Artificial Intelligence Course for third year students

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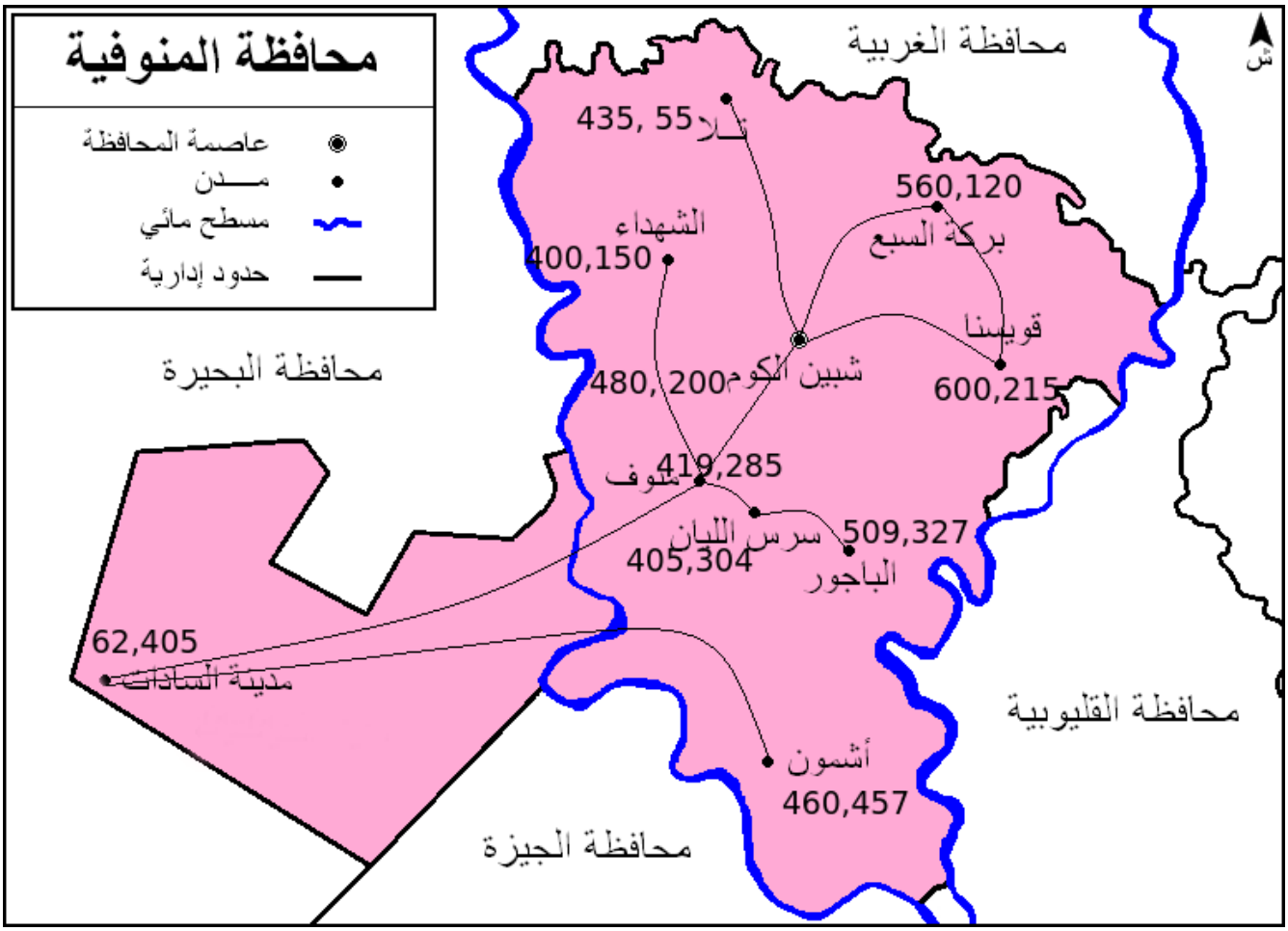
Applying and Testing Search Algorithms on Realistic Maps

The goal of this task is to train the students on developing and testing Artificial Intelligence Search Algorithms on Realistic Geographical Maps.

Inputs:

1- A map of Almonofeya governorate describing the centers of each city(x and y coordinates), realistic possible distances between cities that have straight transportation lines.



Write a computer program that do the following:

1- Reads the map description (x, y coordinates of city centers, cities' names) from the user in command line or preserves the map description stored within the program using the appropriate data types (arrays for example).

2- Once data is received, user is asked to choose from a list: which city to move from, which city to move to, which algorithm to be used (Breadth first search, Depth First Search, Greedy or A*).

3- Program replies to the user with a detailed output describing the steps taken to achieve the goal.

4-It is an advantage if the map description (x, y coordinates of city centers, cities' names, realistic distances between cities) is received using some sort of GUI(a nice grid that facilitates receiving input from the user).The same goes if the Map from source to destination is drawn and displayed step by step using the GUI.

Haversine formula

Note:

1- X,Y coordinates of this map are longitude and latitude from Google maps.

2- The realistic distances are approximately calculated from Google maps, attached as an excel sheet.

Credits go to Ahmed Bakoush, A 2014 undergraduate student for the above two items.

3- A maximum of two students can work as a team on this project

4- Google maps is a good option to consider.

5- Egy- GeoInfo