**Design Document**

For this project, I decided to use Java 11 as my programming language just because I am currently taking the Object-Oriented Programming Course and I wanted to test what I have learned so far from that course. Otherwise, I would have chosen to use C++ 15, since it is the language that I have the most experience with.

I made 4 classes:

* The Main class is where the simulation will run. In this class the topology input file is also opened, and the data is transfer to a List of Nodes. In here both the name of topology file and the number of rounds the simulation is going to run for is inputted.
* The Routing Table class is used to create the Routing Tables for each Node. It contains de destination, cost, and next hop.
* Inside the Node class, I created a list of Routing Tables, and a list of integers that keep the node’s neighbors.
* The Packet class was supposed to be the one that was going to test the routing table of each node by sending a packet to another node by following the node’s routing table that is currently holding the packet.

I planned to create a list of nodes in the main (simulation) class, where each node holds a routing table, neighbors, and the node ID. Each class was going to have a set of methods to work with the data. On my whiteboard, I had a couple of ideas to tackle this problem. My choices were to either override the equals method, extend each class with a comparable, or use streams. All of this to quickly go through the list of nodes and extract the information needed like finding if a node being read from the topology file already exists in the list of nodes. However, I quickly realized that I could not do either due to my lack of knowledge in the language and the complexity of this project. I could not even get a simple For Each loop to work so I decided to go back to basics and uses a bunch of for loops and while loops to maneuver the data. I will eventually go back to the project and make it the way I ambition but due to upcoming projects, exams, and assignments for other classes, I decided to just get it done with what I know.