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Course: Programming 1
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Module 4 Critical Thinking Assignment: Option 2 - Capture Grade Statistics using For Loop

[Git Project Folder](#)

Write a program that will provide important statistics for the grades in a class. The program will utilize a for-loop to read ten floating-point grades from user input. Include code to prevent an endless loop. Ask the user to enter the values, then print the following data:

- Average
- Maximum
- Minimum

Pseudocode

```
Declare class:
  Declare main method:
    Declare variables:
      user input scanner
      array to store grades
      floats for total, min, max, and average
    Define ten iteration for-loop:
      get grade from user
      add grade to total
      if grade is lowest, assign to min
      if grade is highest, assign to max
      add grade to grade array
    calculate average grade
    print summary statistics to console:
      array of grades
      minimum grade
      maximum grade
      average grade
```

Source Code

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

public class App {
    public static void main(String[] args) {
        Scanner scnr = new Scanner(System.in);
        int arrayLen = 10;
        float[] gradeArray = new float[arrayLen];
```

```

float sumGrades = 0;
Float minGrade = null;
Float maxGrade = null;

// take user input for grades, sum total for average
for (int i=0; i<arrayLen; i++) {
    String promptString = String.format("Enter grade %d of 10 (between 0 -
100)", i + 1);
    System.out.println(promptString);
    float grade = scnr.nextFloat();

    // calculate sum of grades
    sumGrades += grade;

    // initialize min and max grade values
    if (minGrade == null && maxGrade == null) {
        minGrade = grade;
        maxGrade = grade;
    }
    else {
        // calculate min grade
        if (grade < minGrade) {
            minGrade = grade;
        }

        // calculate max grade
        if (grade > maxGrade) {
            maxGrade = grade;
        }
    }
    // add to array of grades for verification
    gradeArray[i] = grade;
}

// calculate average grade
float avgGrade = sumGrades/arrayLen;

// print results to console
System.out.println("Grades: " + Arrays.toString(gradeArray));
System.out.println("Minimum Grade: " + Float.toString(minGrade));
System.out.println("Maximum Grade: " + Float.toString(maxGrade));
System.out.println("Average Grade: " + Float.toString(avgGrade));

scnr.close();
}
}

```

Result

Input Example

Enter grade 10 of 10 (between 0 - 100)
7.8

Output Example

Grades: [1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 7.8]
Minimum Grade: 1.0
Maximum Grade: 9.0
Average Grade: 5.2799997

Screenshot of Execution

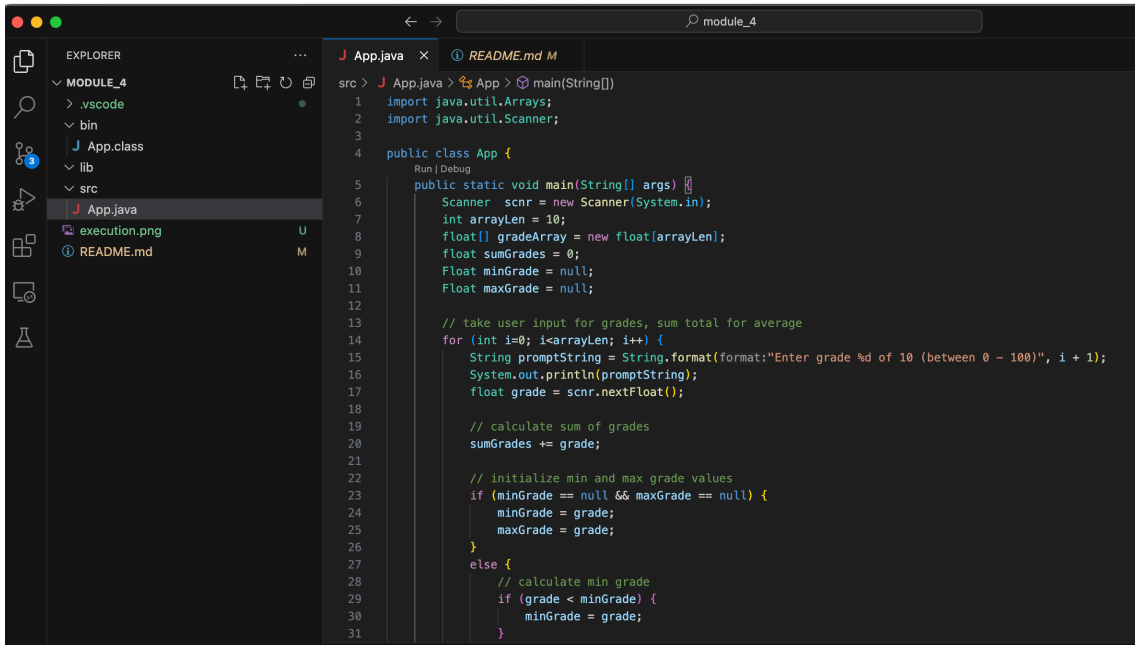
```
src > J App.java > App > main(String[])
1  import java.util.Arrays;
2  import java.util.Scanner;
3
4  public class App {
5      public static void main(String[] args) {
6          Scanner scnr = new Scanner(System.in);
7          int arrayLen = 10;
8          float[] gradeArray = new float[arrayLen];
9          float sumGrades = 0;
10         float minGrade = null;
11         float maxGrade = null;
12
13         // take user input for grades, sum total for average
14         for (int i=0; i<arrayLen; i++) {
15             String prompts = "Enter grade " + (i + 1) + " of 10 (between 0 - 100)";
16             System.out.print(prompts);
17             float grade = scnr.nextFloat();
18         }
19     }
20 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
(base) corwinbell@Corwins-MacBook-Air module_4 % cd /Users/corwinbell/repos/programming-1-csu/module_4 ; /usr/bin/env /Library/Java/J
avaVirtualMachines/jdk-21.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/corwinbell/repos/programming-1
-csu/module_4/bin App
Enter grade 1 of 10 (between 0 - 100)
1
Enter grade 2 of 10 (between 0 - 100)
2
Enter grade 3 of 10 (between 0 - 100)
3
Enter grade 4 of 10 (between 0 - 100)
4
Enter grade 5 of 10 (between 0 - 100)
5
Enter grade 6 of 10 (between 0 - 100)
6
Enter grade 7 of 10 (between 0 - 100)
7
Enter grade 8 of 10 (between 0 - 100)
8
Enter grade 9 of 10 (between 0 - 100)
9
Enter grade 10 of 10 (between 0 - 100)
7.8
Grades: [1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 7.8]
Minimum Grade: 1.0
Maximum Grade: 9.0
Average Grade: 5.2799997
```

Git Repo path and project folder Screenshot

<https://github.com/corwin-bell/programming-1-csu.git>



The screenshot shows a Visual Studio Code editor window with a dark theme. The Explorer sidebar on the left displays a project structure for 'MODULE_4' containing files like '.vscode', 'bin', 'App.class', 'lib', 'src', 'App.java', 'execution.png', and 'README.md'. The main editor area shows the 'App.java' file with the following code:

```
src > J App.java > App > main(String[])
1  import java.util.Arrays;
2  import java.util.Scanner;
3
4  public class App {
5
6      public static void main(String[] args) {
7          Scanner scnr = new Scanner(System.in);
8          int arrayLen = 10;
9          float[] gradeArray = new float[arrayLen];
10         float sumGrades = 0;
11         float minGrade = null;
12         float maxGrade = null;
13
14         // take user input for grades, sum total for average
15         for (int i=0; i<arrayLen; i++) {
16             String promptString = String.format(format:"Enter grade %d of 10 (between 0 - 100)", i + 1);
17             System.out.println(promptString);
18             float grade = scnr.nextFloat();
19
20             // calculate sum of grades
21             sumGrades += grade;
22
23             // initialize min and max grade values
24             if (minGrade == null && maxGrade == null) {
25                 minGrade = grade;
26                 maxGrade = grade;
27             }
28             else {
29                 // calculate min grade
30                 if (grade < minGrade) {
31                     minGrade = grade;
32                 }
33             }
34         }
35     }
36 }
```

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