Project #3 – Transportation Manager

Final Report

**Nicholas Board**

**CSC316: Data Structures for Computer Scientists**

**ndboard@ncsu.edu**

**North Carolina State University**

**Department of Computer Science**

**April 5th, 2017**

# Challenges

Briefly describe 2 major challenges you encountered during this project and how you responded to each challenge. (1-2 paragraphs)

For example:

* Did your build time-out in Jenkins and force you to find a more efficient solution?
* Did you set aside enough time to work on the project?
* Did you have trouble with file input/output?
* Did you have trouble writing JUnit test cases?

My hardest issue implementing this problem was actual just implementing the data structures based off the algorithms given in class. I spent a long time trying to force the data structures to be handled with key values (because the given algorithms are dictionaries), but I was over thinking it and then things went quickly once I realized that.

After that, the hardest part is always just trying to make the output match the expected output on Jenkins. It should be easy but I always have a hard time with this.

I tried to try and focus more on security between class this time, and I’m still not where I need to be with it. I want my classes to be less coupled. For example, in my Adjacency List, I have inner classes representing vertices and edges. The way my code is currently, those two inner classes are public, but I’d like to be able to make the Adjacency List completely usable with just public methods.

# Data Structures & Algorithms

Did you use the same data structures and/or algorithm(s) you selected in your proposal? Why or why not? (2-3 sentences)

I used the Minimum Heap and UpTree just like in the proposal. I believe in the proposal I thought I was going to use an Adjacency Matrix, but I ended up implementing an Adjacency List. The only reason for that shift is because the TS UML used and Adjacency List and I like to try and stick to that design as much as possible.

# Improving Efficiency

Describe at least one way you could further improve the efficiency of your project software, based on topics we have discussed in class. (2-3 sentences)

As of writing this, I’m “done” with the project enough to be satisfied and write this final report, however the TS tests for the larger inputs are still failing. I’m planning to go back and work on these later, and I think the main thing I need to do is just remove some lines of code that don’t need to be inside of loops, to be outside of loops. The biggest culprit here is in constructing my Adjacency List, and because of this I’m wondering if my code would be more efficient if I implemented an Adjacency Matrix instead.

# Moving Forward

Briefly describe one thing you will change or improve upon as you work on the next project. (2-3 sentences)

After the complete trainwreck-in-slow-motion that was project 2, I feel a lot better about project 3. I started earlier, kept my focus better, and understood the implementation better. I’m hoping to use these experiences on project 4. The main thing I want to focus on next time is decrease coupling, and I also want to try and keep efficiency in mind more as I work on it, instead of trying to work on it at the end.