Name: Tung Do   Lab #3   Date: September 29, 2022
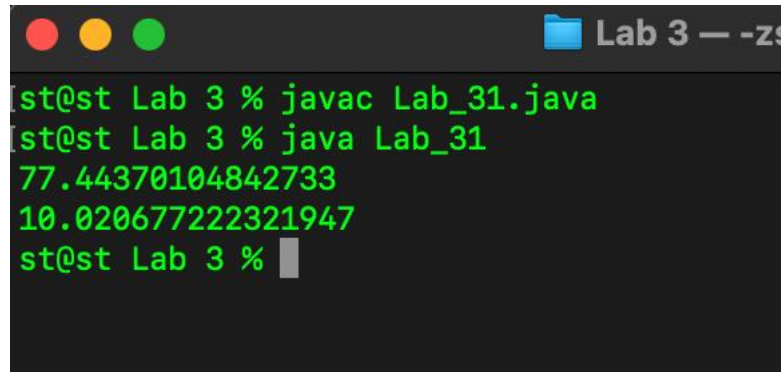
Objectives: The objective of this lab was to read the data from the given file, then find the mean and standard deviations and write to an output file. Thus, in order to perform the lab, I need to know how to scan the code then store each number from each line into an array, then perform calculation using that array then printout the result.

Program:

```java
import java.util.List;
import java.util.ArrayList;
import java.util.Scanner;
import java.io.FileReader;
import java.io.IOException;
import java.io.*;

public class Lab_31 {
  public static void main (String[] args) throws IOException {
    List<Double> stngFile = new ArrayList<Double>();
    Scanner sc = new Scanner(new FileReader("Numbers.txt"));
    Double str;
    while (sc.hasNext()) {
      str = sc.nextDouble();
      stngFile.add(str);
    }
    Double[] array = stngFile.toArray(new Double[0]);

    double sum = 0.0;
    double sumsd = 0.0;
    double sd = 0.0;
    double mean = 0.0;
    double sqr = 0.0;

    int l = array.length;
    for (int i = 0; i < l; i++) {
      sum = sum + array[i];
    }

    mean = sum/l;
    System.out.println(mean);

    for (double num : array) {
      sumsd += Math.pow(num - mean, 2);
    }
    sd = Math.sqrt(sumsd/l);
    System.out.println(sd);

    PrintWriter output = new PrintWriter("Result.txt");
    output.printf("mean = %.4f", mean);
    output.printf("\nstandard deviation = %.4f", sd);
    output.close();
    System.exit(0);
  }
}
```
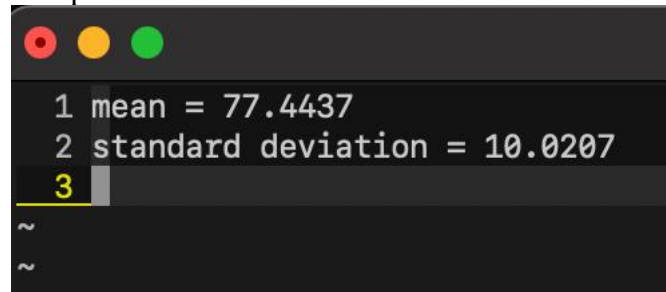
Results:
- The console log that prints out the mean and standard deviations

- The output file that prints out the mean and standard deviations

Conclusion:
During the coding process, I have some problems with the standard deviations calculation. Then I change the code for calculating and it worked fine. As a result, my program is able to read the data from a file, store them into an array, and perform calculation for mean and standard deviations and print the result in an output file. So the objective of the lab 3 has been done.