WORKSHOP 01

Introduction To Complex Systems, Java, MVN, And Git

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1 Introduction

In this workshop a program was developed for reading from a file a set of n real numbers to obtain its mean and standard deviation. The purpose of this workshop was to review the concepts of object-oriented programming, automatic dependency management and version control.

2 Design

The program uses its own implementation of a linked list which in turn is compliant with Java's collections API. The linked list is made up by nodes, each node has a pointer to the next one and contains the given data. The linked list has pointers to the head node, for iterating over all nodes, and the tail node, which makes it easy to add a node at the end in constant time.

The StatisticUtils class has two static methods, one for calculating the mean and the other for calculating the standard deviation. The purpose for those methods being static is because they are commonly used and instantiating an object would be to use memory space inefficiently.

At last, the Main class uses the implementation of the linked list for storing the real numbers that would be read from a file and uses the static methods to get the mean and standard deviation.

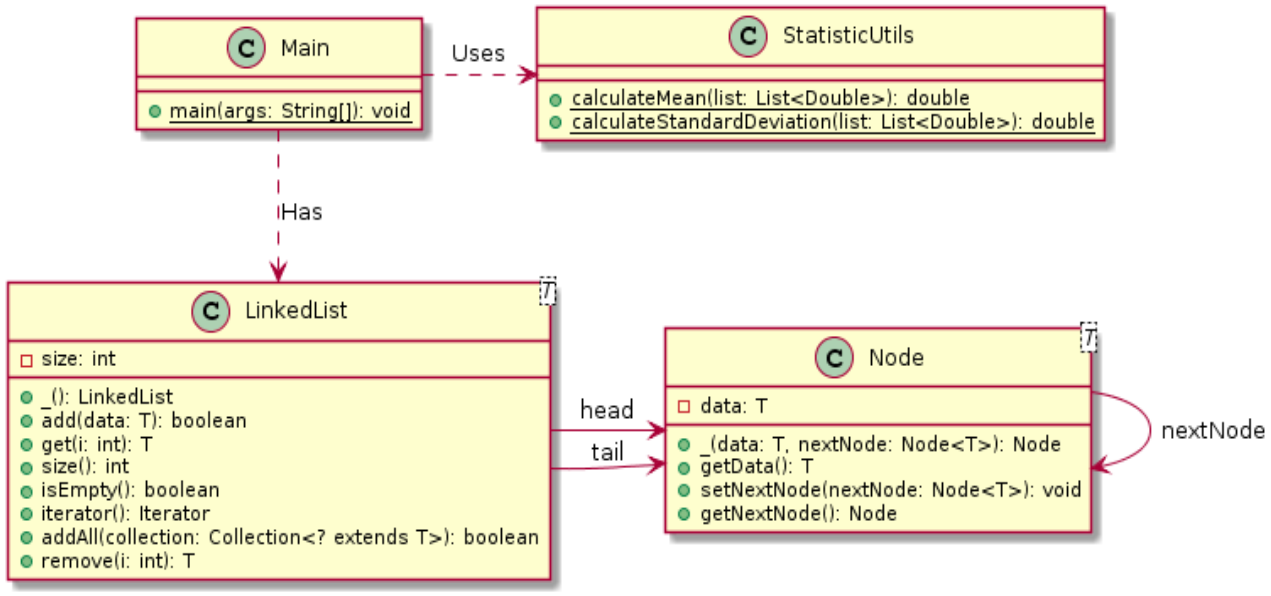

Figure 1: Class Diagram

References

[1] Anonimous. *The Java Collections API*. URL: `http://how2examples.com/java/collections`. (accessed: 17-01-2020).

[2] baeldung. *A Guide to Iterator in Java*. URL: `https://www.baeldung.com/java-iterator`. (accessed: 17-01-2020).

[3] CodeLike. *Insert node at end of linked list*. URL: `https://www.codelike.in/c/linked-list/insert-node-at-end-of-linked-list`. (accessed: 17-01-2020).

[4] Oracle. *List (Java Platform SE 8)*. URL: `https://docs.oracle.com/javase/8/docs/api/?java/util/List.html`. (accessed: 17-01-2020).

[5] PlantUML. *PlantUML*. URL: https://plantuml.com/. (accessed: 17-01-2020).