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Data Structures and Algorithms II

Project 3

User’s Manual

Setup and Compilation

\*\*\*\*\*At the last minute I broke the brute force algorithm somehow, I was not able to calculate the costs or times for 12+ cities. The GA algorithm will produce a result, but the brute force will crash the terminal if you try 12+ cities. I think it had to do with the method I used to handle the cost calculation.

1. Download and unzip the file the maples.zip file from eLearning on a Linux, macOS, or windows machine.
2. The submission includes:

* userParse.cpp
* userParse.hpp
* geneticAlg.cpp
* geneticAlg.hpp
* distances.txt
* data.xlsx
* main.cpp
* usersManual.docx (this file)
* Makefile
* UML diagram

1. Environment: this program has been tested in the multi-platform lab and will run there.
2. Compiling: This program includes a Makefile. To use this open up the project directory on the command line and type make. It will create an executable called main, to run this simply type ./main and the program will start.
3. User Input: several pieces of information are required from the user, they are listed below.

* The number of cities to run
* The number of individual tours in a given generation
* The number of generations to run
* The percentage of a generation that should be comprised of mutations

1. Output: The text below should be output into the console.

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Number of cities run: 9

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It took the GA algorithm: 0 seconds and 516623 microseconds.

Genetic algorithm cost: 426.27

It took the Brute force algorithm: 0 seconds and 758058 microseconds.

Optimal Brute force cost: 329.63

The GA produced a solution that is 129% of the optimal solution.