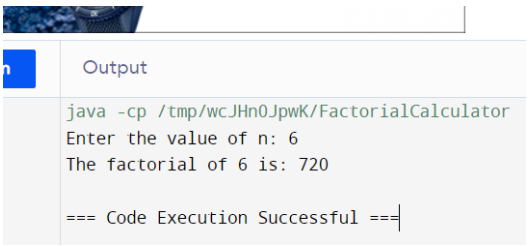
ASSIGNMENT-8 DATE-23/7/24

1.Write a program to calculate the factorial of number using recursive function.
Sample Input & Output:
Enter the value of n: 6
Sample Input & Output:
The factorial of 6 is: 720
CODE:

```
import java.util.Scanner;
public class FactorialCalculator {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the value of n: ");
        int n = scanner.nextInt();
        int factorial = calculateFactorial(n);
        System.out.println("The factorial of " + n + " is: " + factorial);
    }
    public static int calculateFactorial(int n) {
        if (n == 0) {
            return 1;
        } else {
            return n * calculateFactorial(n - 1);
        }
    }
}
```

OUTPUT:

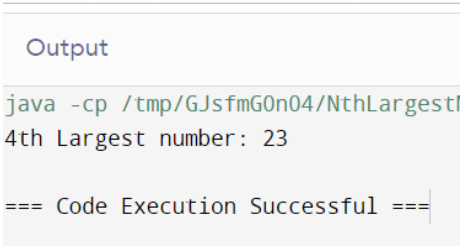


2.Write a Program to Find the Nth Largest Number in a array.
Sample Input:
List : {14, 67, 48, 23, 5, 62}
N = 4
Sample Output:
4th Largest number: 23

CODE:

```
import java.util.Arrays;
public class NthLargestNumber {
   public static void main(String[] args) {
      int[] arr = {14, 67, 48, 23, 5, 62};
      int n = 4;
      Arrays.sort(arr);
      System.out.println(n + "th Largest number: " + arr[arr.length - n]);
   }
}
```

OUTPUT:



3. Write a program to convert the Binary to Decimal, Octal

Sample Input:

Given Number: 1101

Sample Output:

Decimal Number: 13

CODE:

```
import java.util.Scanner;
public class BinaryToDecimalOctal {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter a binary number: ");
      String binaryString = scanner.nextLine();
      int decimal = Integer.parseInt(binaryString, 2);
      System.out.println("Decimal Number: " + decimal);
      int decimalForOctal = Integer.parseInt(binaryString, 2);
      String octalString = Integer.toOctalString(decimalForOctal);
      System.out.println("Octal Number: " + octalString)
      scanner.close();
   }
}
```

OUTPUT:

```
Output

java -cp /tmp/5fnFeOxjr9/BinaryToDecim
Enter a binary number: 1001
Decimal Number: 9
Octal Number: 11

=== Code Execution Successful ===
```

4. Write a program to find the number of special characters in the given statement
Sample Input:
Given statement: Modi Birthday @ September 17, #&$% is the wishes code for him.
Sample Output:
Number of special Characters: 5

CODE:

```
public class SpecialCharactersCounter {
   public static void main(String[] args) {
      String statement = "Modi Birthday @ September 17, #&$% is the wishes code for him.";
      int specialCharCount = 0;

      for (int i = 0; i < statement.length(); i++) {
         if (!Character.isLetterOrDigit(statement.charAt(i)) &&
!Character.isWhitespace(statement.charAt(i))) {
            specialCharCount++;
         }
      }

      System.out.println("Number of Special Characters: " + specialCharCount);
   }
}
```

OUTPUT:

```
Output

java -cp /tmp/6zUeIdwNhV/SpecialCharac
Number of Special Characters: 7

=== Code Execution Successful ===
```

1. 5. Write a Program to Remove the Duplicate Items from a array.

Sample Input:
Enter the number of elements in array:7
Enter element1:10
Enter element2:20

Enter element3:20
Enter element4:30
Enter element5:40
Enter element6:40
Enter element7:50
Sample Output:
Non-duplicate items:
[10, 20, 30, 40, 50]

CODE:

```
import java.util.*;
public class RemoveDuplicatesFromArray {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter the number of elements in the array: ");
      int n = scanner.nextInt();
      int[] arr = new int[n];
      Set<Integer> uniqueElements = new HashSet<>();
      for (int i = 0; i < n; i++) {
         System.out.print("Enter element" + (i + 1) + ": ");
         int num = scanner.nextInt();
         arr[i] = num;
         uniqueElements.add(num);
      }
      System.out.println("Non-duplicate items:");
      System.out.println(uniqueElements);
   }
}
```

OUTPUT:

Output

```
java -cp /tmp/XtxiTI4uBr/RemoveDuplicatesFromArr
Enter the number of elements in the array: 3
Enter element1: 1
Enter element2: 2
Enter element3: 4
Non-duplicate items:
[1, 2, 4]
```