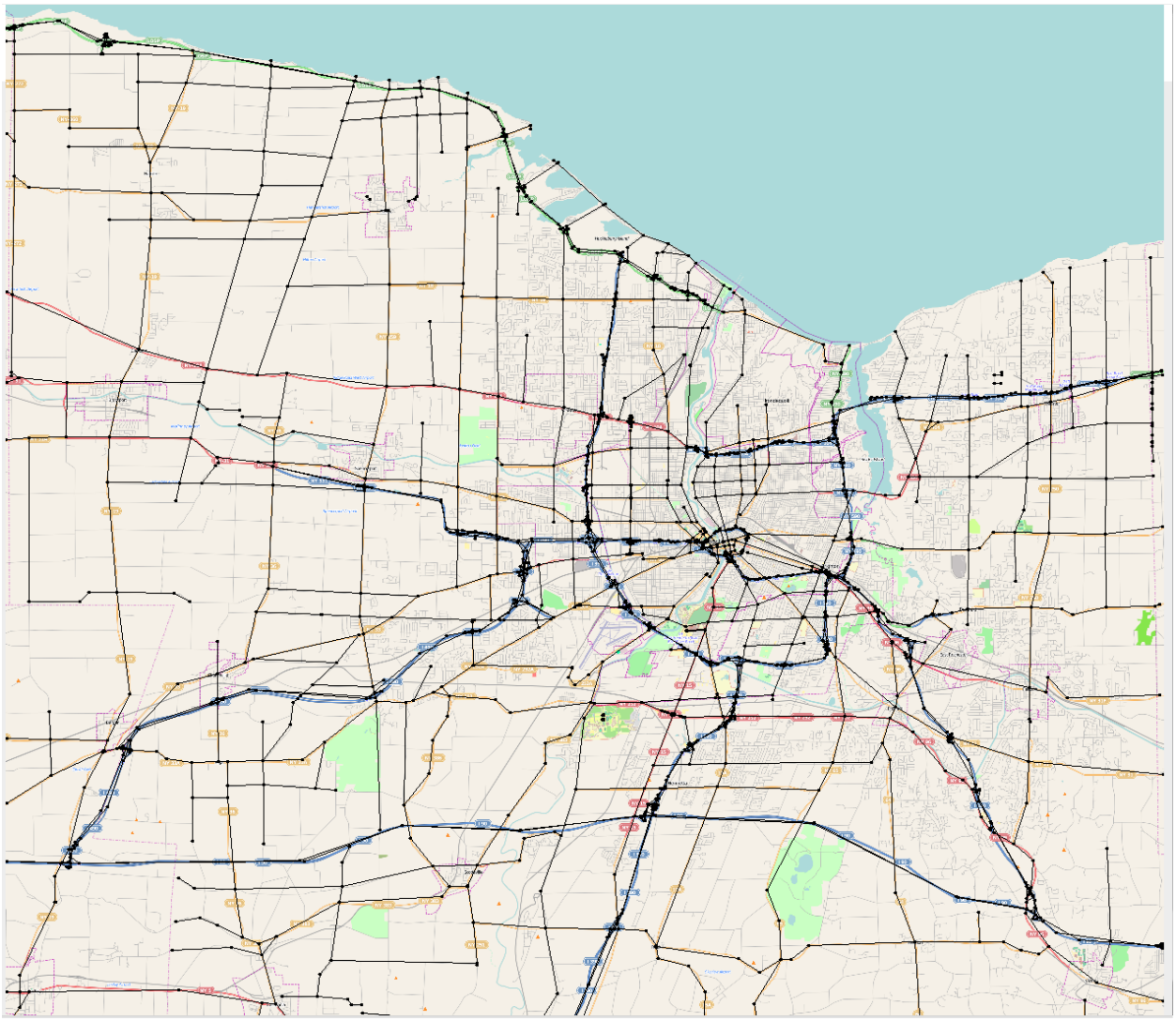
CSC172 PROJECT 4 – Street Mapping

SUMMARY

This project will require you to create a Java program will process information about describing and roads in Monroe County, NY. Your program must should have at least three functions.



Your program must should have at least three functions.

(1) Read in the data and use it to graphically display a map representing the streets. All that is required is for you to draw the streets in some color according to their proper x,y locations.. Extra credit will be awarded for additional information and making the map look nice.

(2) The government of Monroe county faces a snow plowing dilemma every year. After a large snowstorm the government want to plow the roads in such a way that everyone is able to travel as quickly as possible. You are to calculate and draw a minimum spanning

tree for use a second color line to indicate a the roads that make up the minimum spanning tree.

(3) Your program should be able to find the shortest path between any two intersections in the map. Given any two intersections in the data you should be able to draw the shortest path in a third color and also print out the path both as a series of verticies and a series of roads.

The file `monroe-streets.tab` contains two parts describing a graph The graph contains approximately 20000 intersections and about the same number of roads connecting intersections.

The first part of the file contains information about intersections Intersections are described by a the letter “i” followed by a unique Id, followed by an (x,y) coordinate.

```
i       i1250717798   407.27386164817847 355.58565000000374
i       i1251697920   371.8033488114149   349.6009805555548
```

The second part of the file contains information about roads Roads are described by a the letter “r” followed by a unique Id, followed by a pair of intersection identifiers..

```
r       r14087276-1   i134123750    i134122617
r       r14087276-2   i134122617    i134122618
```

GRADING:

Report Documentation: 10%
Write up a report explaining your code, and giving the results that your program produces for the test file provided for the project.

Report Run Time Analysis: 10%
You must include an analysis of how the time complexity of your program scales with larger input.

Code Style: 10%
Make sure to add comments and implement everything as specified above.

Functionality: 60%
Approximately 20% for each of the three functional requirement specified above. The program will be tested with `monroe-streets.tab` file. This will likely be the largest file used for testing. Other similar street files, of the same format will also be used. However, there should not be any hard limits on the size of the graph that your program accepts.