ACI Assignment 1
Question 2A – Travel Agent

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A businessman wants to establish his new branches in Middle East countries. He needs to travel from Turkey to Kuwait by flight. Create an algorithm to help him to reach the destination with optimal cost. The cost factor may be attributed by ticket price, time taken on a particular route which are depicted in the below map. Here ticket price in dollars and time taken to particular route is denoted in Hours. By using the information provided for each city. Use the following algorithm to solve the problem:

a) Uniform cost search.

b) A* search.
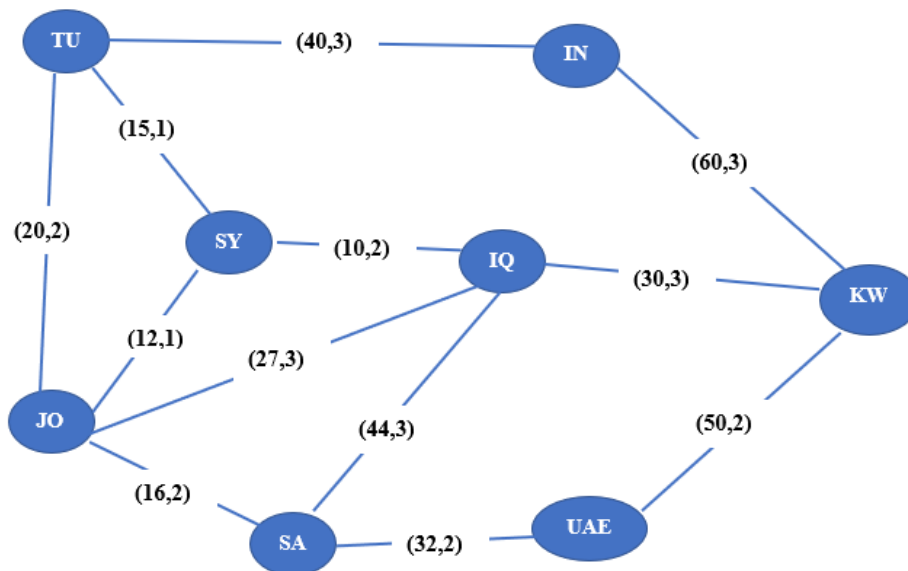
Iran	IN
Iraq	IQ
Turkey	TU
Syria	SY
Jordan	JO
Saudi Arabia	SA
United Arab Emirates	UAE
Kuwait	KW

Note 1:

1. Between every pair of states, parameters = (ticket_cost-TC, time expected-Hours) is given for each edge.

2. Take linear combination of the relevant cost parameters for your cost design without the loss of information. Time taken is considered twice as important related ticket cost.

3. You may design your own heuristic function and explain in your documentation.

Evaluations will be based on the following:

1. Explain the PEAS (Performance measure, Environment, Actuator, Sensor.) for your agent. (20% marks)

2. Use Uniform cost search and A* search and implement the algorithms in PYTHON. Compare to interpret the results in terms of the algorithm working, performance & shortest path if obtained relevant to the given problem. (20+20=40% marks)

3. Print the path, and the total cost of the path. (20% marks)

4. Include code in your implementation to calculate the space complexity and time complexity and print the same. (20% marks)

Note 2:

- You are provided with the python notebook template which stipulates the structure of code and documentation. Use well intended python code.

- Use separate MS word document for explaining the theory part. Do not include theory part in the Python notebook except Python comments.

- The implementation code must be completely original and executable.

- Please keep your work (code, documentation) confidential. If your code is found to be

- plagiarized, you will be penalized severely. Parties involved in the copy will be considered equal partners and will be penalized severely. Collaboration among different group members will also be considered as plagiarism.