WORKSHOP 02

Introduction To Computer System Design

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1 Introduction

In this workshop a web application was developed for receiving n real numbers to obtain its mean and standard deviation. The purpose of this workshop was to use technologies as Heroku and web frameworks as Spark using Java.

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 SparkWebApp class uses the implementation of the linked list for storing the real numbers that would be read from an input and uses the static methods to get the mean and standard deviation. The web application uses the *get* method for loading the initial page and with a *post* method it receives the set of real numbers.

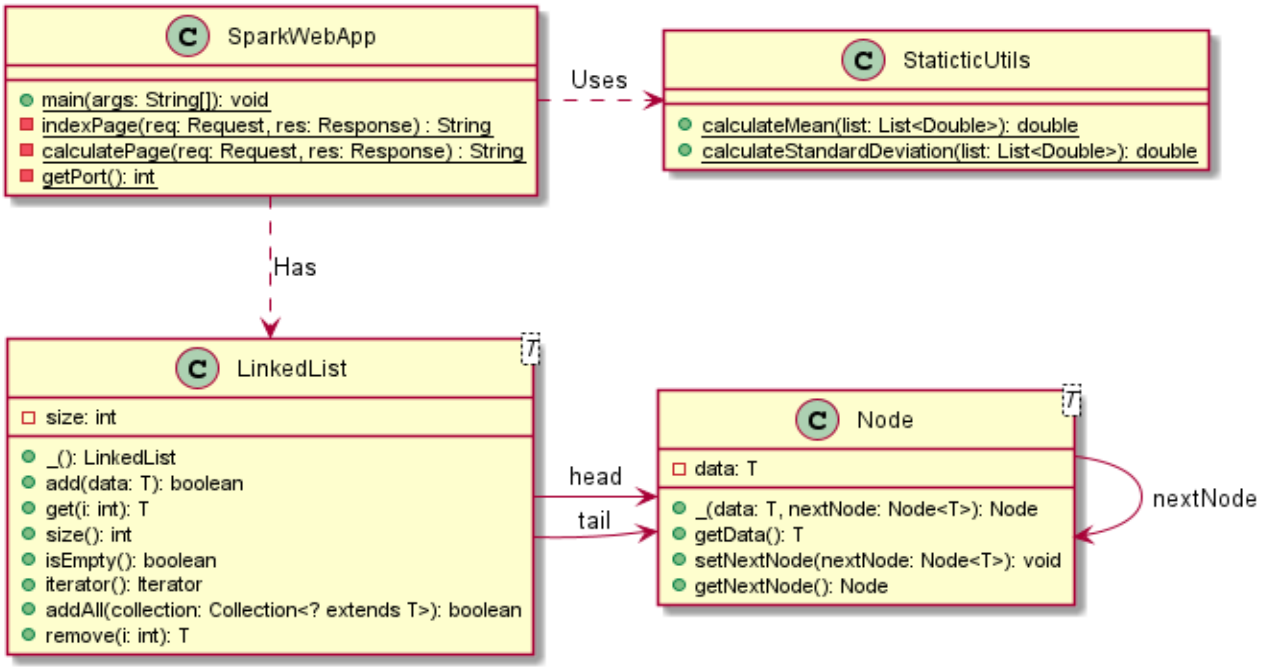

Figure 1: Class Diagram

3 Deployment

The web application was deployed on Heroku, the next diagram shows how the deployment is set up. The SparkWebApp application is on a web server that is deployed on Heroku, the client access it from the browser as a normal web page.

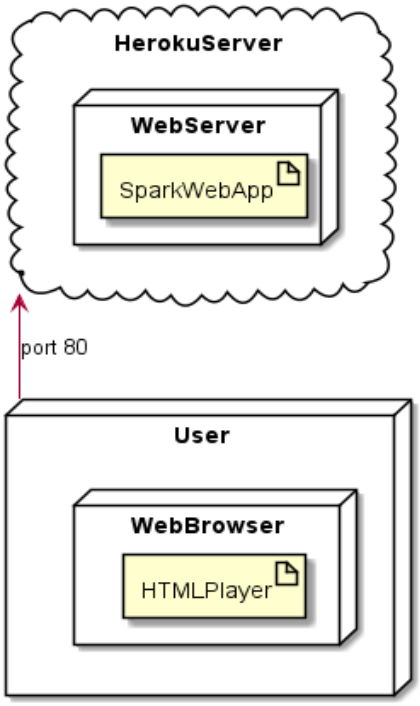

Figure 2: Deployment Diagram

4 Conclusion

From this workshop I learned how to deploy in Heroku using a micro-framework called Spark. Identifying how web application are deploying in PaaS.

References

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

[2] Spark. *Spark - Documentation*. URL: `http://sparkjava.com/documentation`. (accessed: 28-01-2020).