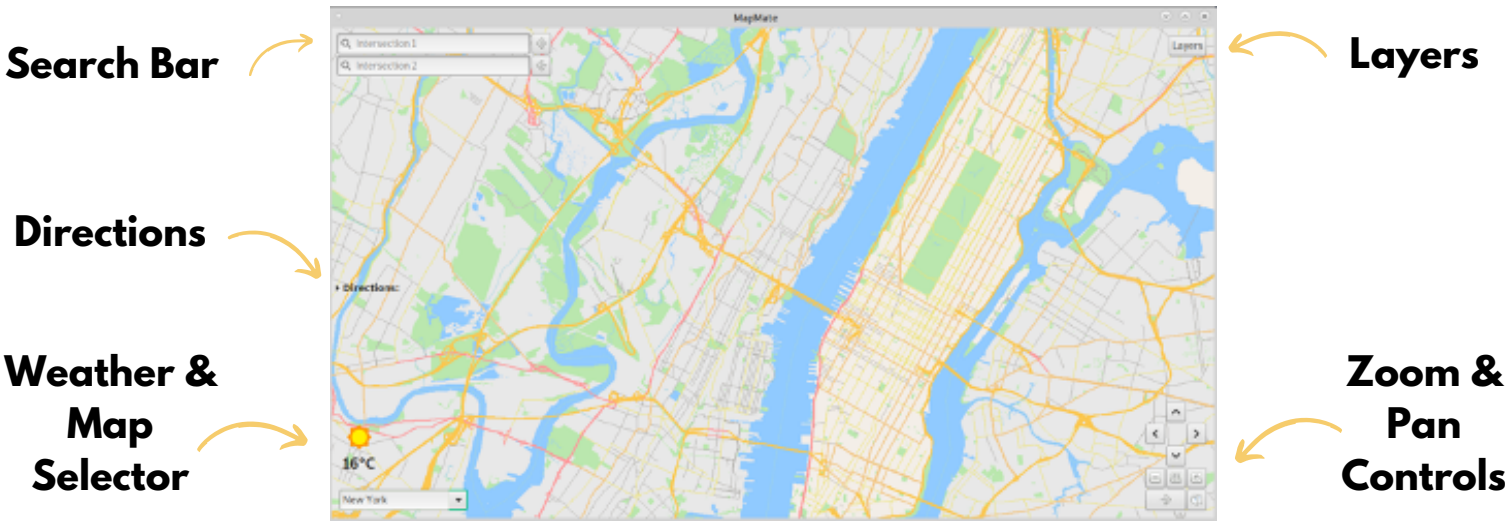
MapMate!

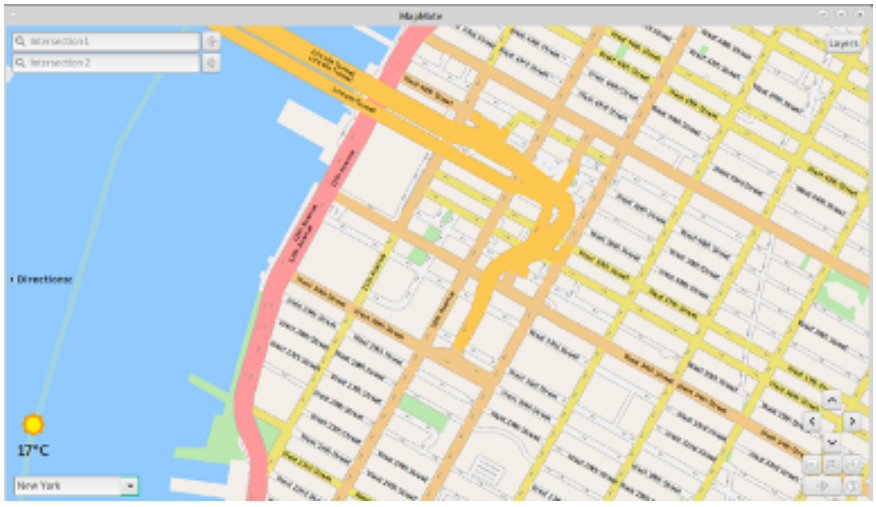
Document made by Himani Sangamesh

Background

MapMate is a Geographic Information System (GIS) made by Team 006 for the Software Communication and Design (ECE297) course at the University of Toronto. This displays maps for many pre-loaded cities as well as additional info such as points of interest, transit lines, and weather. MapMate was coded in C++ and uses the EZGL graphics library, Open Street Maps (OSM) data, and various APIs.

Layout





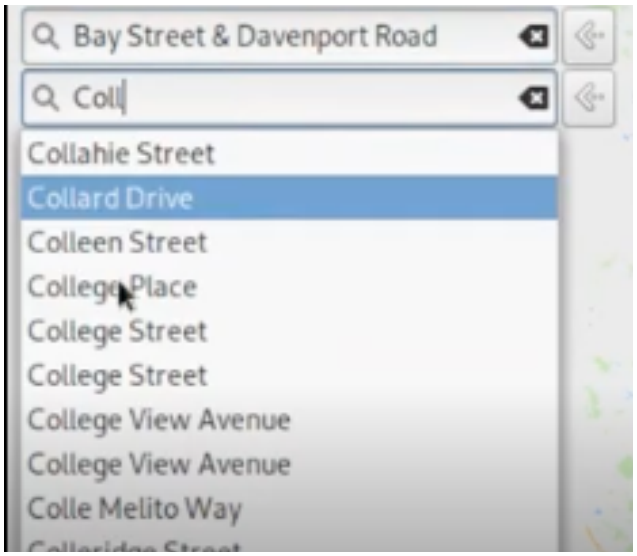
Colour Scheme

- Background and foreground colours have a high contrast ratio
- Helps people with low vision
- Street colors based on road type/priority

Layers

- Turn certain layers on and off
- Only view information that you need
- Layers include various public transport methods, points of interest, and live location

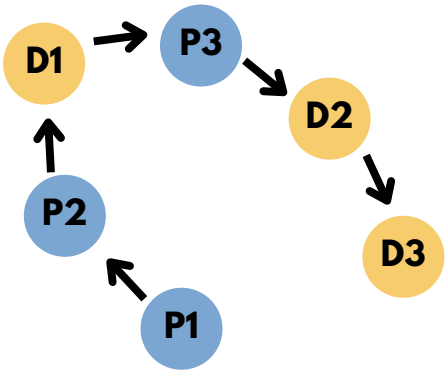
Navigation



- The fastest path between two intersections can be found by using the search bars or by clicking the intersections
- Each search bar takes an intersection and autocompleted options are displayed

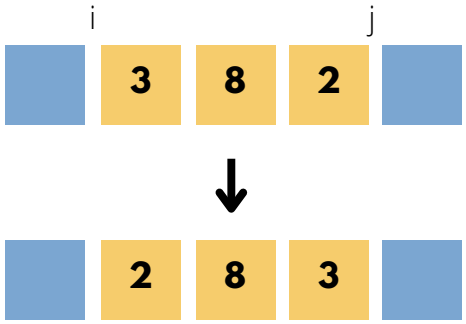
Travelling Salesman Problem

Our final goal of this project was to tackle the computationally complex traveling salesman problem which finds the shortest path between multiple pickup and dropoff points. Some algorithms we used were:



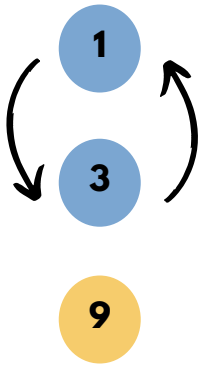
Greedy Algorithm

Generally finds an optimal path between all points



Two-Opt

Reverses all elements between i and j



Random Perturbations

Swaps two elements