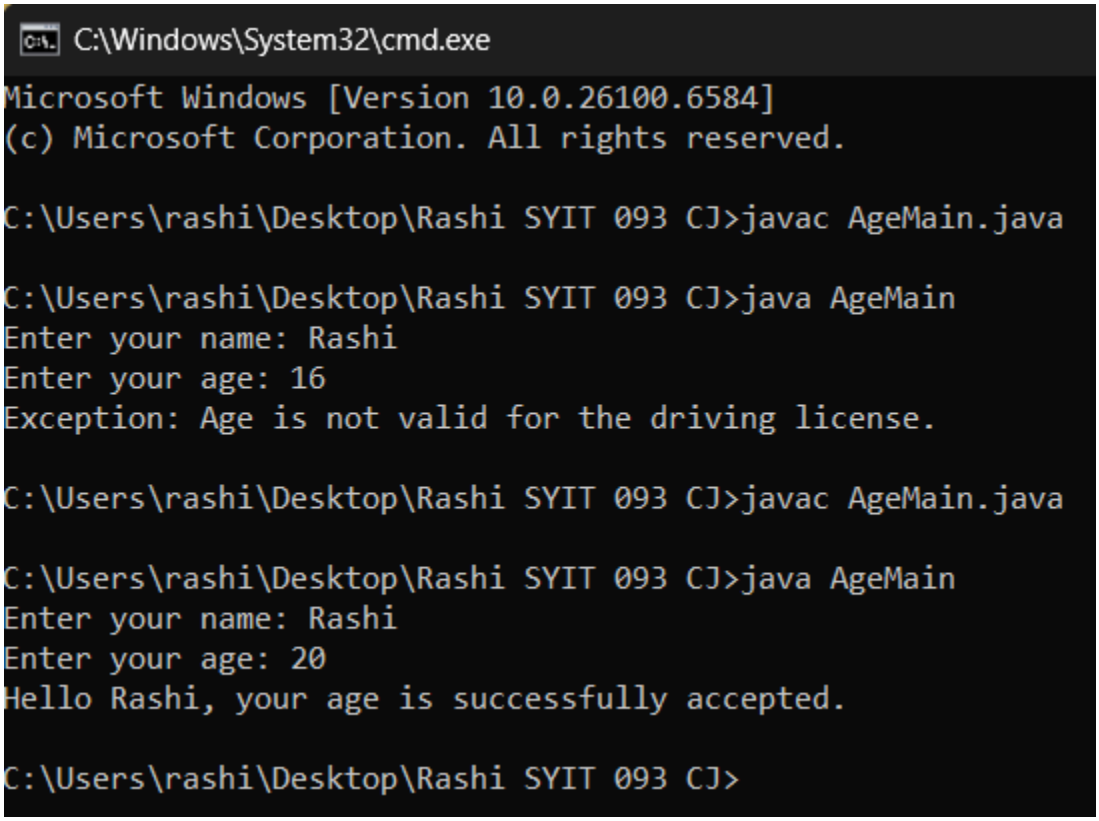
Q4.Write a program in java to perform user defined exceptions. Create class age create proper method which will ask name of user and age.
Handle exception if age is less than 18 then throw exception age is not valid for the driving license else display successfully accepted.

Source Code:

```
import java.util.Scanner;

// Custom Exception
class AgeNotValidException extends Exception {
    public AgeNotValidException(String msg) {
        super(msg);
    }
}

class AgeCheck {
    public void checkAge(String name, int age) throws
AgeNotValidException {
        if(age < 18) {
            throw new AgeNotValidException("Age is not valid for the driving
license.");
        } else {
            System.out.println("Hello " + name + ", your age is successfully
accepted.");
        }
    }
}

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

        System.out.print("Enter your name: ");
```

```
        String name = sc.nextLine();

        System.out.print("Enter your age: ");
        int age = sc.nextInt();

        AgeCheck obj = new AgeCheck();
        try {
            obj.checkAge(name, age);
        } catch(AgeNotValidException e) {
            System.out.println("Exception: " + e.getMessage());
        }
    }
}
```

Output:



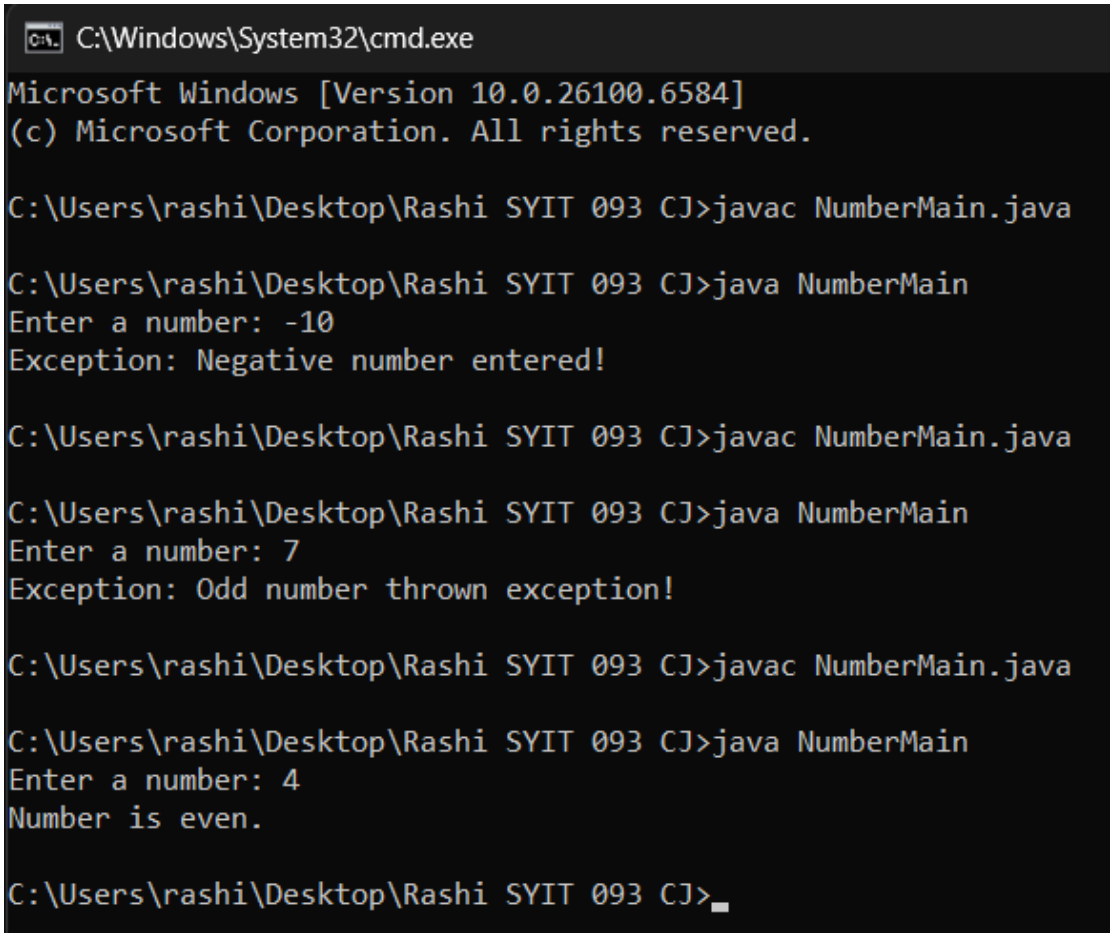
Q5.Write a program in java to perform user defined exceptions. Create class odd number and negative number. Handle exception if odd number are entered then throw odd number thrown exception, else print number is even. Also throw negative number exception.

Source Code:

```
import java.util.Scanner;

// Custom Exceptions
class OddNumberException extends Exception {
    public OddNumberException(String msg) {
        super(msg);
    }
}

class NegativeNumberException extends Exception {
    public NegativeNumberException(String msg) {
        super(msg);
    }
}

class NumberCheck {
    public void checkNumber(int num) throws OddNumberException,
NegativeNumberException {
        if(num < 0) {
            throw new NegativeNumberException("Negative number entered!");
        } else if(num % 2 != 0) {
            throw new OddNumberException("Odd number thrown exception!");
        } else {
            System.out.println("Number is even.");
        }
    }
}
class NumberMain {
```

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

        System.out.print("Enter a number: ");
        int num = sc.nextInt();

        NumberCheck obj = new NumberCheck();
        try {
            obj.checkNumber(num);
        } catch(OddNumberException | NegativeNumberException e) {
            System.out.println("Exception: " + e.getMessage());
        }
    }
}
```

Output:



Q6.Program to read content from a file and write in another in java

Source Code:

```
import java.io.*;
class FileCopy {
    public static void main(String[] args) {
        try {
            FileReader fr = new FileReader("input.txt");
            FileWriter fw = new FileWriter("output.txt");

            int ch;
            while((ch = fr.read()) != -1) {
                fw.write(ch);
            }

            fr.close();
            fw.close();

            System.out.println("File copied successfully!");
        } catch(IOException e) {
            System.out.println("Error: " + e.getMessage());
        }
    }
}
```

Output:

PRACTICAL 13

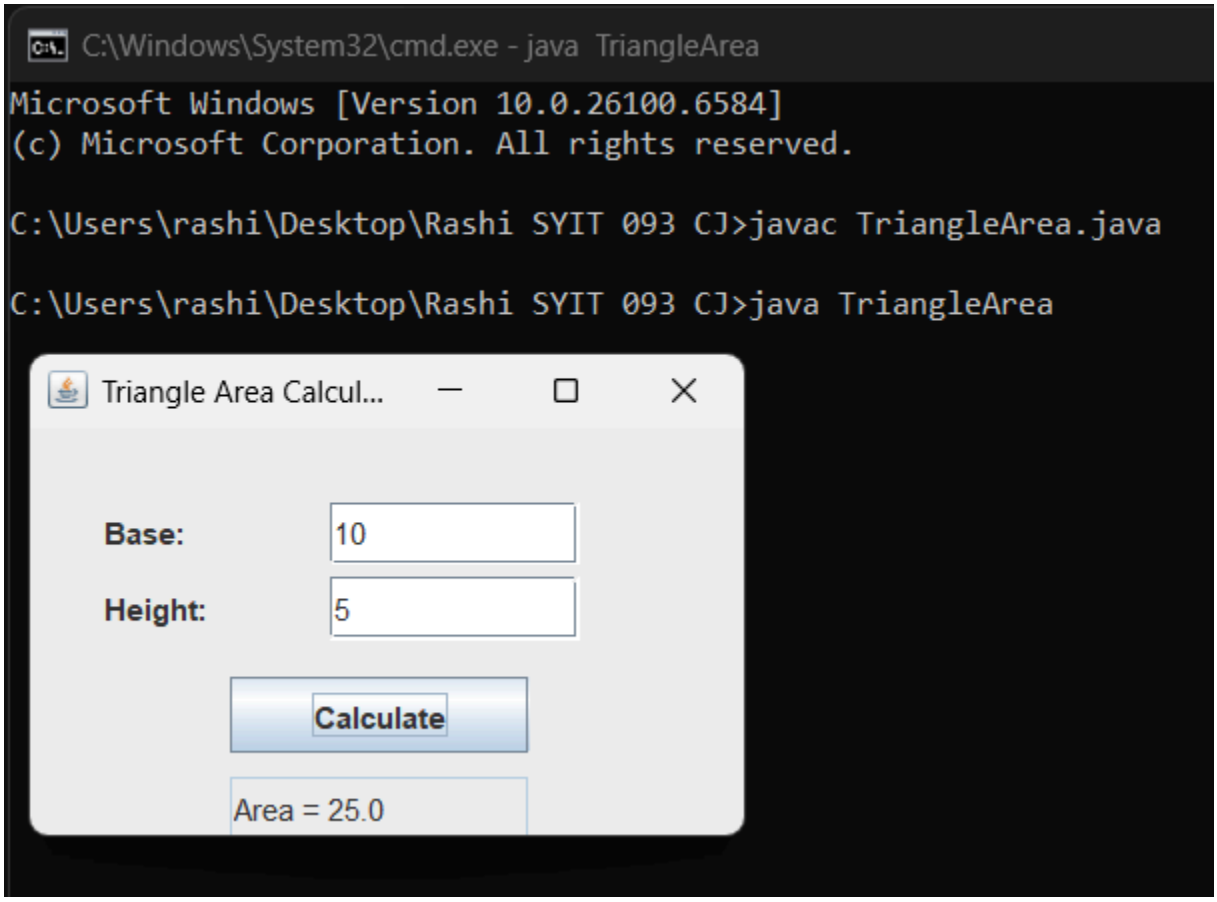
Q1.WAP in java swing to calculate area of triangle using action listener

Source Code:

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

class TriangleArea extends JFrame implements ActionListener {
    JTextField baseField, heightField, resultField;
    JButton calcBtn;

    TriangleArea() {
        setTitle("Triangle Area Calculator");
        setSize(300, 200);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLayout(null);

        JLabel baseLabel = new JLabel("Base:");
        baseLabel.setBounds(30, 30, 80, 25);
        add(baseLabel);

        baseField = new JTextField();
        baseField.setBounds(120, 30, 100, 25);
        add(baseField);

        JLabel heightLabel = new JLabel("Height:");
        heightLabel.setBounds(30, 60, 80, 25);
        add(heightLabel);

        heightField = new JTextField();
        heightField.setBounds(120, 60, 100, 25);
        add(heightField);
```

```
        calcBtn = new JButton("Calculate");
        calcBtn.setBounds(80, 100, 120, 30);
        calcBtn.addActionListener(this);
        add(calcBtn);

        resultField = new JTextField();
        resultField.setBounds(80, 140, 120, 25);
        resultField.setEditable(false);
        add(resultField);

        setVisible(true);
    }

    public void actionPerformed(ActionEvent e) {
        double base = Double.parseDouble(baseField.getText());
        double height = Double.parseDouble(heightField.getText());
        double area = 0.5 * base * height;
        resultField.setText("Area = " + area);
    }

    public static void main(String[] args) {
        new TriangleArea();
    }
}
```

Output:



Q2.WAP in java to Change the font of text using RadioButton.

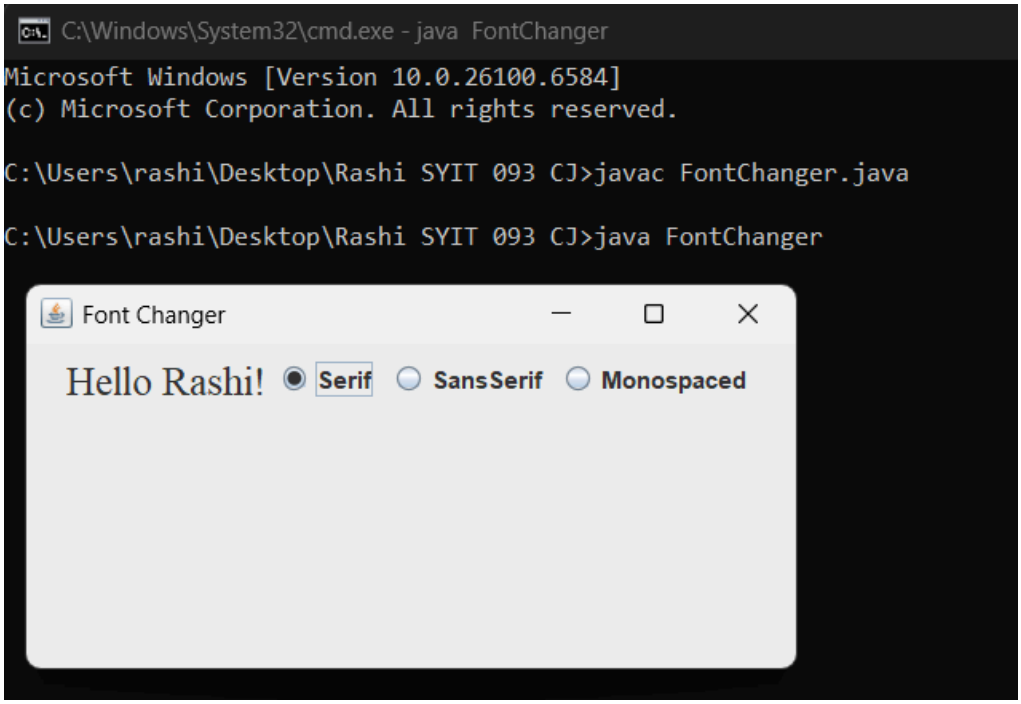
Source Code:

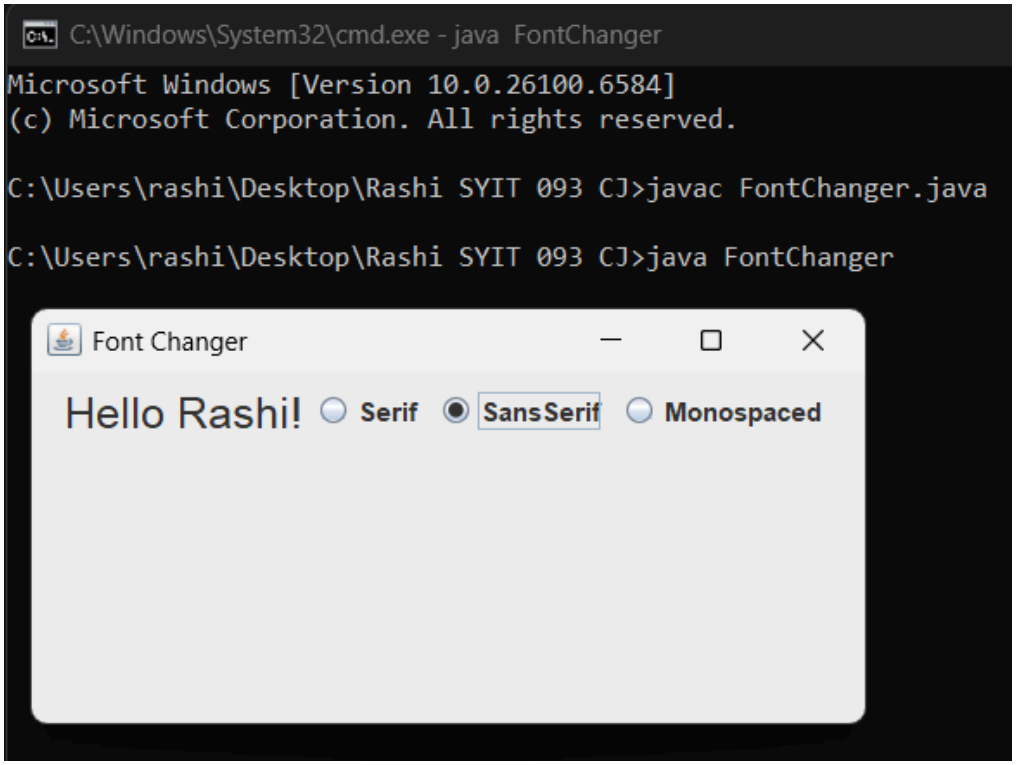
```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;

class FontChanger extends JFrame implements ActionListener {
    JLabel label;
    JRadioButton rb1, rb2, rb3;
    ButtonGroup bg;
```

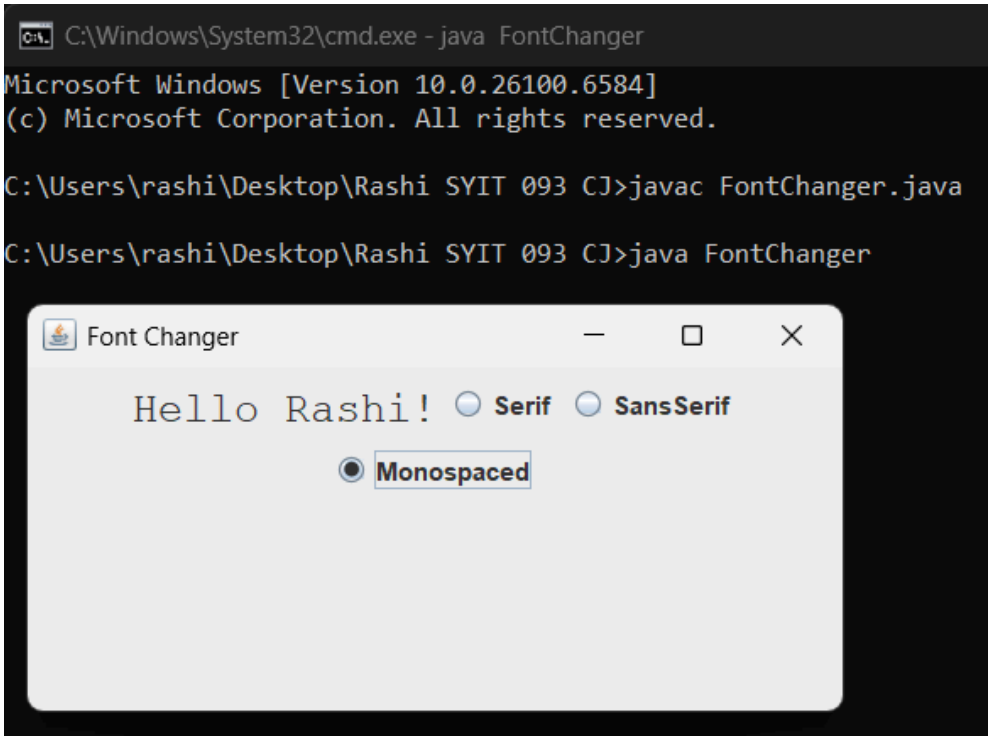
```
FontChanger() {
    setTitle("Font Changer");
    setSize(400, 200);
    setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    setLayout(new FlowLayout());

    label = new JLabel("Hello Rashi!");
    add(label);

    rb1 = new JRadioButton("Serif");
    rb2 = new JRadioButton("SansSerif");
    rb3 = new JRadioButton("Monospaced");

    bg = new ButtonGroup();
    bg.add(rb1);
    bg.add(rb2);
    bg.add(rb3);

    add(rb1);
    add(rb2);
    add(rb3);

    rb1.addActionListener(this);
    rb2.addActionListener(this);
    rb3.addActionListener(this);

    setVisible(true);
}

public void actionPerformed(ActionEvent e) {
    if (rb1.isSelected())
        label.setFont(new Font("Serif", Font.PLAIN, 20));
    else if (rb2.isSelected())
        label.setFont(new Font("SansSerif", Font.PLAIN, 20));
    else if (rb3.isSelected())
```

```
            label.setFont(new Font("Monospaced", Font.PLAIN, 20));
    }

    public static void main(String[] args) {
        new FontChanger();
    }
}
```

Output:


C:\Windows\System32\cmd.exe - java FontChanger
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac FontChanger.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java FontChanger
Font Changer
Hello Rashi!
Serif
SansSerif
Monospaced


C:\Windows\System32\cmd.exe - java FontChanger
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac FontChanger.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java FontChanger
Font Changer
Hello Rashi!
Serif
SansSerif
Monospaced



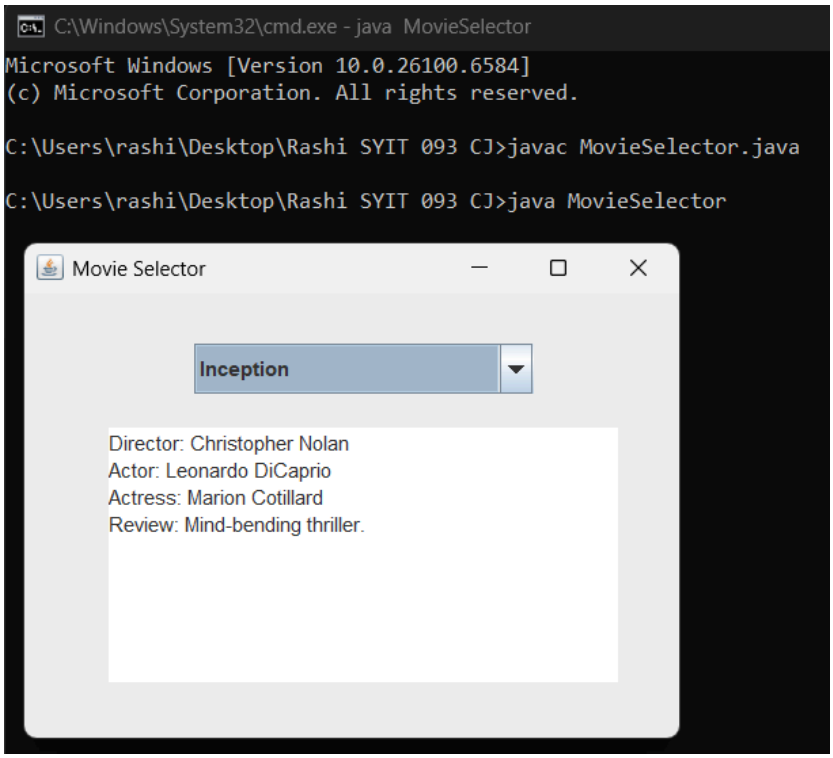
Q3.WAP in Java to create GUI for selecting movie from drop down box and display director name, actor name, actress name and review (use ComboBox)

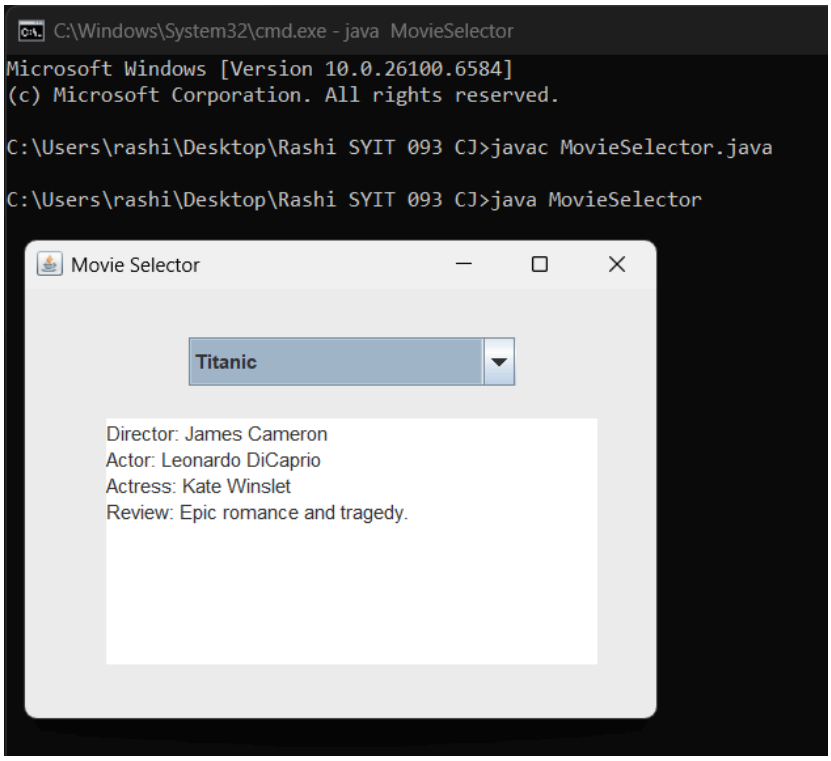
Source Code:

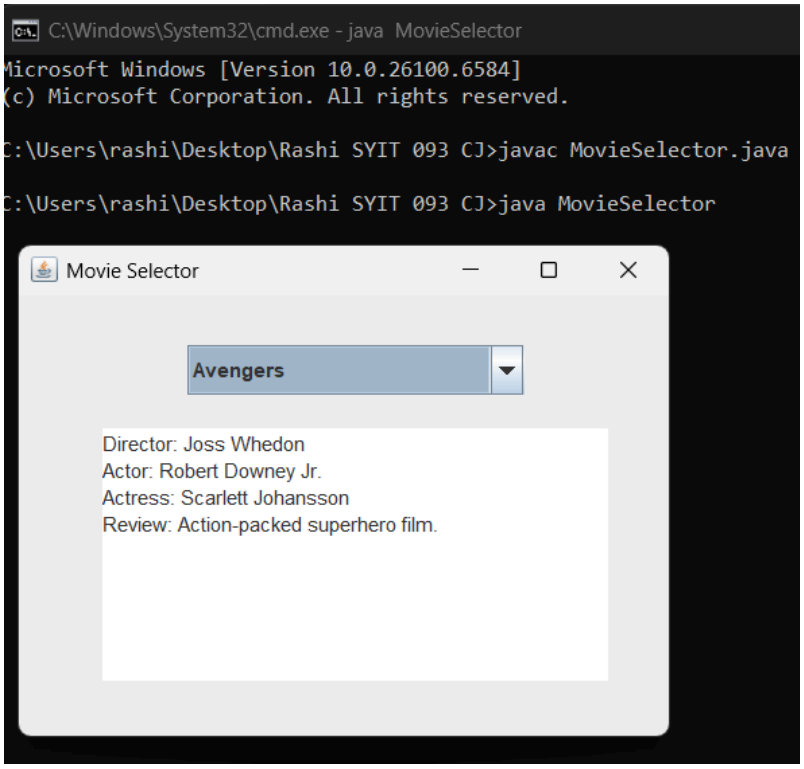
```
import javax.swing.*;
import java.awt.event.*;

class MovieSelector extends JFrame implements ActionListener {
    JComboBox<String> combo;
    JTextArea details;

    MovieSelector() {
        setTitle("Movie Selector");
        setSize(400, 300);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLayout(null);
```

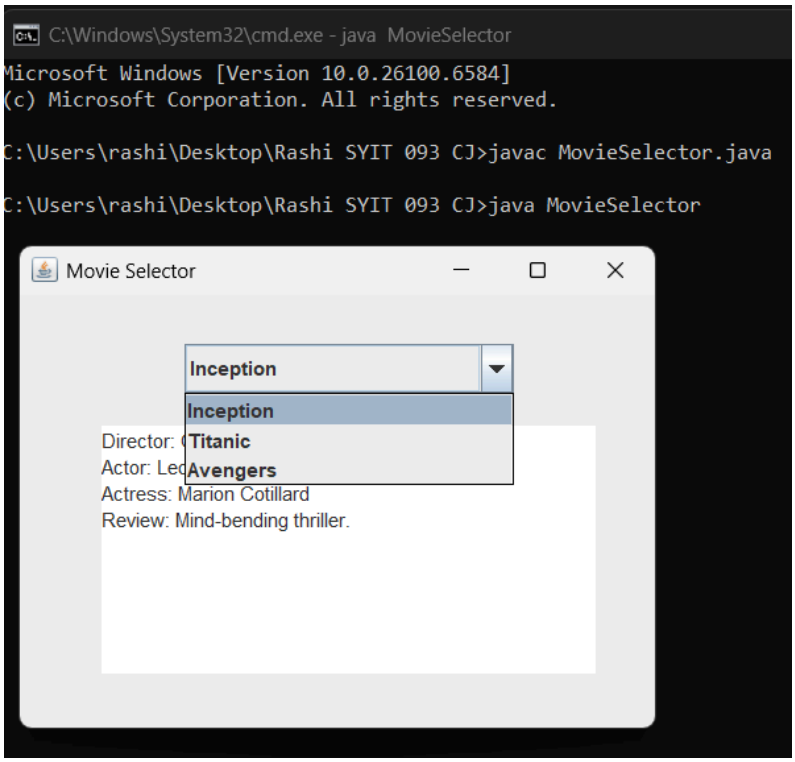
```
        String movies[] = {"Inception", "Titanic", "Avengers"};
        combo = new JComboBox<>(movies);
        combo.setBounds(100, 30, 200, 30);
        combo.addActionListener(this);
        add(combo);

        details = new JTextArea();
        details.setBounds(50, 80, 300, 150);
        details.setEditable(false);
        add(details);

        setVisible(true);
    }

    public void actionPerformed(ActionEvent e) {
        String movie = (String) combo.getSelectedItem();
        if (movie.equals("Inception")) {
            details.setText("Director: Christopher Nolan\nActor: Leonardo
DiCaprio\nActress: Marion Cotillard\nReview: Mind-bending thriller.");
        } else if (movie.equals("Titanic")) {
            details.setText("Director: James Cameron\nActor: Leonardo
DiCaprio\nActress: Kate Winslet\nReview: Epic romance and tragedy.");
        } else if (movie.equals("Avengers")) {
            details.setText("Director: Joss Whedon\nActor: Robert Downey
Jr.\nActress: Scarlett Johansson\nReview: Action-packed superhero film.");
        }
    }

    public static void main(String[] args) {
        new MovieSelector();
    }
}
```

Output:


C:\Windows\System32\cmd.exe - java MovieSelector
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac MovieSelector.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java MovieSelector
Movie Selector
Inception
Director: Christopher Nolan
Actor: Leonardo DiCaprio
Actress: Marion Cotillard
Review: Mind-bending thriller.


C:\Windows\System32\cmd.exe - java MovieSelector
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac MovieSelector.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java MovieSelector
Movie Selector
Titanic
Director: James Cameron
Actor: Leonardo DiCaprio
Actress: Kate Winslet
Review: Epic romance and tragedy.


C:\Windows\System32\cmd.exe - java MovieSelector
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac MovieSelector.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java MovieSelector
Movie Selector
Avengers
Director: Joss Whedon
Actor: Robert Downey Jr.
Actress: Scarlett Johansson
Review: Action-packed superhero film.


C:\Windows\System32\cmd.exe - java MovieSelector
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac MovieSelector.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java MovieSelector
Movie Selector
Inception
Inception
Titanic
Avengers
Actress: Marion Cotillard
Review: Mind-bending thriller.

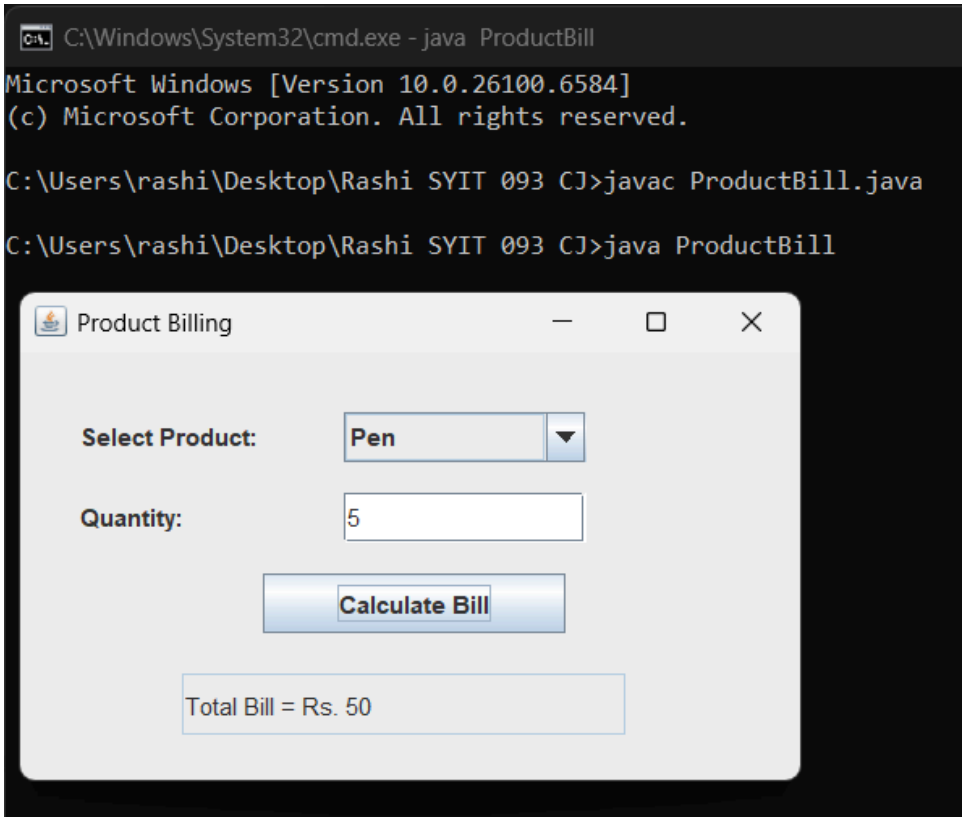
Q4.WAP to perform combo box event add product name in combo box (Pen, Ruler etc) add qualities in textbox and onclick display total bill.

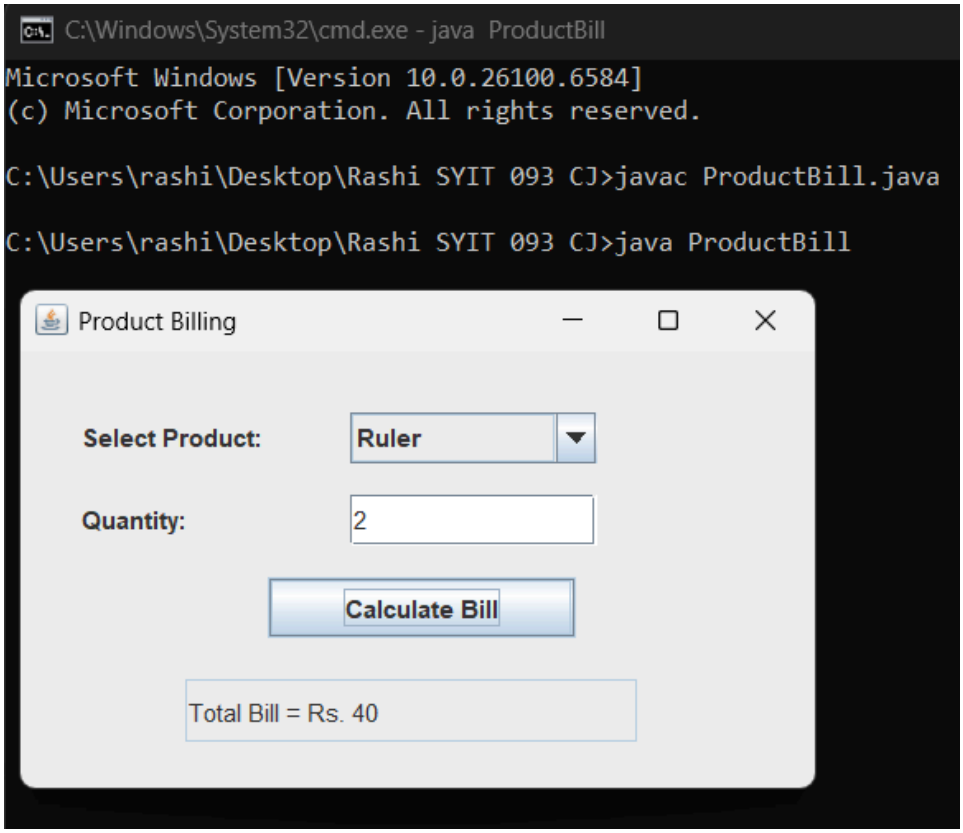
Source Code:

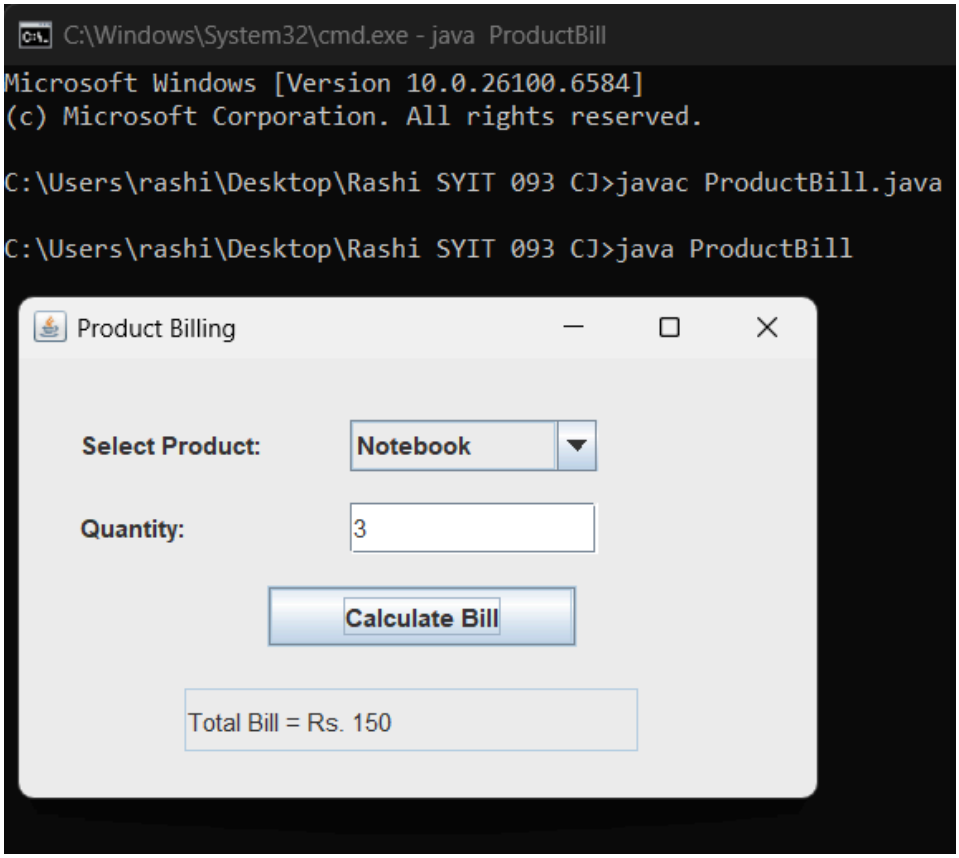
```
import javax.swing.*;
import java.awt.event.*;

class ProductBill extends JFrame implements ActionListener {
    JComboBox<String> combo;
    JTextField qtyField, resultField;
    JButton calcBtn;

    ProductBill() {
        setTitle("Product Billing");
        setSize(400, 250);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLayout(null);

        JLabel productLabel = new JLabel("Select Product:");
        productLabel.setBounds(30, 30, 120, 25);
        add(productLabel);

        String products[] = {"Pen", "Ruler", "Notebook"};
        combo = new JComboBox<>(products);
        combo.setBounds(160, 30, 120, 25);
        add(combo);

        JLabel qtyLabel = new JLabel("Quantity:");
        qtyLabel.setBounds(30, 70, 120, 25);
        add(qtyLabel);

        qtyField = new JTextField();
        qtyField.setBounds(160, 70, 120, 25);
```

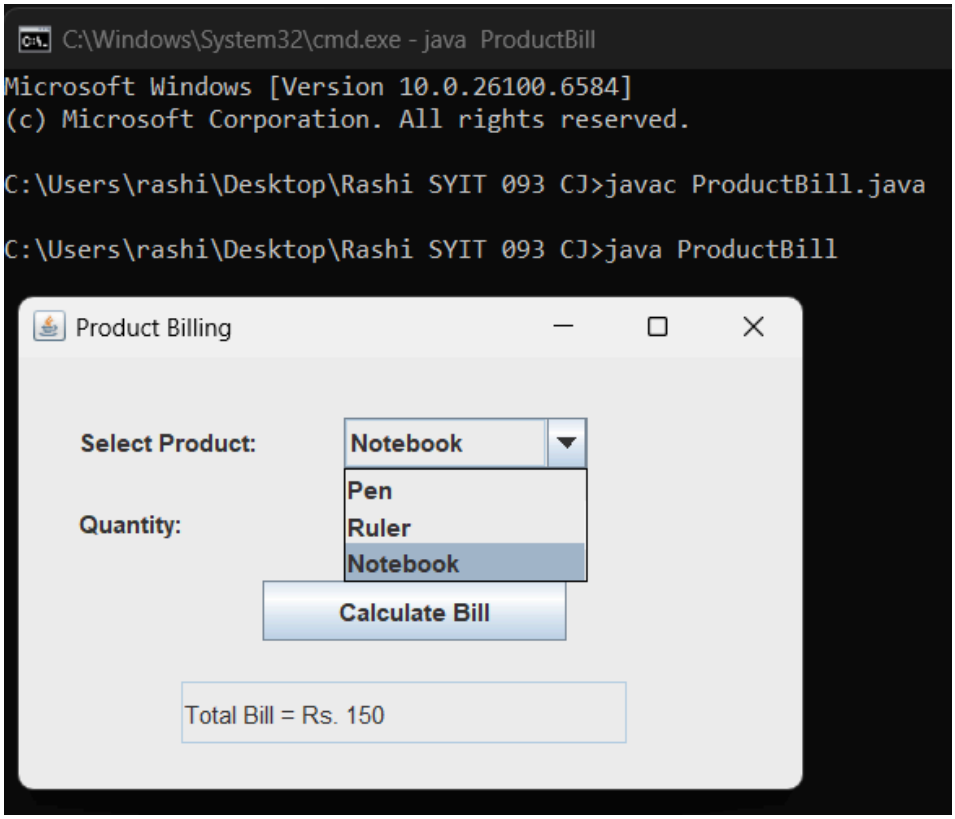
```
        add(qtyField);

        calcBtn = new JButton("Calculate Bill");
        calcBtn.setBounds(120, 110, 150, 30);
        calcBtn.addActionListener(this);
        add(calcBtn);

        resultField = new JTextField();
        resultField.setBounds(80, 160, 220, 30);
        resultField.setEditable(false);
        add(resultField);

        setVisible(true);
    }

    public void actionPerformed(ActionEvent e) {
        String product = (String) combo.getSelectedItem();
        int qty = Integer.parseInt(qtyField.getText());
        int price = 0;

        if (product.equals("Pen")) price = 10;
        else if (product.equals("Ruler")) price = 20;
        else if (product.equals("Notebook")) price = 50;

        int total = qty * price;
        resultField.setText("Total Bill = Rs. " + total);
    }

    public static void main(String[] args) {
        new ProductBill();
    }
}
```

Output:


C:\Windows\System32\cmd.exe - java ProductBill
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac ProductBill.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java ProductBill
Product Billing
Select Product:
Pen
Quantity:
5
Calculate Bill
Total Bill = Rs. 50


C:\Windows\System32\cmd.exe - java ProductBill
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac ProductBill.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java ProductBill
Product Billing
Select Product:
Ruler
Quantity:
2
Calculate Bill
Total Bill = Rs. 40


C:\Windows\System32\cmd.exe - java ProductBill
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac ProductBill.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java ProductBill
Product Billing
Select Product:
Notebook
Quantity:
3
Calculate Bill
Total Bill = Rs. 150


C:\Windows\System32\cmd.exe - java ProductBill
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac ProductBill.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java ProductBill
Product Billing
Select Product:
Notebook
Pen
Ruler
Notebook
Quantity:
Calculate Bill
Total Bill = Rs. 150

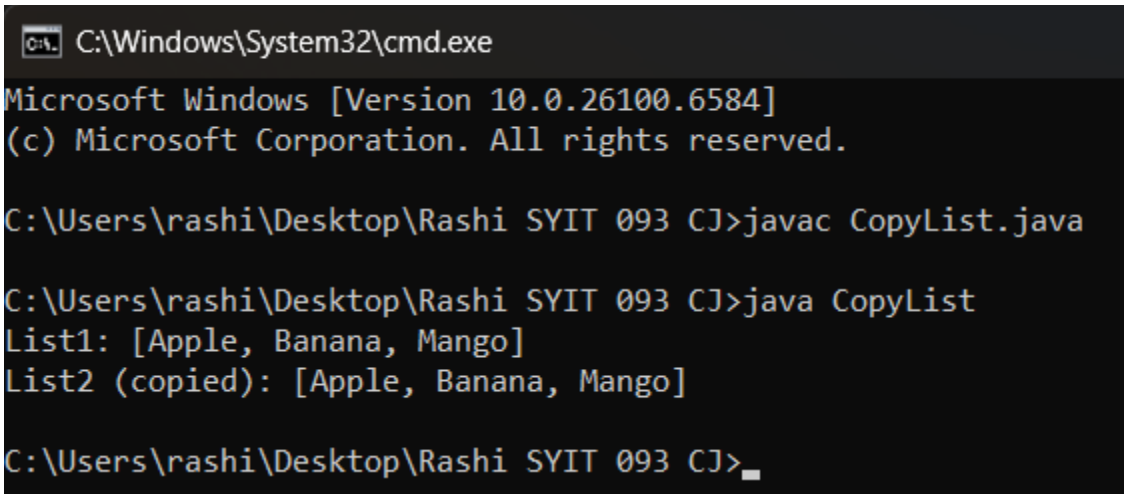
PRACTICAL 14

Q1.Copy content of one list to another.

Source Code:

```
import java.util.*;

class CopyList {
    public static void main(String[] args) {
        List<String> list1 = new ArrayList<>();
        list1.add("Apple");
        list1.add("Banana");
        list1.add("Mango");

        List<String> list2 = new ArrayList<>(list1);

        System.out.println("List1: " + list1);
        System.out.println("List2 (copied): " + list2);
    }
}
```

Output:



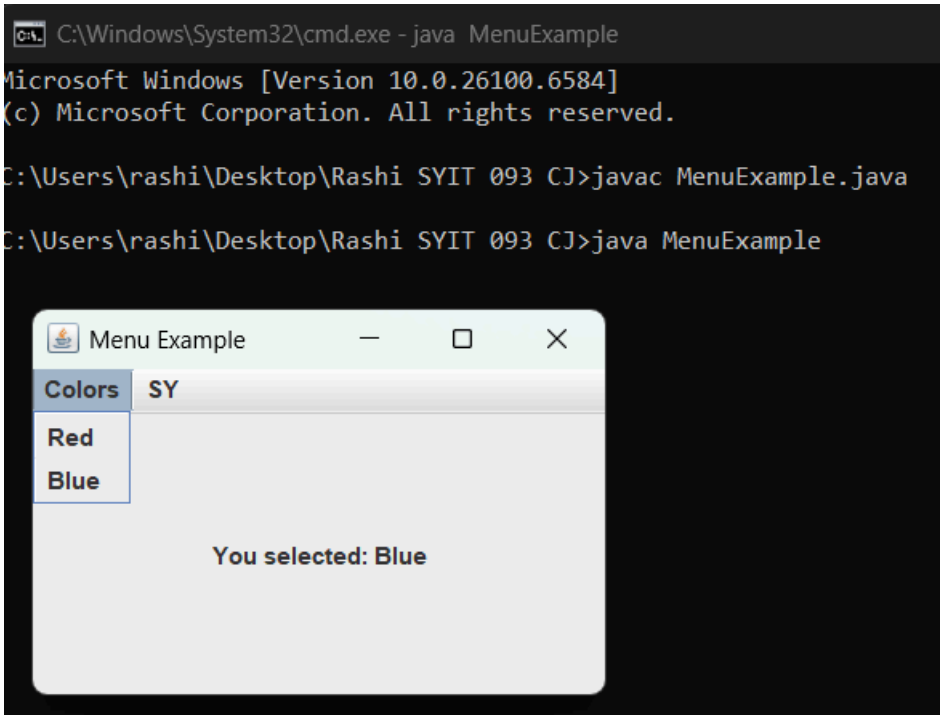
Q2.Write a program to create menu Colors and SY Create menu item in colors like red and blue also in SY Android and java respectively.

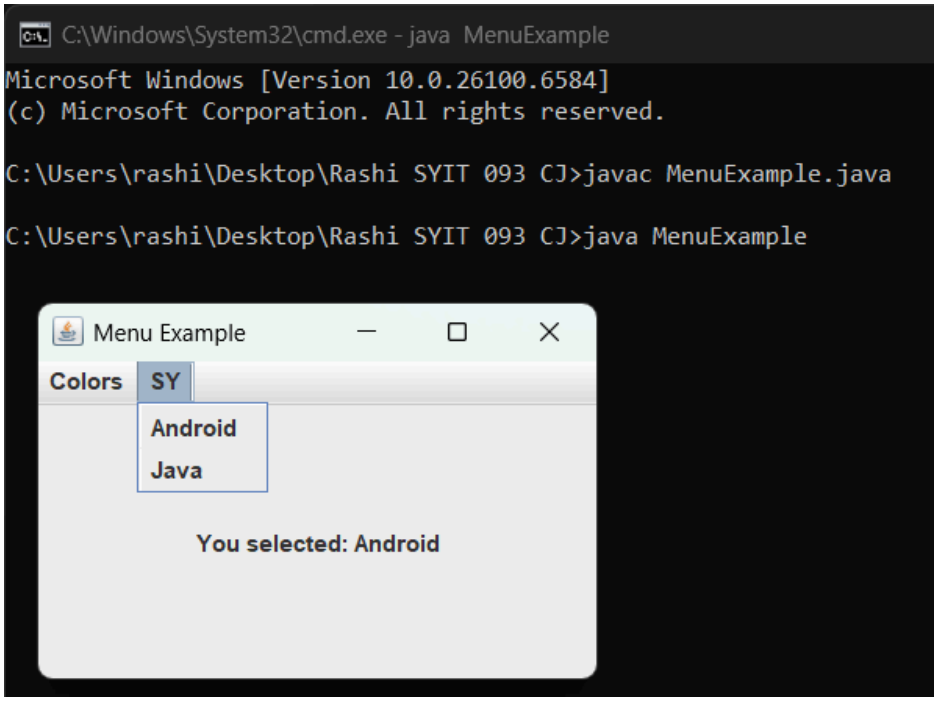
Source Code:

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

public class MenuExample extends JFrame implements ActionListener {
    JLabel label;

    public MenuExample() {
        setTitle("Menu Example");
        setSize(300, 200);
        setDefaultCloseOperation(EXIT_ON_CLOSE);

        JMenuBar mb = new JMenuBar();

        JMenu colors = new JMenu("Colors");
        JMenuItem red = new JMenuItem("Red");
        JMenuItem blue = new JMenuItem("Blue");
        colors.add(red);
        colors.add(blue);

        JMenu sy = new JMenu("SY");
        JMenuItem android = new JMenuItem("Android");
        JMenuItem java = new JMenuItem("Java");
        sy.add(android);
        sy.add(java);

        mb.add(colors);
        mb.add(sy);
        setJMenuBar(mb);

        label = new JLabel("Select from menu", SwingConstants.CENTER);
```

```
        add(label);

        red.addActionListener(this);
        blue.addActionListener(this);
        android.addActionListener(this);
        java.addActionListener(this);

        setVisible(true);
    }

    public void actionPerformed(ActionEvent e) {
        String item = e.getActionCommand();
        label.setText("You selected: " + item);
    }

    public static void main(String[] args) {
        new MenuExample();
    }
}
```

Output:


C:\Windows\System32\cmd.exe - java MenuExample
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac MenuExample.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java MenuExample
Menu Example
Colors
SY
Red
Blue
You selected: Blue


C:\Windows\System32\cmd.exe - java MenuExample
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>javac MenuExample.java
C:\Users\rashi\Desktop\Rashi SYIT 093 CJ>java MenuExample
Menu Example
Colors
SY
Android
Java
You selected: Android

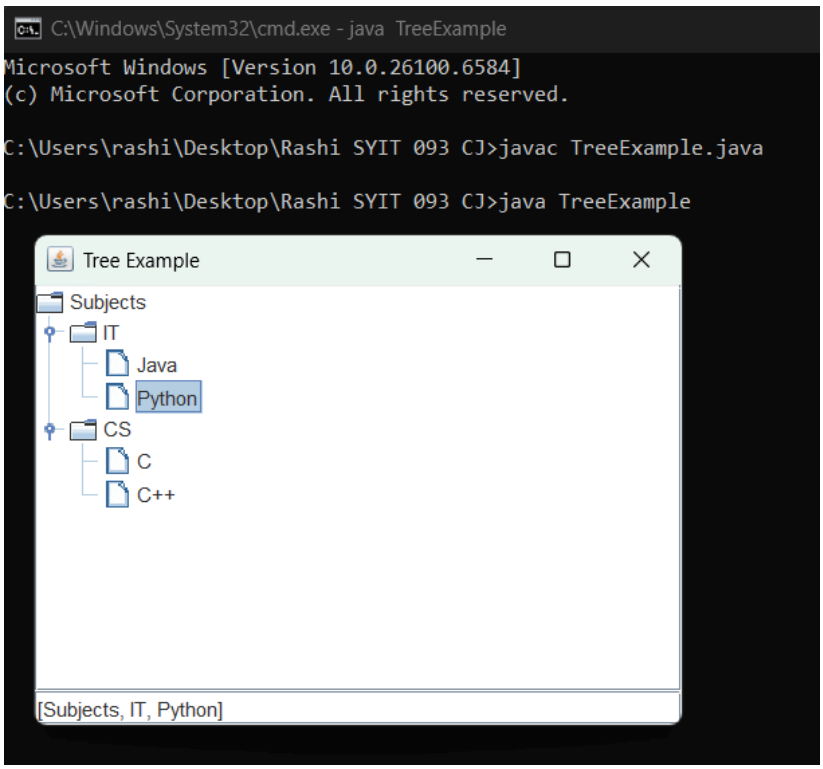
Q3.WAP to Display Tree and perform event handling. On selection of any node display path in textfield.

Source Code:

```
import javax.swing.*;
import javax.swing.tree.*;
import javax.swing.event.*;

class TreeExample extends JFrame {
    JTextField tf;

    TreeExample() {
        setTitle("Tree Example");
        setSize(400, 300);
        setDefaultCloseOperation(EXIT_ON_CLOSE);

        DefaultMutableTreeNode root = new
DefaultMutableTreeNode("Subjects");
        DefaultMutableTreeNode it = new DefaultMutableTreeNode("IT");
        DefaultMutableTreeNode cs = new DefaultMutableTreeNode("CS");
        root.add(it);
        root.add(cs);

        it.add(new DefaultMutableTreeNode("Java"));
        it.add(new DefaultMutableTreeNode("Python"));
        cs.add(new DefaultMutableTreeNode("C"));
        cs.add(new DefaultMutableTreeNode("C++"));

        JTree tree = new JTree(root);
        JScrollPane sp = new JScrollPane(tree);
        add(sp, "Center");
```

```
        tf = new JTextField();
        add(tf, "South");

        tree.addTreeSelectionListener(new TreeSelectionListener() {
            public void valueChanged(TreeSelectionEvent e) {
                TreePath path = e.getPath();
                tf.setText(path.toString());
            }
        });

        setVisible(true);
    }

    public static void main(String[] args) {
        new TreeExample();
    }
}
```

Output:

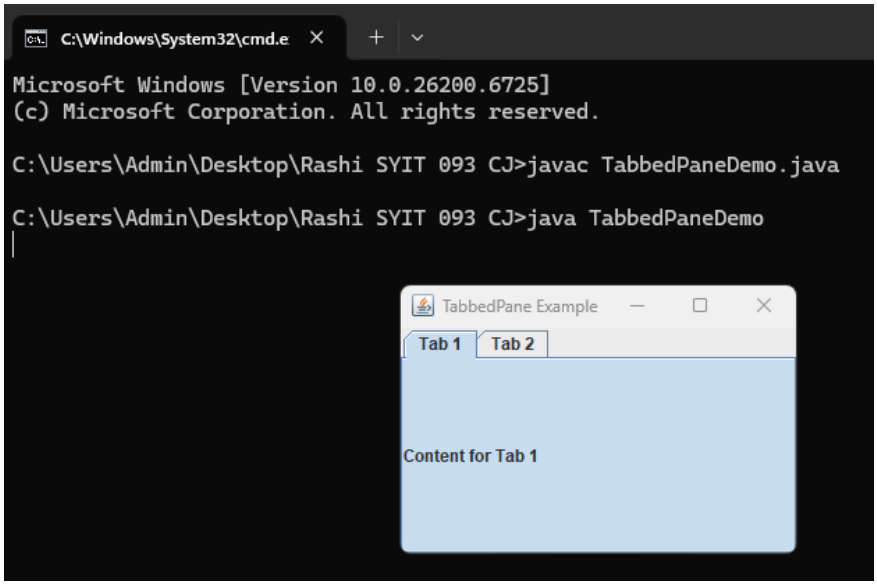


Q4.Demonstration of TabbedPane class

Source Code:

```
import javax.swing.*;

public class TabbedPaneDemo {
    public static void main(String[] args) {
        JFrame f = new JFrame("TabbedPane Example");
        JTabbedPane tp = new JTabbedPane();

        tp.add("Tab 1", new JLabel("Content for Tab 1"));
        tp.add("Tab 2", new JLabel("Content for Tab 2"));

        f.add(tp);
        f.setSize(300, 200);
        f.setVisible(true);
    }
}
```

Output:



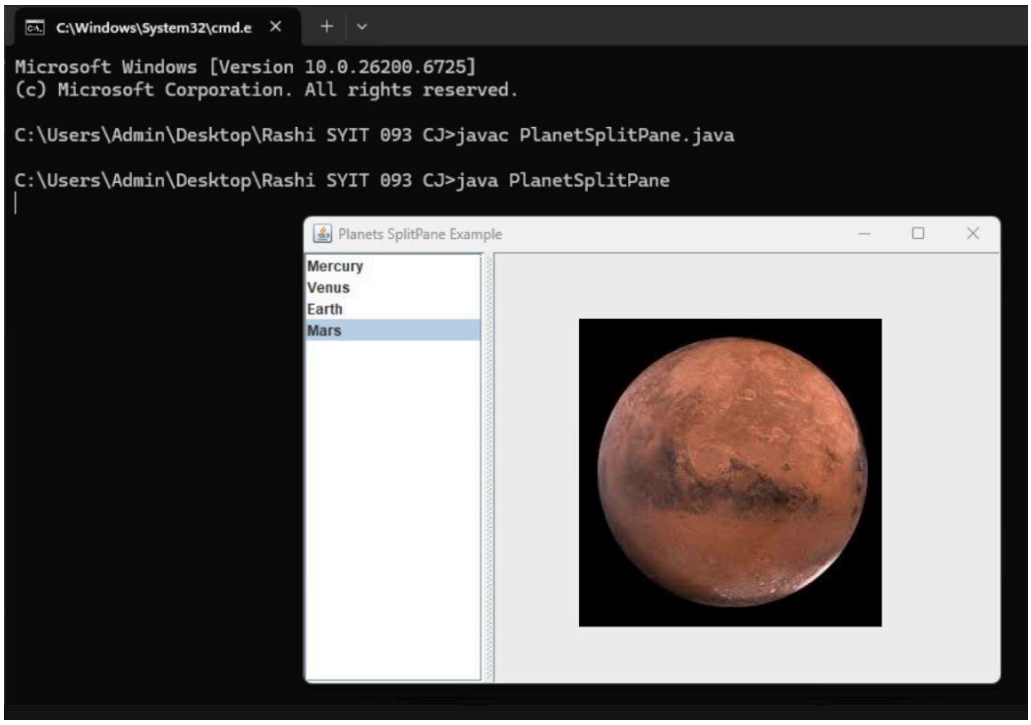
Q5.Write a program To develop a Java Program using Split pane to demonstrate a screen divided into two parts, one part contains the names of planets and another displays the image of the planet. When the user selects the planet name from the left screen, the appropriate image of the planet is displayed on the right screen.

Source Code:

```
import javax.swing.*;
import javax.swing.event.*;
import java.awt.*;
public class PlanetSplitPane extends JFrame {
    JLabel imageLabel;
    public PlanetSplitPane() {
        String[] planets = {"Mercury", "Venus", "Earth", "Mars"};
        JList<String> planetList = new JList<>(planets);
        JScrollPane listScroll = new JScrollPane(planetList);
        imageLabel = new JLabel("Select a planet", JLabel.CENTER);
        imageLabel.setFont(new Font("Arial", Font.BOLD, 16));
        JSplitPane splitPane = new
JSplitPane(JSplitPane.HORIZONTAL_SPLIT, listScroll, imageLabel);
        splitPane.setDividerLocation(150);
        add(splitPane);
        planetList.addListSelectionListener(e -> {
            if (!e.getValueIsAdjusting()) {
```

```
        String selected = planetList.getSelectedValue();
                ImageIcon icon = new ImageIcon("images/" +
selected.toLowerCase() + ".jpg");
                imageLabel.setIcon(icon);
                imageLabel.setText("");
            }
        });
        setTitle("Planets SplitPane Example");
        setSize(600, 400);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setVisible(true);
    }
    public static void main(String[] args) {
        new PlanetSplitPane();
    }
}
```

Output:



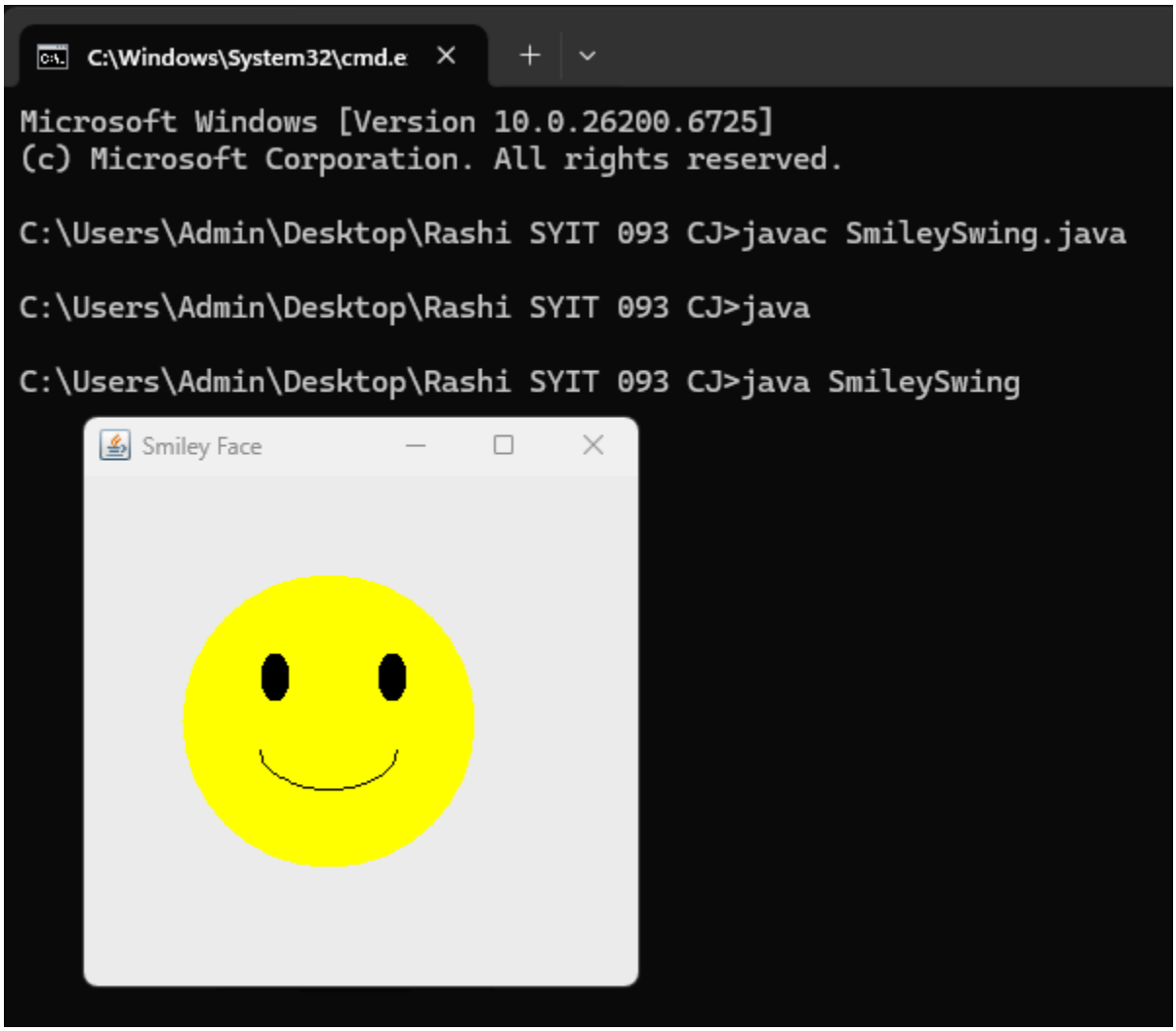
Q6.Write a program in Java to draw a smiley using an applet.

Source Code:

```
import javax.swing.*;

import javax.swing.*;

import java.awt.*;

public class SmileySwing extends JPanel {

    public void paintComponent(Graphics g) {

        super.paintComponent(g);

        g.setColor(Color.yellow);

        g.fillOval(50, 50, 150, 150);

        g.setColor(Color.black);

        g.fillOval(90, 90, 15, 25);
```

```
        g.fillOval(150, 90, 15, 25);
        g.drawArc(90, 120, 70, 40, 0, -180);
    }
    public static void main(String[] args) {
        JFrame f = new JFrame("Smiley Face");
        f.add(new SmileySwing());
        f.setSize(300, 300);
        f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        f.setVisible(true);
    }
}
```

Output:


C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.26200.6725]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ>javac SmileySwing.java
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ>java
C:\Users\Admin\Desktop\Rashi SYIT 093 CJ>java SmileySwing
Smiley Face