

PROGRAM -1

```
import java.util.*;

public class Program2 {

    public static void main(String[] args) {

        Scanner sc =new Scanner(System.in);

        int a=sc.nextInt();

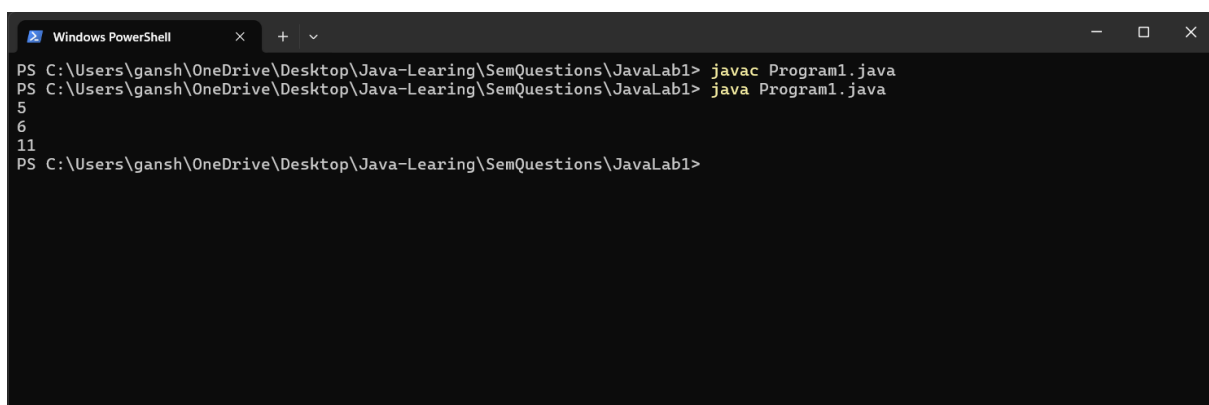
        int b=sc.nextInt();

        int c=a+b;

        System.out.print(c);

    }

}
```



```
Windows PowerShell
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> javac Program1.java
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> java Program1.java
5
6
11
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1>
```

PROGRAM-2

```
import java.util.*;

public class Program2 {

    public static void main(String[] args) {

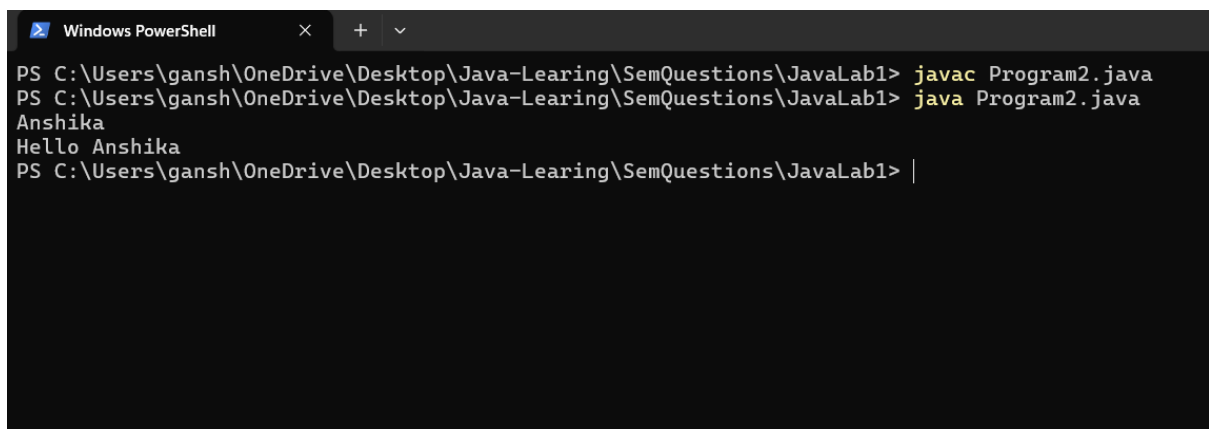
        Scanner sc=new Scanner(System.in);

        String a=sc.nextLine();

        System.out.print("Hello "+a);

    }

}
```

A screenshot of a Windows PowerShell terminal window. The title bar shows 'Windows PowerShell' with standard window controls. The terminal content shows the following sequence of commands and output:
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> javac Program2.java
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> java Program2.java
Anshika
Hello Anshika
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> |
The output 'Anshika' and 'Hello Anshika' corresponds to the input and print statement in the code above.

PROGRAM-3

```
import java.util.Scanner;

public class Program3 {

    public static void main(String[] args) {

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

```
System.out.println("Enter coefficient");

System.out.print("a: ");

double a = scanner.nextDouble();

System.out.print("b: ");

double b = scanner.nextDouble();

System.out.print("c: ");

double c = scanner.nextDouble();


double discriminant = b * b - 4 * a * c;


if (discriminant > 0) {

    double root1 = (-b + Math.sqrt(discriminant)) / (2 * a);
    double root2 = (-b - Math.sqrt(discriminant)) / (2 * a);
    System.out.println("Two distinct real roots:");
    System.out.println("Root 1 = " + root1);
    System.out.println("Root 2 = " + root2);
} else if (discriminant == 0) {

    double root = -b / (2 * a);
    System.out.println("One repeated real root:");
    System.out.println("Root = " + root);
} else {

    double realPart = -b / (2 * a);
    double imaginaryPart = Math.sqrt(-discriminant) / (2 * a);
    System.out.println("Two complex (imaginary) roots:");
    System.out.println("Root 1 = " + realPart + " + " + imaginaryPart
```

```

+ "i");

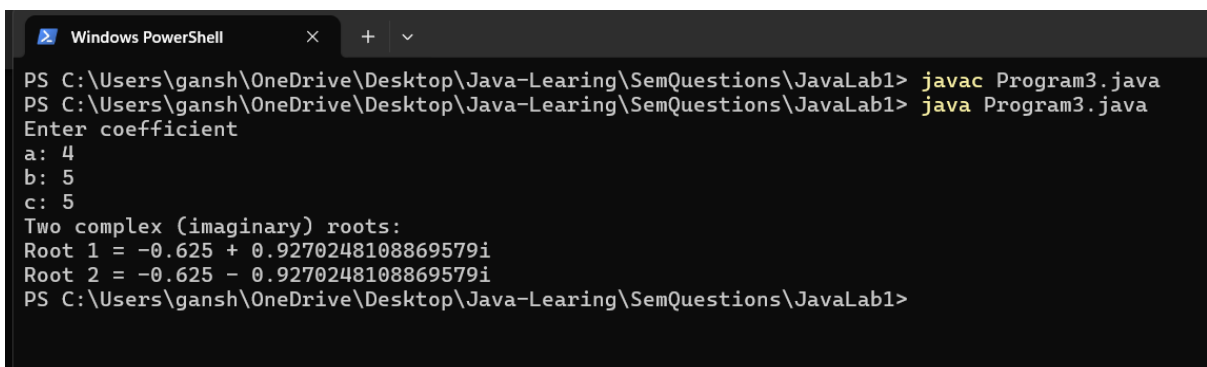
        System.out.println("Root 2 = " + realPart + " - " + imaginaryPart
+ "i");

    }

}

}

```



```

Windows PowerShell
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> javac Program3.java
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> java Program3.java
Enter coefficient
a: 4
b: 5
c: 5
Two complex (imaginary) roots:
Root 1 = -0.625 + 0.9270248108869579i
Root 2 = -0.625 - 0.9270248108869579i
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1>

```

Program-4

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

```
public class Fibonacci {
```

```
    static void Fibo(int n) {
```

```
        int num1 = 0, num2 = 1;
```

```
        System.out.println("Fibonacci Series up to " + n + " terms:");
```

```
        for (int i = 1; i <= n; ++i) {
```

```
            System.out.print(num1 + " ");
```

```
            int sum = num1 + num2;
```

```
            num1 = num2;
```

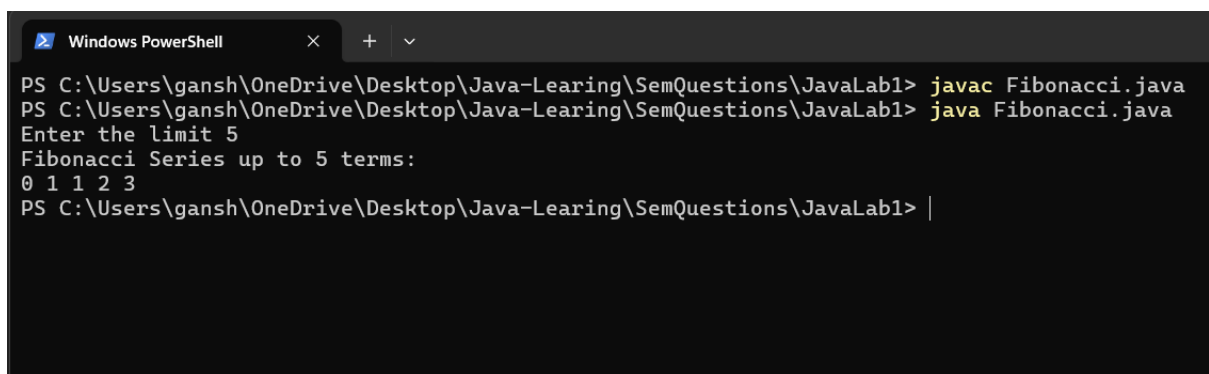
```

        num2 = sum;
    }
}

public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.print("Enter the limit ");
    int n = scanner.nextInt();

    Fibo(n);
}
}

```



The screenshot shows a Windows PowerShell window with the following commands and output:

```

PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> javac Fibonacci.java
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> java Fibonacci.java
Enter the limit 5
Fibonacci Series up to 5 terms:
0 1 1 2 3
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> |

```

Program-5

```

import java.util.Scanner;

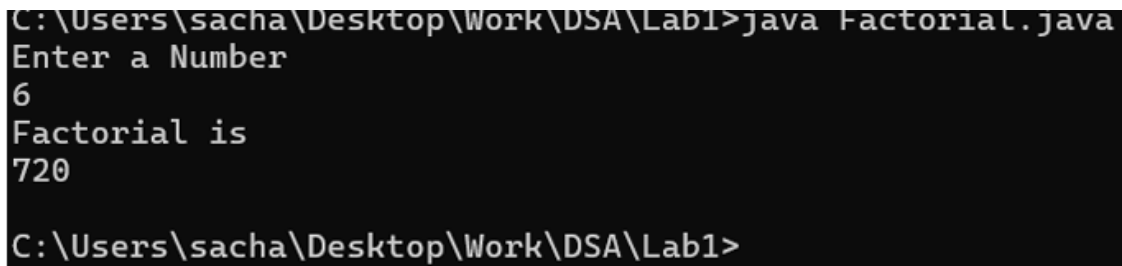
public class Factorial {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter a Number");
        int n=scanner.nextInt();
        int ans=1;
    }
}

```

```

for(int i=1;i<=n;i++){
ans=ans*i;
}
System.out.println("Factorial is");
System.out.println(ans);
}}

```



```

C:\Users\sacha\Desktop\Work\DSA\Lab1>java Factorial.java
Enter a Number
6
Factorial is
720
C:\Users\sacha\Desktop\Work\DSA\Lab1>

```

Program 6

```

import java.util.Scanner;

public class Calculator {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the first number: ");

        double num1 = scanner.nextDouble();

        System.out.print("Enter the operation (+, -, *, /): ");

        String operator = scanner.next();

        System.out.print("Enter the second number: ");

        double num2 = scanner.nextDouble();

        double result;

        if (operator.equals("+")) {

            result = num1 + num2;

            System.out.println("Result: " + result);

        } else if (operator.equals("-")) {

```

```

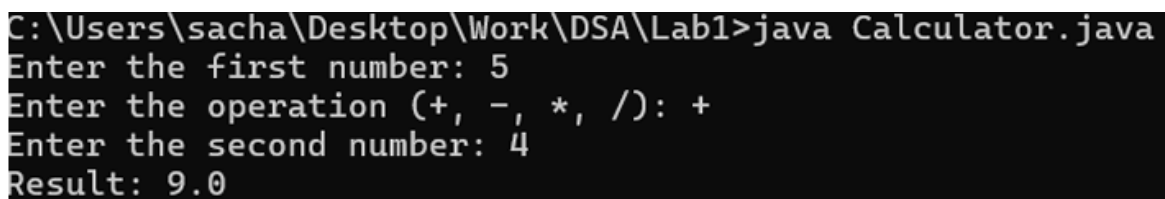
result = num1 - num2;

System.out.println("Result: " + result);
} else if (operator.equals("*")) {
result = num1 * num2;

System.out.println("Result: " + result);
} else if (operator.equals("/")) {
if (num2 != 0) {
result = num1 / num2;

System.out.println("Result: " + result);
} else {
System.out.println("Error: Division by zero is not allowed.");
}
} else {
System.out.println("Error: Invalid operator entered.");
}
}
scanner.close();
}
}

```



```

C:\Users\sacha\Desktop\Work\DSA\Lab1>java Calculator.java
Enter the first number: 5
Enter the operation (+, -, *, /): +
Enter the second number: 4
Result: 9.0

```

Program 7

```

import java.util.Scanner;

public class NumberCheck {

public static void main(String[] args) {

```

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

System.out.print("Enter the first number: ");

int num1 = scanner.nextInt();

System.out.print("Enter the second number: ");

int num2 = scanner.nextInt();

String num1Str = String.valueOf(num1);

String num2Str = String.valueOf(num2);

boolean isPresent = true;

for (char ch : num2Str.toCharArray()) {

    if (num1Str.indexOf(ch) == -1) {

        isPresent = false;

        break;

    }

}

if (isPresent) {

    System.out.println(num2 + " is present in " + num1);

} else {

    System.out.println(num2 + " is NOT present in " + num1);

}

scanner.close();

}
```

```
C:\Users\sacha\Desktop\Work\DSA\Lab1>java NumberCheck.java
Enter the first number: 22
Enter the second number: 33
33 is NOT present in 22
```


Program 8

```
import java.util.Scanner;

public class CharacterCount {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a string: ");

        String inputString = scanner.nextLine();

        int digitCount = 0;

        int letterCount = 0;

        int specialCharCount = 0;

        for (char ch : inputString.toCharArray()) {

            if (Character.isDigit(ch)) {

                digitCount++;

            } else if (Character.isLetter(ch)) {

                letterCount++;

            } else {

                specialCharCount++;

            }

        }

        System.out.println("Number of digits: " + digitCount);

        System.out.println("Number of alphabetic characters: " + letterCount);

        System.out.println("Number of special characters: " +

            specialCharCount);

        scanner.close();

    }

}
```

```
C:\Users\sacha\Desktop\Work\DSA\Lab1>java CharacterCount.java
Enter a string: r2d8
Number of digits: 2
Number of alphabetic characters: 2
Number of special characters: 0
```

Program 9

```
import java.util.Scanner;

public class CharacterTransform {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a string: ");

        String inputString = scanner.nextLine();

        StringBuilder transformedString = new StringBuilder();

        for (int i = 0; i < inputString.length(); i++) {

            char ch = inputString.charAt(i);

            if (Character.isLetterOrDigit(ch)) {

                ch++;

            }

            if (Character.isUpperCase(ch)) {

                ch = Character.toLowerCase(ch);

            } else if (Character.isLowerCase(ch)) {

                ch = Character.toUpperCase(ch);

            }

            transformedString.append(ch);

        }

        System.out.println("Transformed string: " + transformedString);

    }

}
```

```
        scanner.close();
    }
}
```

```
C:\Users\sacha\Desktop\Work\DSA\Lab1>java CharacterTransform.java
Enter a string: ramu
Transformed string: SBNV
```

Program-10

```
import java.util.Scanner;

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

        int maxAttempts = 3;
        String correctUsername = "admin";
        String correctPassword = "password123";

        boolean loggedIn = false;

        for (int attempt = 1; attempt <= maxAttempts; attempt++) {
            System.out.print("Enter username: ");
            String username = scanner.nextLine();

            System.out.print("Enter password: ");
            String password = scanner.nextLine();
```

```

        if (username.equals(correctUsername) && password.equals(correctPassword)) {

            loggedIn = true;

            break;

        } else {

            System.out.println("Incorrect username or password. Attempts left: " +
(maxAttempts - attempt));

        }

    }

    if (loggedIn) {

        System.out.println("Welcome, " + correctUsername + "!");

    } else {

        System.out.println("Maximum login attempts reached. Program will terminate.");

    }

    scanner.close();

}

}

```

```

Windows PowerShell
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> javac LoginSystem.java
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> java LoginSystem.java
Enter username: anshika
Enter password: 098
Incorrect username or password. Attempts left: 2
Enter username: admin
Enter password: password123
Welcome, admin!
PS C:\Users\gansh\OneDrive\Desktop\Java-Learning\SemQuestions\JavaLab1> |

```