HOMEWORK 7

SETUP
The program was run and compiled in Ubuntu 18.04 but should work in most other versions. The following commands were done in order to get the program working:
> sudo apt-get update
> sudo apt-get install freeglut3
> sudo apt-get install freeglut3-dev
> sudo apt-get install binutils-gold
> sudo apt-get install g++ cmake
> sudo apt-get install libglew-dev
> sudo apt-get install g++
> sudo apt-get install mesa-common-dev
> sudo apt-get install build-essential
> sudo apt-get install libglew1.5-dev libglm-dev
> sudo apt-get install mesa-utils
> sudo apt-get –f install
> sudo apt install fltk1.3-dev

PROGRAM COMPILATION AND RUNNING
The following command should be executed to compile the program:
> fltk-config --use-images --compile dijkstra.cc

This should create a "histogram" program which is ran doing the following command:
> ./dijkstra
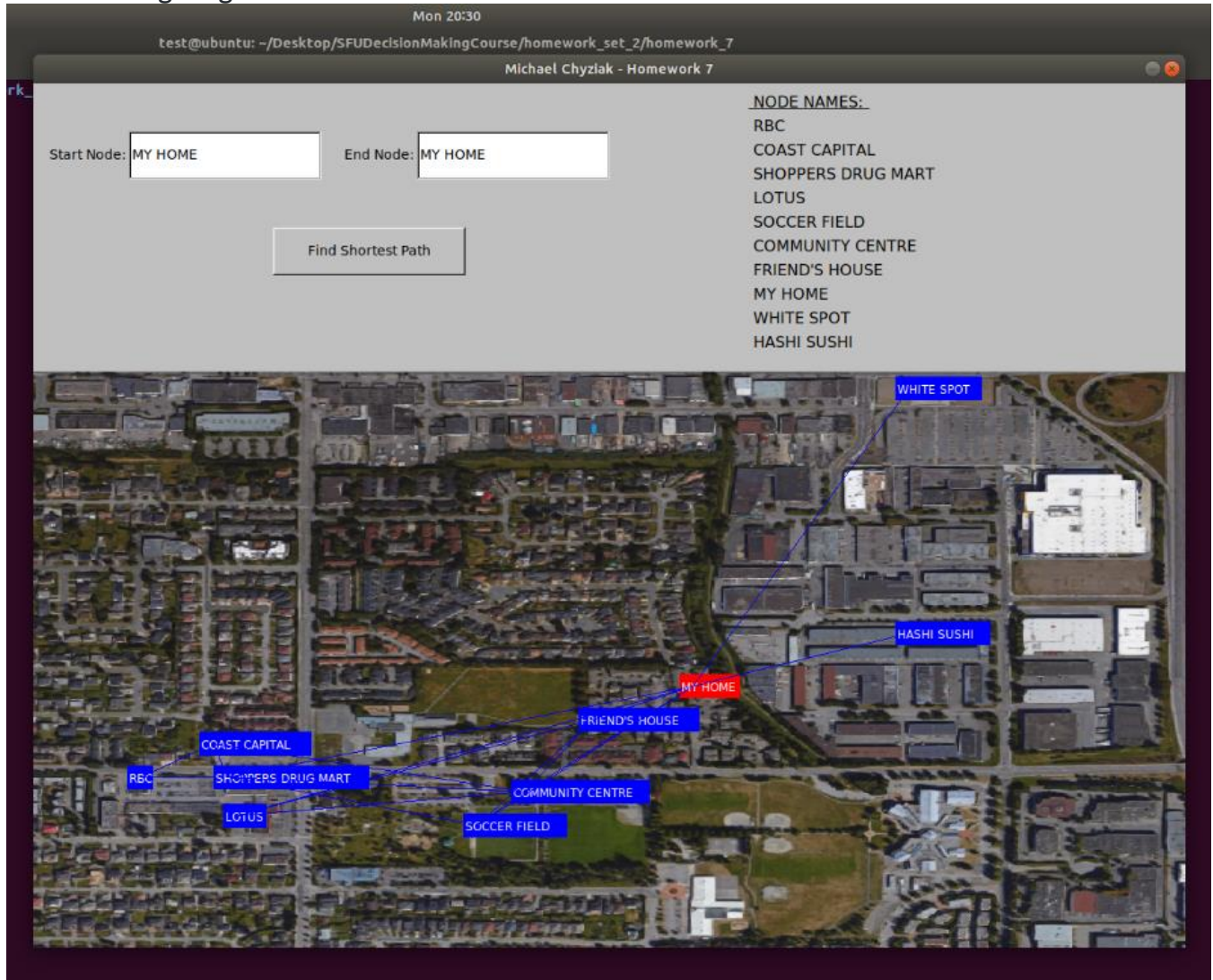
SOLUTIONS/SCREENSHOTS

The google map view of my neighbourhood is shown in the first screenshot. It is the default view a user sees when they first start the program. Many of the nodes are close by since my neighbourhood is mostly residential with just a few places for activities and places to visit. Since we need to perform Dijkstra's shortest path algorithm to go from a start to end node the weights for each edge is given by the approximate time (in seconds) it takes to traverse that edge. The Start and End node inputs are shown which the user can enter the start and end nodes that they wish to traverse and after pressing the "Find Shortest Path" button the graph highlights the start and end nodes and the edges that correspond to the quickest path.
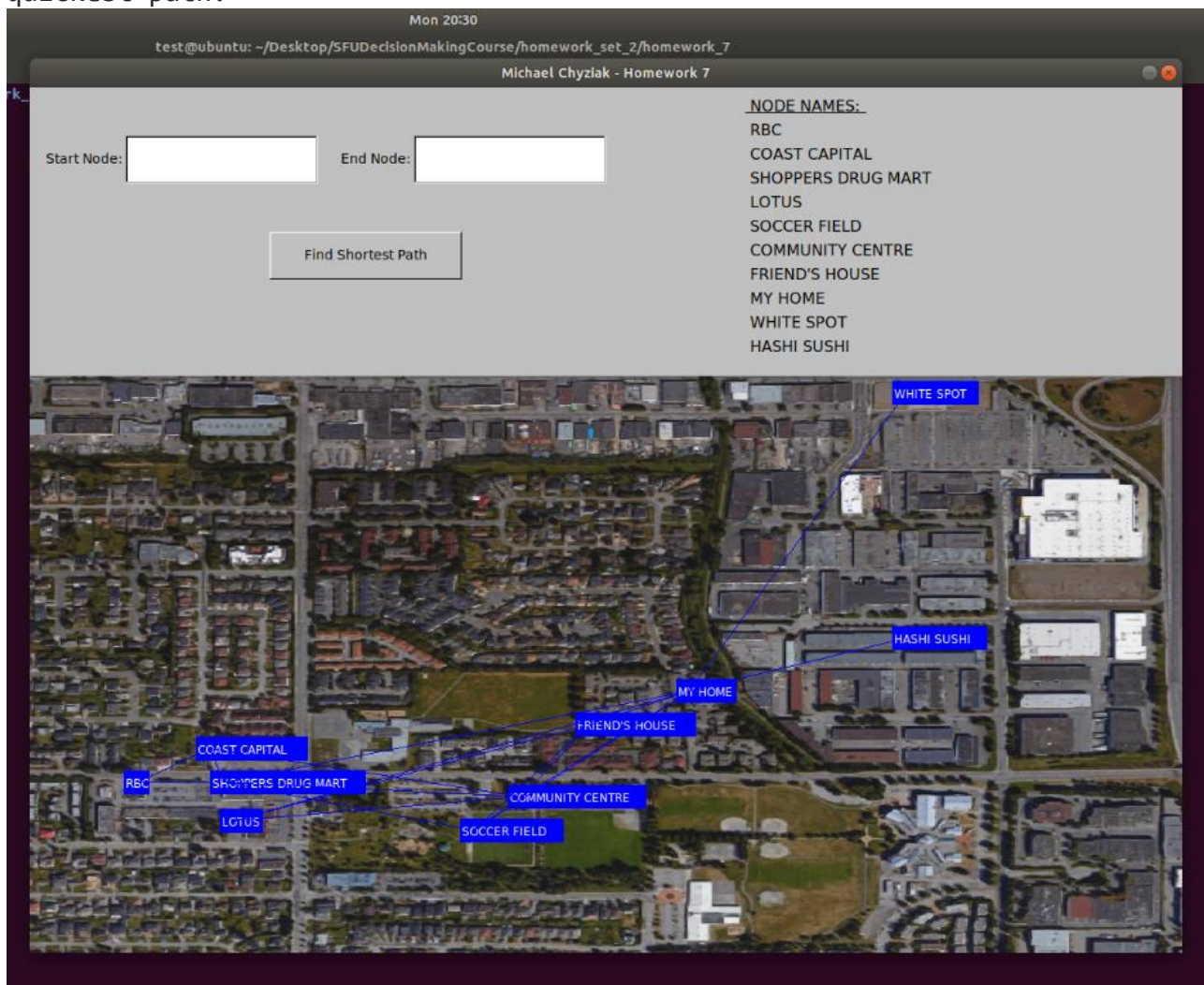
The next screenshot shows the fastest distance between RBC and WHITE SPOT nodes. RBC from the far-left side goes to SHOPPERS DRUG MART, COMMUNITY CENTRE, MY HOME, and final WHITE SPOT. This is the quickest path using Dijkstra's algorithm which provides the shortest path. The start and end nodes are highlighted in red and the edges traveled are also shown in red to let the user follow along.
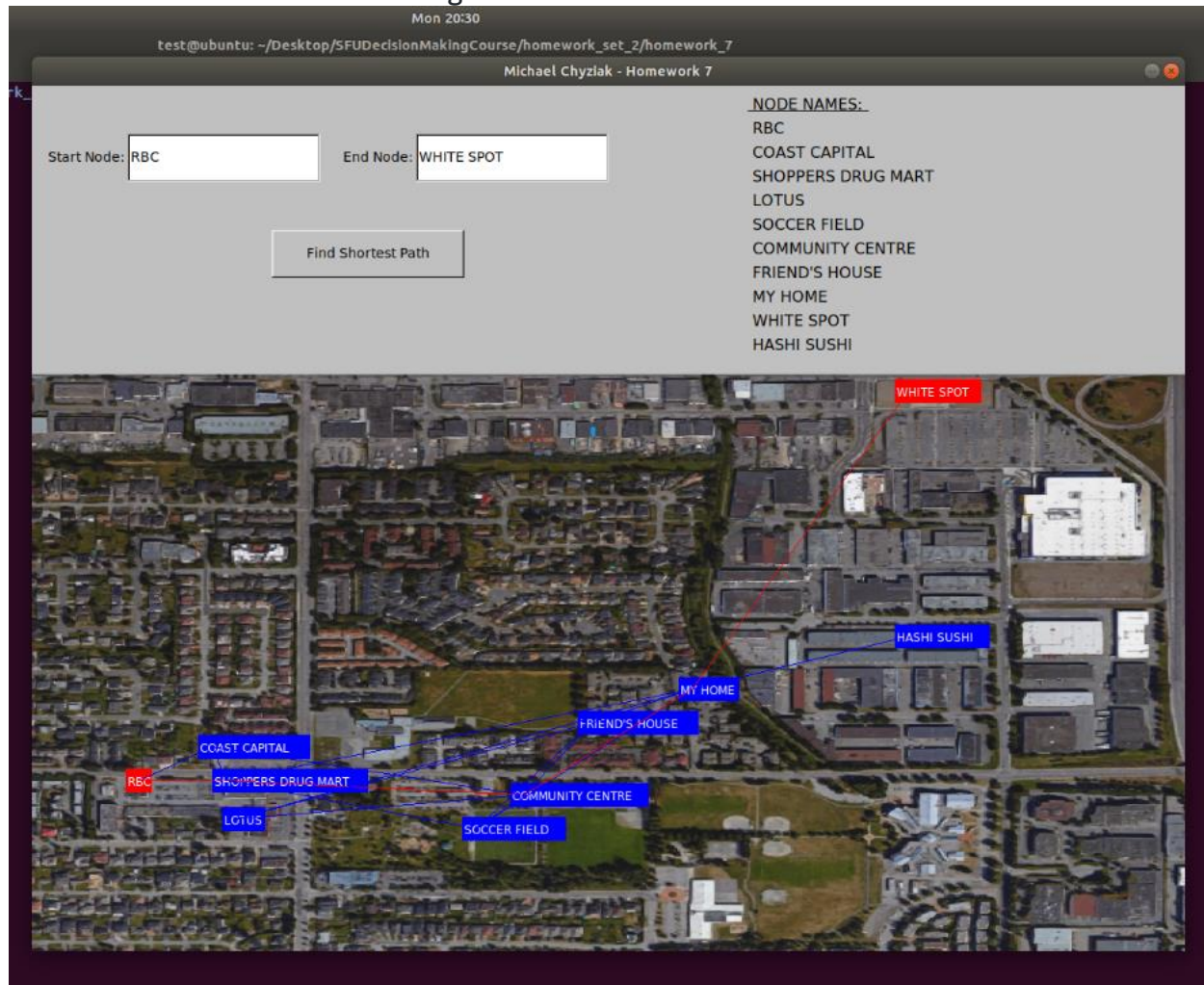
The next screenshot shows what happens when you choose the same start and end node. In this case "MY HOME" was chosen and since the shortest path between the same node is not traversing any nodes means that only that one node is highlighted in red.

The next two screenshots show what error is shown on the terminal when the user enters an incorrect start or end node (since they must be the same).