

ASSIGNMENT-2

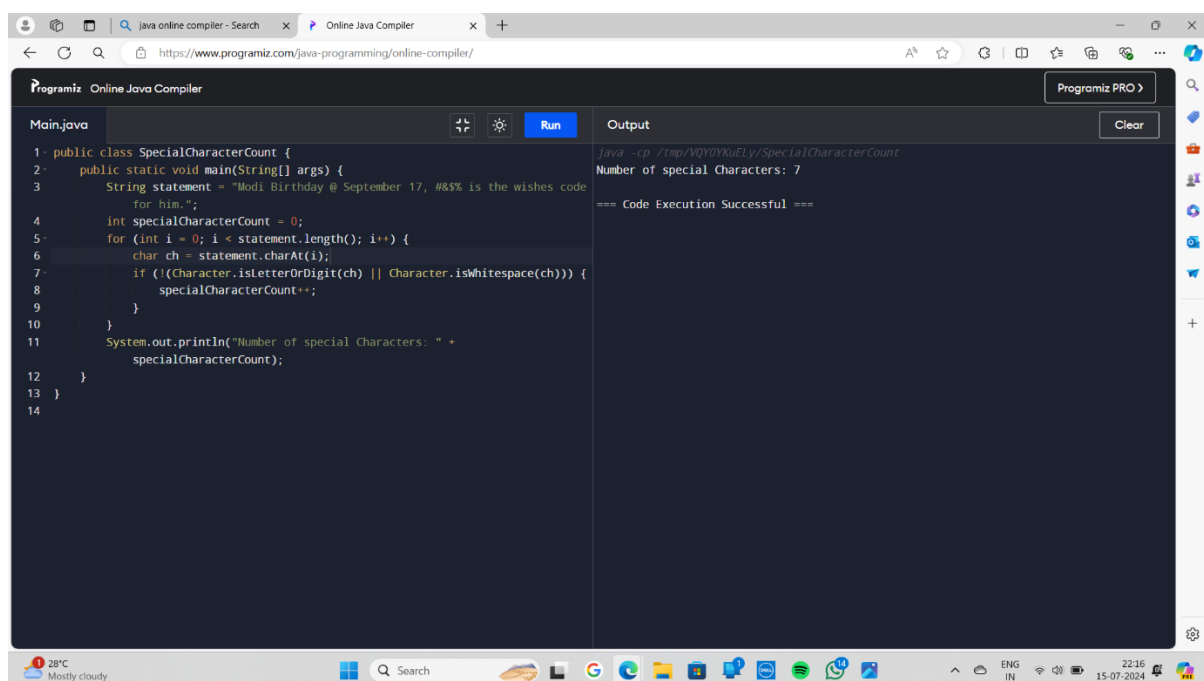
1. Write a program to find the number of special characters in the given statement

Sample Input:

Given statement: Modi Birthday @ September 17, #&\$% is the wishes code for him.

Sample Output:

Number of special Characters: 5



The screenshot shows a web browser window with the URL <https://www.programiz.com/java-programming/online-compiler/>. The page title is "Programiz Online Java Compiler". The code editor on the left contains the following Java code:

```
1 public class SpecialCharacterCount {
2     public static void main(String[] args) {
3         String statement = "Modi Birthday @ September 17, #&$% is the wishes code
4         for him.";
5         int specialCharacterCount = 0;
6         for (int i = 0; i < statement.length(); i++) {
7             char ch = statement.charAt(i);
8             if (!(Character.isLetterOrDigit(ch) || Character.isWhitespace(ch))) {
9                 specialCharacterCount++;
10            }
11        }
12        System.out.println("Number of special Characters: " +
13        specialCharacterCount);
14    }
15 }
```

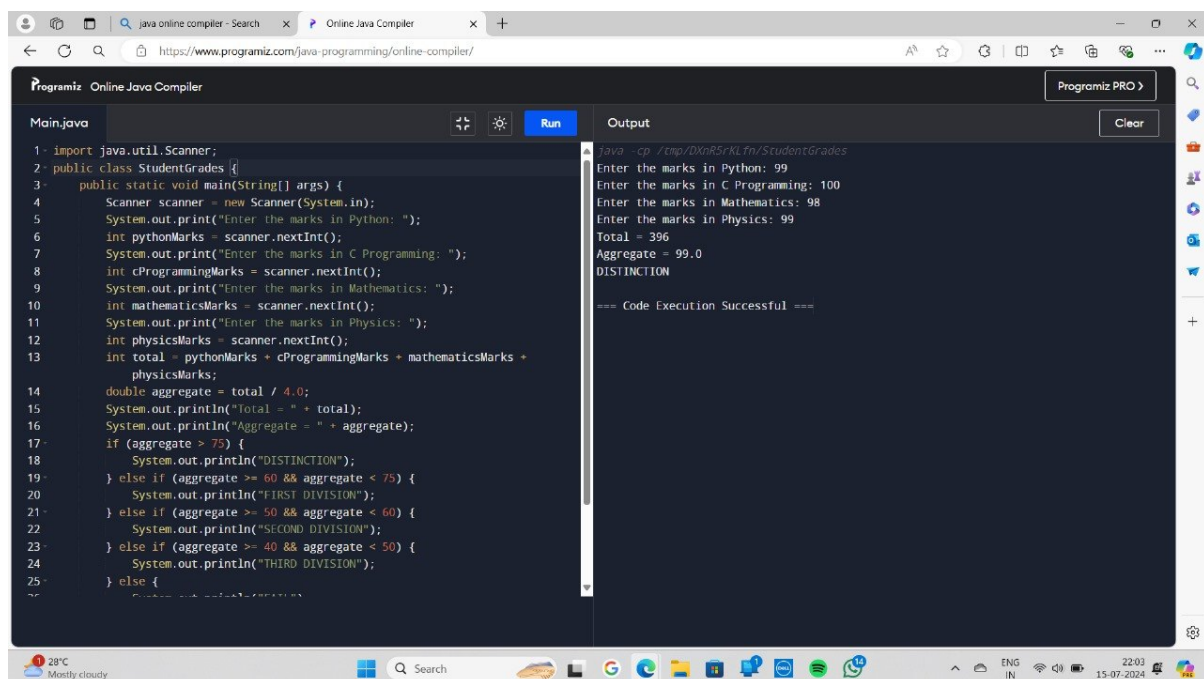
The "Run" button is highlighted in blue. The output window on the right shows the following text:

```
java -cp /tmp/VQY0YKuELy/SpecialCharacterCount
Number of special Characters: 7
=== Code Execution Successful ===
```

The bottom of the browser window shows a Windows taskbar with the date 15-07-2024 and time 22:16.

2. Write a program to enter the marks of a student in four subjects. Then calculate the total and aggregate, display the grade

obtained by the student. If the student scores an aggregate greater than 75%, then the grade is Distinction. If aggregate is $60 \geq$ and < 75 , then the grade is First Division. If aggregate is $50 \geq$ and < 60 , then the grade is Second Division. If aggregate is $40 \geq$ and < 50 , then the grade is Third Division. Else the grade is Fail



```
1- import java.util.Scanner;
2- public class StudentGrades {
3-     public static void main(String[] args) {
4-         Scanner scanner = new Scanner(System.in);
5-         System.out.print("Enter the marks in Python: ");
6-         int pythonMarks = scanner.nextInt();
7-         System.out.print("Enter the marks in C Programming: ");
8-         int cProgrammingMarks = scanner.nextInt();
9-         System.out.print("Enter the marks in Mathematics: ");
10-        int mathematicsMarks = scanner.nextInt();
11-        System.out.print("Enter the marks in Physics: ");
12-        int physicsMarks = scanner.nextInt();
13-        int total = pythonMarks + cProgrammingMarks + mathematicsMarks +
            physicsMarks;
14-        double aggregate = total / 4.0;
15-        System.out.println("Total = " + total);
16-        System.out.println("Aggregate = " + aggregate);
17-        if (aggregate > 75) {
18-            System.out.println("DISTINCTION");
19-        } else if (aggregate >= 60 && aggregate < 75) {
20-            System.out.println("FIRST DIVISION");
21-        } else if (aggregate >= 50 && aggregate < 60) {
22-            System.out.println("SECOND DIVISION");
23-        } else if (aggregate >= 40 && aggregate < 50) {
24-            System.out.println("THIRD DIVISION");
25-        } else {
26-            System.out.println("FAIL");
27-        }
28-    }
29- }
```

Output

```
java -cp /tmp/DXpR5rKlfn/StudentGrades
Enter the marks in Python: 99
Enter the marks in C Programming: 100
Enter the marks in Mathematics: 98
Enter the marks in Physics: 99
Total = 396
Aggregate = 99.0
DISTINCTION

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

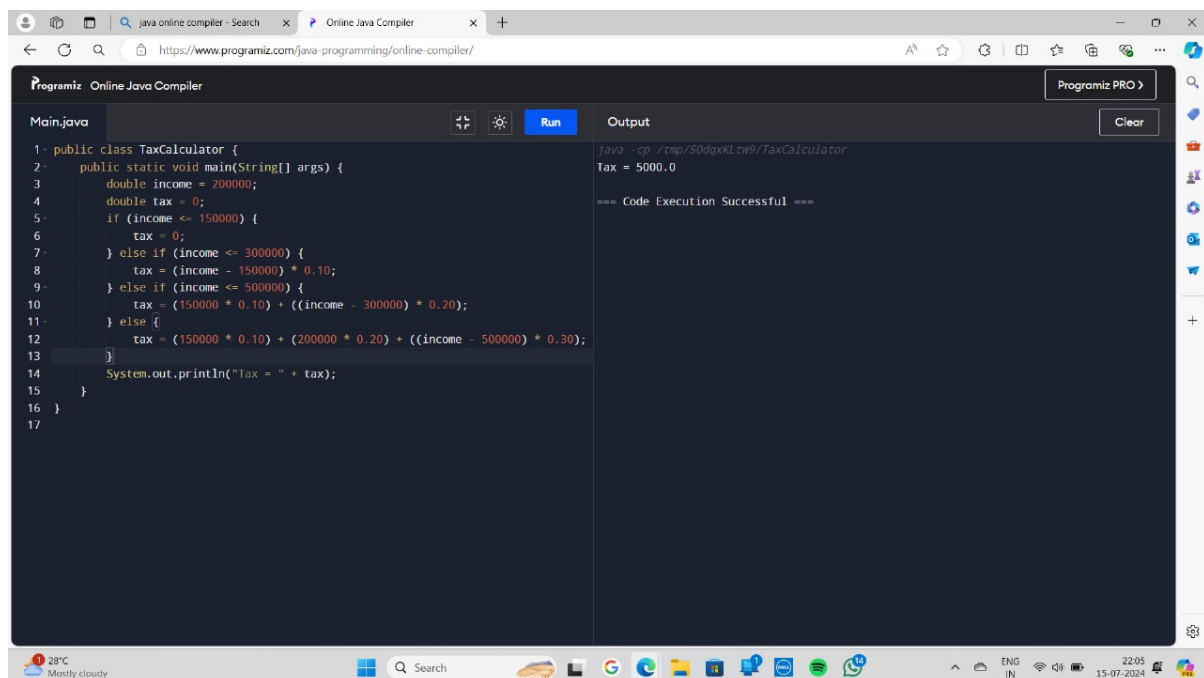
3. Write a program to calculate tax given the following conditions:

a. If income is less than or equal to 1,50,000 then no tax

b.If taxable income is 1,50,001 – 3,00,000 the charge 10% tax

c.If taxable income is 3,00,001 – 5,00,000 the charge 20% tax

d.If taxable income is above 5,00,001 then charge 30% tax



The screenshot shows a web browser with the URL <https://www.programiz.com/java-programming/online-compiler/>. The page title is "Programiz Online Java Compiler". The code editor on the left contains the following Java code:

```
1 public class TaxCalculator {
2     public static void main(String[] args) {
3         double income = 200000;
4         double tax = 0;
5         if (income <= 150000) {
6             tax = 0;
7         } else if (income <= 300000) {
8             tax = (income - 150000) * 0.10;
9         } else if (income <= 500000) {
10            tax = (150000 * 0.10) + ((income - 300000) * 0.20);
11        } else {
12            tax = (150000 * 0.10) + (200000 * 0.20) + ((income - 500000) * 0.30);
13        }
14        System.out.println("Tax = " + tax);
15    }
16 }
17
```

The "Run" button is highlighted. The output panel on the right shows the following text:

```
java -cp /tmp/S0dpxKLtw9/TaxCalculator
Tax = 5000.0
=== Code Execution Successful ===
```

The bottom of the browser window shows a Windows taskbar with a search bar, several application icons, and a system tray displaying the date and time as 15-07-2024, 22:05.

4. Write a program to print the first n perfect numbers. (Hint Perfect number means a positive integer that is equal to the sum of its proper divisors)

Sample Input:

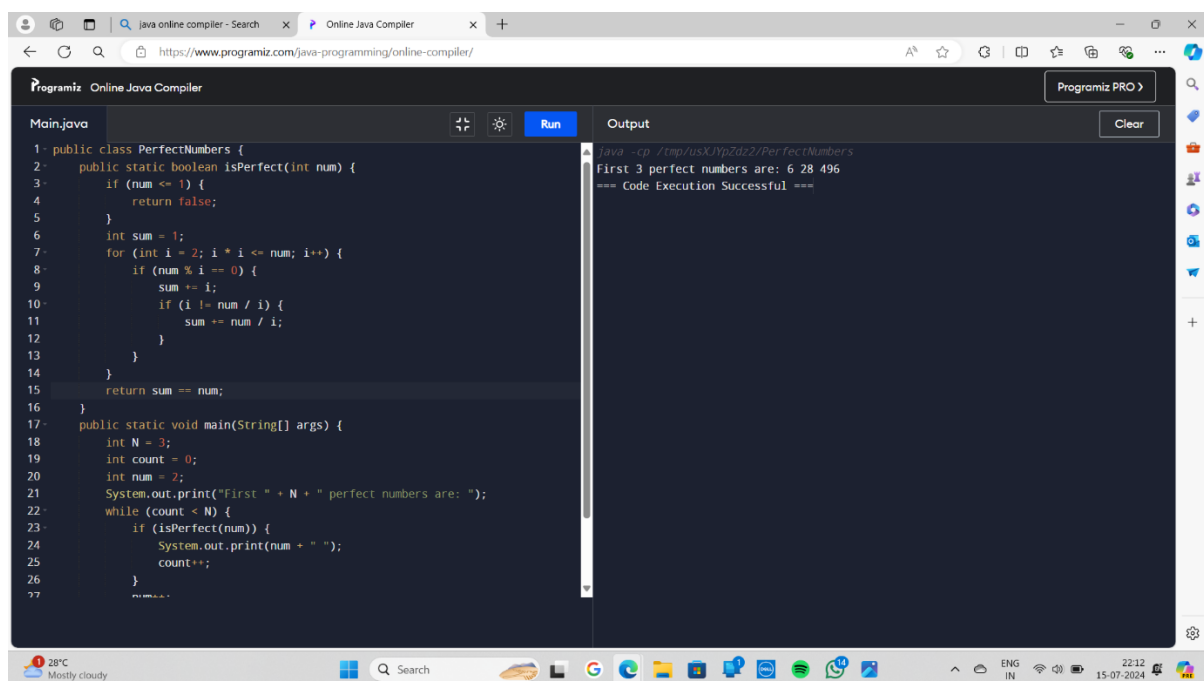
N = 3

Sample Output:

First 3 perfect numbers are: 6 , 28 , 496

Test Cases:

1. N = 0
2. N = 5
3. N = -2
4. N = -5
5. N = 0.2



The screenshot shows a web browser window with the URL <https://www.programiz.com/java-programming/online-compiler/>. The page title is "Programiz Online Java Compiler". The code editor on the left contains the following Java code:

```
1 public class PerfectNumbers {
2     public static boolean isPerfect(int num) {
3         if (num <= 1) {
4             return false;
5         }
6         int sum = 1;
7         for (int i = 2; i * i <= num; i++) {
8             if (num % i == 0) {
9                 sum += i;
10                if (i != num / i) {
11                    sum += num / i;
12                }
13            }
14        }
15        return sum == num;
16    }
17    public static void main(String[] args) {
18        int N = 3;
19        int count = 0;
20        int num = 2;
21        System.out.print("First " + N + " perfect numbers are: ");
22        while (count < N) {
23            if (isPerfect(num)) {
24                System.out.print(num + " ");
25                count++;
26            }
27            num++;
28        }
29    }
30 }
```

The output window on the right shows the command `java -cp ./tmp/usXJypZd22/PerfectNumbers` and the output `First 3 perfect numbers are: 6 28 496`, followed by `=== Code Execution Successful ===`. The browser's taskbar at the bottom shows the system clock as 22:12 on 15-07-2024.

5. Write a Program to Find the Nth Largest Number in a array.

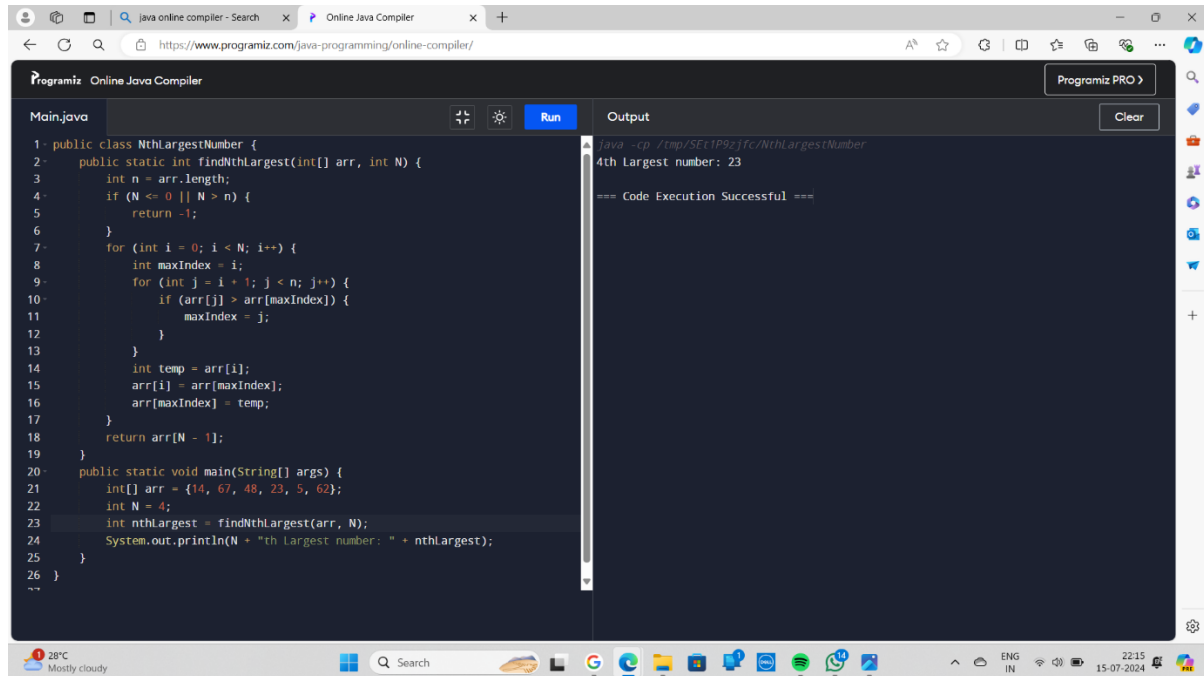
Sample Input:

List : {14, 67, 48, 23, 5, 62}

N = 4

Sample Output:

4th Largest number: 23



The screenshot shows a web browser window with the URL <https://www.programiz.com/java-programming/online-compiler/>. The browser tabs include "Java online compiler - Search" and "Online Java Compiler". The main content area is titled "Programiz Online Java Compiler" and features a "Run" button. The code editor displays the following Java code:

```
1 public class NthLargestNumber {
2     public static int findNthLargest(int[] arr, int N) {
3         int n = arr.length;
4         if (N <= 0 || N > n) {
5             return -1;
6         }
7         for (int i = 0; i < N; i++) {
8             int maxIndex = i;
9             for (int j = i + 1; j < n; j++) {
10                if (arr[j] > arr[maxIndex]) {
11                    maxIndex = j;
12                }
13            }
14            int temp = arr[i];
15            arr[i] = arr[maxIndex];
16            arr[maxIndex] = temp;
17        }
18        return arr[N - 1];
19    }
20    public static void main(String[] args) {
21        int[] arr = {14, 67, 48, 23, 5, 62};
22        int N = 4;
23        int nthLargest = findNthLargest(arr, N);
24        System.out.println(N + "th Largest number: " + nthLargest);
25    }
26 }
```

The output window on the right shows the command `java -cp /tmp/SEtIP9zjfc/NthLargestNumber` and the output `4th Largest number: 23`. Below the output, it states `=== Code Execution Successful ===`. The bottom of the browser window shows a Windows taskbar with a search bar, various application icons, and system information including the date and time (15-07-2024, 22:15).