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**User Manual - Project 1 - Search for Spatio-Temporal Resources**

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This readme file explains the steps to be followed for running each of the algorithms.

This project has been implemented using Leaflet Routing Machine and the Open Street Maps. The necessary files for running the Algorithms have been incorporated into the zip folder of each algorithm.

**Please Note: The OSM might run slow at times depending on the load on the servers and server maintenance times, the route and the summary of the simulation given out by the algorithms might turn out to be slower.**

**Tools to be installed:**

1. XAMPP Server with PHPMYADMIN

2. Web Browser

**Instructions**:

1. Install xampp server suited for your computer from https://www.apachefriends.org/download.html.

2. After the installation, make the following changes to the default installation variables. This needs to be done because the default values of the runtime variable is set to only 30 seconds which is not suitable for our purpose.

The following steps are very important.

a. For Xampp version on Windows please go to xampp\phpMyAdmin\libraries\config.default.php

Look for : $cfg['ExecTimeLimit'] = 600;

b. Add this line to xampp\phpmyadmin\config.inc.php

$cfg['ExecTimeLimit'] = 6000;

c. And Change xampp\php\php.ini to

post\_max\_size = 750M

upload\_max\_filesize = 750M

max\_execution\_time = 5000

max\_input\_time = 5000

memory\_limit = 1000M

d. And change xampp\mysql\bin\my.ini

max\_allowed\_packet = 200M

3. After the changes have been made, copy the contents of the unzipped folder into the htdocs folder of the XAMPP installed directory.

xampp\htdocs\algorithm\_folder\_contents.

4. After the installation, run the Apache server and the MYSQL database server.

5. Start a web browser and open the javascript console. The javascript console for each of the internet browsers is given in the following link:

http://webmasters.stackexchange.com/questions/8525/how-to-open-the-javascript-console-in-different-browsers

6. Upload the csv files to MYSQL database using PHPMYADMIN. The following is the schema of the database.

Name of the database: dbms\_db

Table 1: nodes <node\_id, latitude, longitude3

Table 2: edges <block\_id, block\_name, latitude\_1,longitude\_1, latitude\_2,longitude\_2, node\_id\_1, node\_id\_2, number\_of\_blocks, operational>

Table 3: db\_projection<block\_id, available,timestamp,available\_current, available\_current\_20, available\_current\_40, available\_current\_60, available\_20, available\_40, available\_60>

available\_current is the column where the values in the available column has been decreased by random values for differentiating between historical and current availability scenarios esp. to be used by historical analysis algorithm. available\_current\_20, available\_current\_40, available\_current\_60, available\_20, available\_40, available\_60 are the columns with decreased slots to introduce congestion for the corresponding congestion levels as indicated by the name of the column. The columns (available\_current\_20, available\_20), (available\_current\_40, available\_40), (available\_current\_60, available\_60) are essentially the same. These columns are repeated because the baseline algorithm (task 3), historical analysis 1(task 2 - greedy), historical analysis 2(task 2 -gravitational) use the available\_current\_20, available\_current\_40, available\_current\_60 for fetching the values from the database and the algorithms deterministic 1 (task 3 -greedy), deterministic 2 (task 3 -gravitational) and Nash equilibrium use the columns available\_20, available\_40, available\_60.

7. The environment is now set up. For running each of the algorithms please follow the steps below.

Steps to run the algorithms:

1. Unzip the folder and copy it in htdocs folder of the XAMPP directory.

2. Open the browser and then type localhost/input.html

3. Enter the timestamp in the format YYYY-MM-DD HR:MIN:SEC (Eg: 2012-04-05 21:10:51) Values range from (2012-04-05 21:10:51 to 2012-05-05 23:59:09).

4. Enter the desired congestion level (0, 20, 40, 60)

5. Select the destination location from the drop down menu (note that we have only one location - final destination where the user intends to go and assuming that the search for the resources starts from here).

6. After the route has been displayed on the map, click the update route information/ Calculate button on the input page. The console of the javascript will output the results of the simulation.

For Nash Equilibrium algorithm:

7. If the selected algorithm is Nash then, in order to create a multi-user simulation environment the number of available at the blocks has be decreased after a vehicle-slot pair is assigned. Do not refresh the input page because we also have to keep track of the changes being made to the database to revert back the state of the database.

8. After the algorithm has been run for as many times needed then click the reset button to revert the database back before refreshing the database.