

## Problem 9. Outliers

Program: `outlier.py`

In many statistical analysis programs, data values considerable outside the range of the majority of values are simply dropped from consideration. Using this information write a program named `outlier.py` that accepts a number of floating-point values from the command line and display the *average* and the *sample standard deviation* of the input values. All values more than **two** standard deviations away from the computed are to be displayed and dropped from any further calculation, and the new average and standard deviation should be computed and displayed.

The output of your program should look like the following:

```
% python outlier.py 7 4 6 6 5 5 3 10 19 9
Original values: [7, 4, 6, 6, 5, 5, 3, 10, 19, 9]
Mean: 7.40
SD: 4.60

Outliers: [19]

New Values: [7, 4, 6, 6, 5, 5, 3, 10, 9]
Mean: 6.11
SD: 2.26
```

FIGURE 1: SAMPLE OUTPUT FOR PROBLEM 9

## Problem 10. Word Frequency

Program: `frequency.py`

Techniques like word frequency are often used to analyze Web and form the basis of many search engines. Write a program named `frequency.py` that takes a single string from the command line and counts the number of occurrence of each word in the given string. The output of the program should look like the following.

```
% python frequency.py "this is sample text with several words and more
sample text with some different words"
WORD          COUNT
and           1
different     1
is            1
more          1
sample        2
several       1
some          1
text          2
```

```
this      1
with      2
words     2

Number of unique words: 11
```

FIGURE 2: SAMPLE DIALOG FOR THE PROGRAM OF PROBLEM 10

## Acknowledgements

Preparation of this problem set would not have been possible without adaptation from (Bronson, 2012) and (Deitel & Deitel, 2019). The author gratefully acknowledges the work of the authors cited while assuming complete responsibility for any mistake introduced in the adaptation.

## References

- Bronson, G. J. (2012). *C++ for Engineers and Scientists* (4th ed.). Cengage Learning.
- Deitel, P. J., & Deitel, H. (2019). *Python for Programmers*. Pearson Higher Ed.