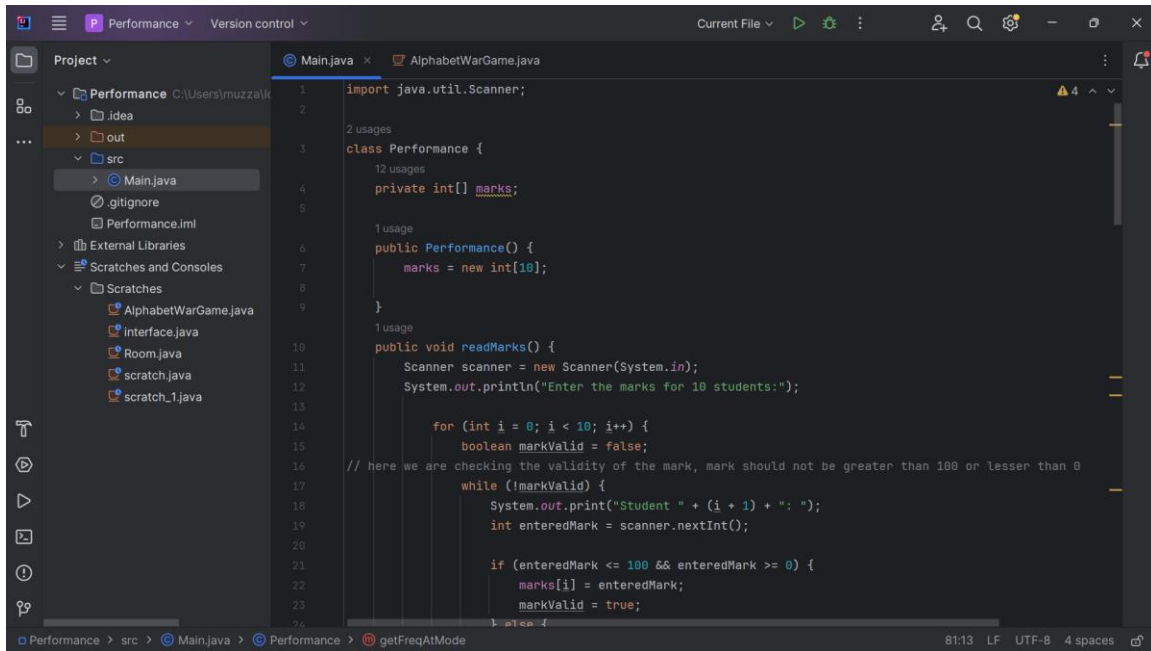
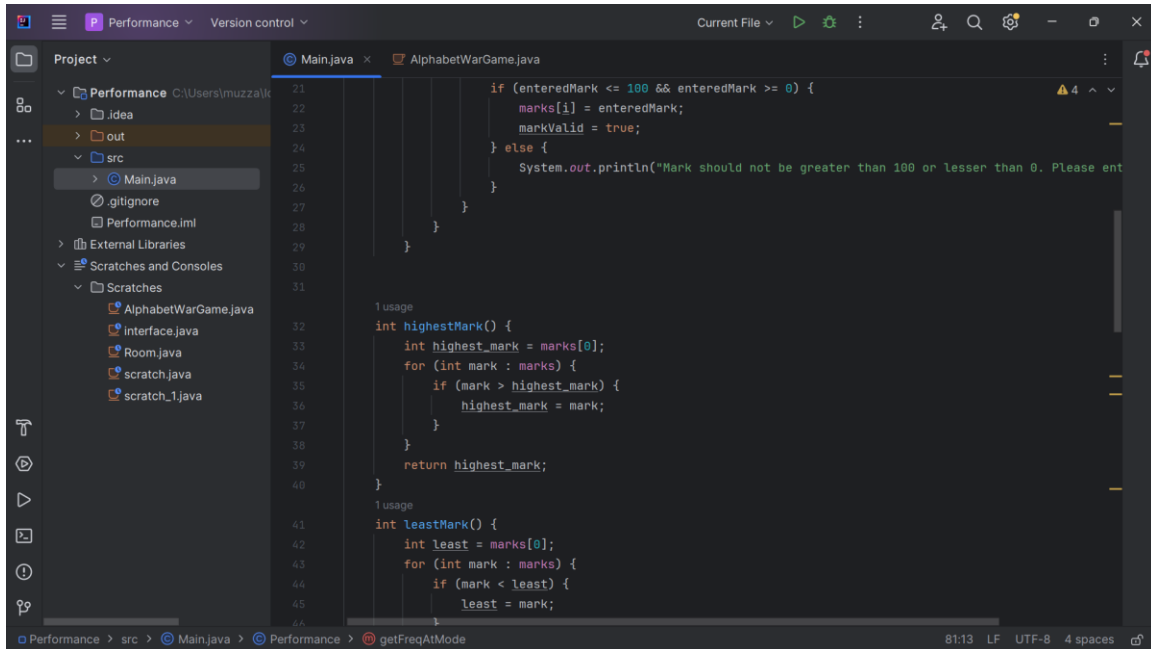


1ST PROGRAM:



```
1 import java.util.Scanner;
2
3 class Performance {
4     private int[] marks;
5
6     public Performance() {
7         marks = new int[10];
8     }
9
10    public void readMarks() {
11        Scanner scanner = new Scanner(System.in);
12        System.out.println("Enter the marks for 10 students:");
13
14        for (int i = 0; i < 10; i++) {
15            boolean markValid = false;
16            // here we are checking the validity of the mark, mark should not be greater than 100 or lesser than 0
17            while (!markValid) {
18                System.out.print("Student " + (i + 1) + ": ");
19                int enteredMark = scanner.nextInt();
20
21                if (enteredMark <= 100 && enteredMark >= 0) {
22                    marks[i] = enteredMark;
23                    markValid = true;
24                }
25            }
26        }
27    }
28 }
```



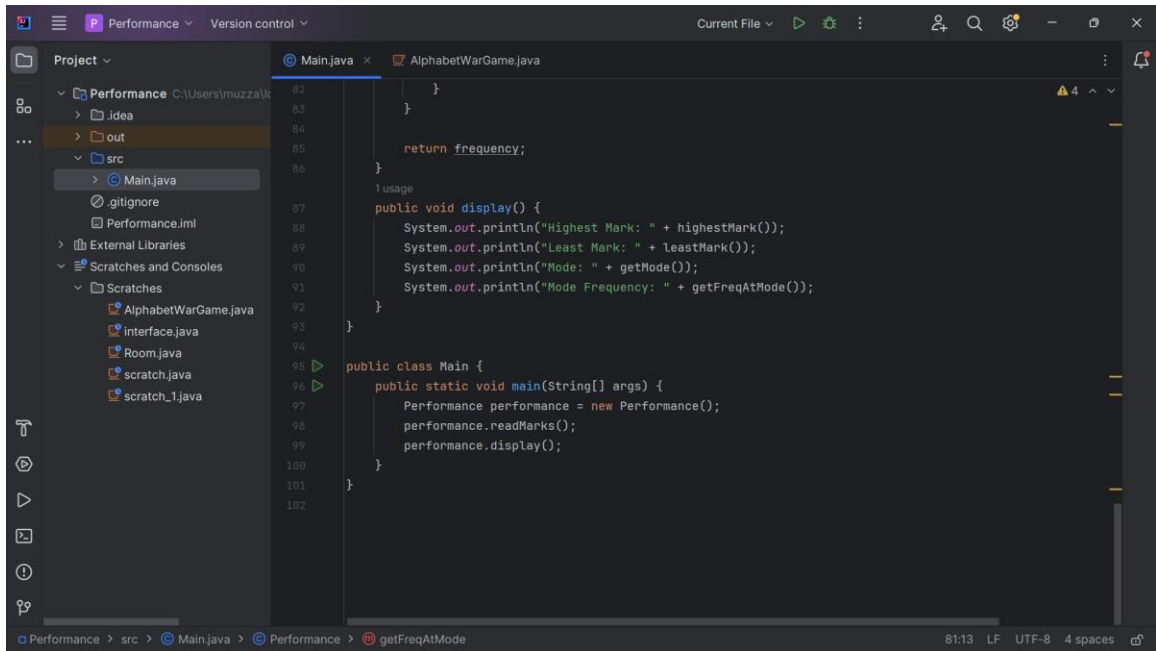
```
21
22
23     if (enteredMark <= 100 && enteredMark >= 0) {
24         marks[i] = enteredMark;
25         markValid = true;
26     } else {
27         System.out.println("Mark should not be greater than 100 or lesser than 0. Please enter a valid mark.");
28     }
29 }
30
31
32 int highestMark() {
33     int highest_mark = marks[0];
34     for (int mark : marks) {
35         if (mark > highest_mark) {
36             highest_mark = mark;
37         }
38     }
39     return highest_mark;
40 }
41
42 int leastMark() {
43     int least = marks[0];
44     for (int mark : marks) {
45         if (mark < least) {
46             least = mark;
47         }
48     }
49     return least;
50 }
```

This screenshot shows the IntelliJ IDEA interface with the `Main.java` file open. The `getLeastMark()` method is being implemented. The code finds the minimum value in the `marks` array and returns it. A tooltip for the `getMode()` method is visible, showing its signature and a brief description.

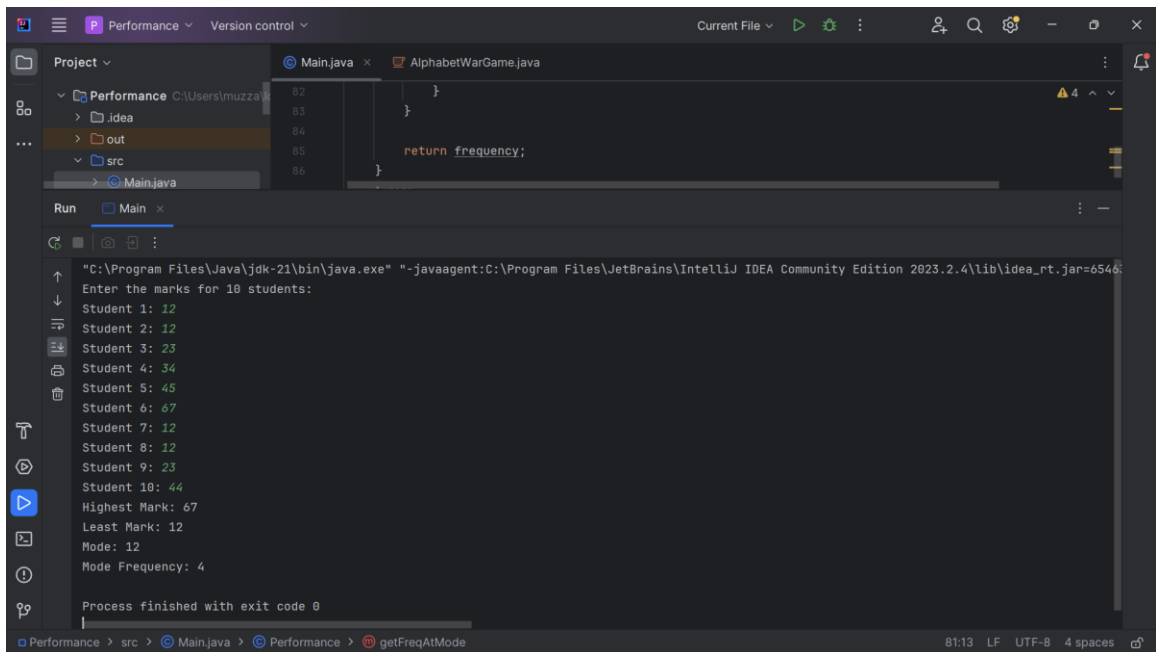
```
43 for (int mark : marks) {
44     if (mark < least) {
45         least = mark;
46     }
47 }
48 return least;
49 }
50
51 2 usages
52 int getMode() {
53     int mode = -1;
54     int maxFrequency = 0;
55
56     for (int i = 0; i < marks.length; i++) {
57         int currentMark = marks[i];
58         int frequency = 0;
59
60         for (int j = 0; j < marks.length; j++) {
61             if (marks[j] == currentMark) {
62                 frequency++;
63             }
64         }
65
66         if (frequency > maxFrequency) {
67             maxFrequency = frequency;
68             mode = currentMark;
69         }
70     }
71 }
```

This screenshot shows the IntelliJ IDEA interface with the `Main.java` file open. The `getFreqAtMode()` method is being implemented, which finds the frequency of the mode. The `display()` method is also shown, which prints the highest mark, least mark, and mode. A tooltip for the `getFreqAtMode()` method is visible, showing its signature and a brief description.

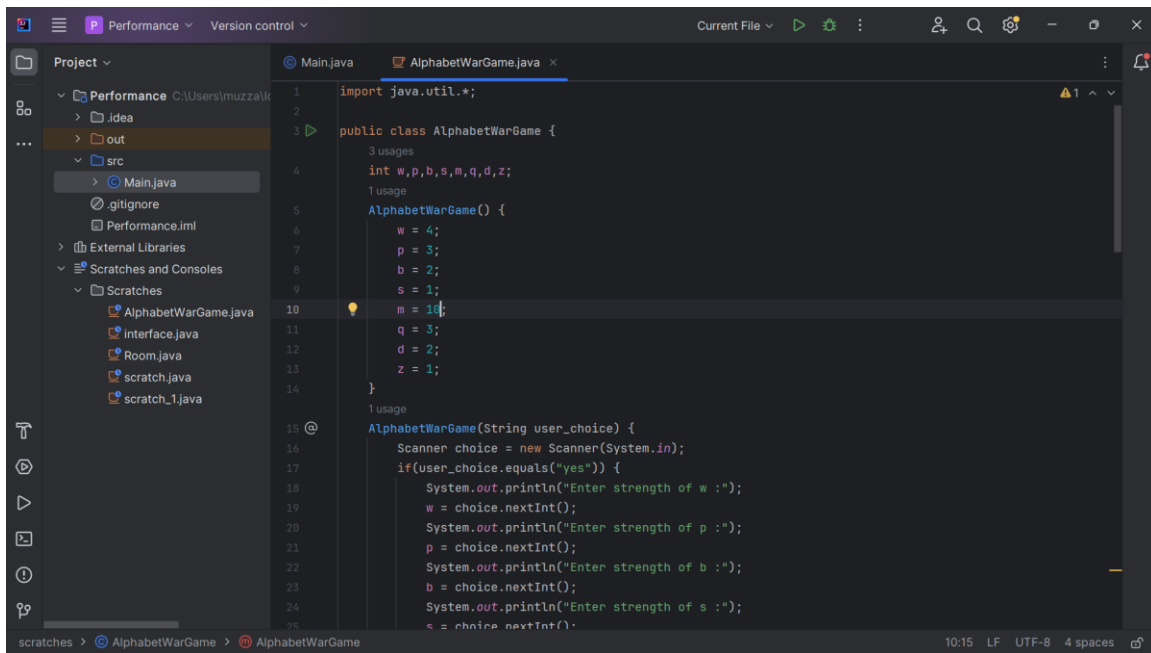
```
66     maxFrequency = frequency;
67     mode = currentMark;
68 }
69
70 return mode;
71 }
72
73 1 usage
74 int getFreqAtMode() {
75     int mode = getMode();
76     int frequency = 0;
77
78     for (int i = 0; i < marks.length; i++) {
79         if (marks[i] == mode) {
80             frequency++;
81         }
82     }
83
84     return frequency;
85 }
86
87 1 usage
88 public void display() {
89     System.out.println("Highest Mark: " + highestMark());
90     System.out.println("Least Mark: " + leastMark());
91     System.out.println("Mode: " + getMode());
92     System.out.println("Mode Frequency: " + getFreqAtMode());
93 }
```



OUTPUT:



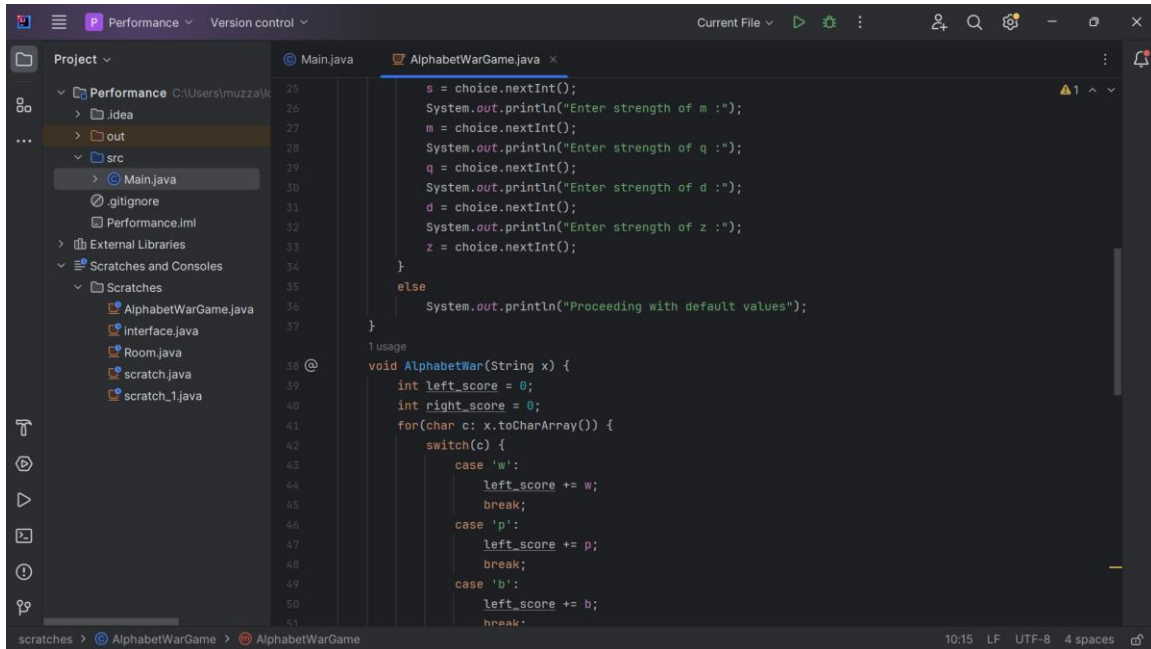
2ND PROGRAM:



```
import java.util.*;

public class AlphabetWarGame {

    3 usages
    int w,p,b,s,m,q,d,z;
    1 usage
    AlphabetWarGame() {
        w = 4;
        p = 3;
        b = 2;
        s = 1;
        m = 10;
        q = 3;
        d = 2;
        z = 1;
    }
    1 usage
    AlphabetWarGame(String user_choice) {
        Scanner choice = new Scanner(System.in);
        if(user_choice.equals("yes")) {
            System.out.println("Enter strength of w :");
            w = choice.nextInt();
            System.out.println("Enter strength of p :");
            p = choice.nextInt();
            System.out.println("Enter strength of b :");
            b = choice.nextInt();
            System.out.println("Enter strength of s :");
            s = choice.nextInt();
```



```
        s = choice.nextInt();
        System.out.println("Enter strength of m :");
        m = choice.nextInt();
        System.out.println("Enter strength of q :");
        q = choice.nextInt();
        System.out.println("Enter strength of d :");
        d = choice.nextInt();
        System.out.println("Enter strength of z :");
        z = choice.nextInt();
    }
    else
        System.out.println("Proceeding with default values");
}
1 usage
void AlphabetWar(String x) {
    int left_score = 0;
    int right_score = 0;
    for(char c: x.toCharArray()) {
        switch(c) {
            case 'w':
                left_score += w;
                break;
            case 'p':
                left_score += p;
                break;
            case 'b':
                left_score += b;
                break;
```

```
45         break;
46     case 'p':
47         left_score += p;
48         break;
49     case 'b':
50         left_score += b;
51         break;
52     case 's':
53         left_score += s;
54         break;
55     case 'm':
56         right_score += m;
57         break;
58     case 'q':
59         right_score += q;
60         break;
61     case 'd':
62         right_score += d;
63         break;
64     case 'z':
65         right_score += z;
66         break;
67     }
68 }
69 if(left_score > right_score)
70     System.out.println("Left side wins");
71 else if (right_score > left_score)
72     System.out.println("Right side wins");
73 }
```

```
66         break;
67     }
68 }
69 if(left_score > right_score)
70     System.out.println("Left side wins");
71 else if (right_score > left_score)
72     System.out.println("Right side wins");
73 else
74     System.out.println("Let's fight again");
75 }
76 }
77 }
78 public static void main(String[] args) {
79     AlphabetWarGame play = new AlphabetWarGame();
80     Scanner input = new Scanner(System.in);
81     System.out.println("Do you want to change the strengths: ");
82     String user_choice = input.nextLine().toLowerCase();
83     AlphabetWarGame play1 = new AlphabetWarGame(user_choice);
84     System.out.println("Enter Letters");
85     play.AlphabetWar(input.nextLine());
86 }
87 }
88 }
```

OUTPUT:

```
Project Performance C:\Users\muzza...
  > .idea
  > out
  > src
  > Main.java

Main.java
66
67
68
69
70
71

AlphabetWarGame.java
66
67
68
69
70
71
break;
}
}
if(left_score > right_score)
    System.out.println("Left side wins");
else if (right_score > left_score)
```

Run AlphabetWarGame

```
"C:\Program Files\Java\jdk-21\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.2.4\lib\idea_rt.jar=6549"
Do you want to change the strengths:
NO
Proceeding with default values
Enter Letters
W B M S
Let's fight again

Process finished with exit code 0
```

scratches > AlphabetWarGame > AlphabetWarGame 10:15 LF UTF-8 4 spaces