Project 1 Dijkstra Algorithm and A* Algorithm

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In this project I implemented dijikstra and A* algorithm for the searching problem.

The program is on Pyhon 2.7 and imported packages as follows: numpy, heapq, collections and common. To make sure the file runs normally, please import these packages. And please change the file directory in "__main__" when running the file.

The first part is transforming the txt data into numpy arrays. This part includes read file into list, convert list to array, and build the adjacency matrix. The #comment are ignored and the data is separated by "Vertices" and "Edges". That makes sure every txt file in the same format could be read normally. Numpy array type is easy for program appliance.

The next part is using heap to apply Dijkstra algorithm. By push and pop vertices the algorithm is easy to put into practice. The data is transformed into list for processing the heap.

The last part defines class A* to implement the algorithm. The Manhattan distance is used. Open, close set are set to determine which node to expand. The result will be a sentence printed like: " The shortest path is [0, 3, 15, 56] ,it cost 955".

**All programs are uploaded to my github: https://github.com/wed91007/project-gwu/*