

In the class, we had completed the A\* algorithm for a graph. Now your task is to implement the complete version of your assignment in that code. You are to develop the entire solution from scratch and submit one .ipynb file.

Note:

- Develop your solution based on the code done in class.

## Files

distances.csv: distance from a star to another

Coordinates.csv: coordinate of a star in a 3D space

*Example: Coordinate of Proxima Centauri is 176, -406, -49*

*And YZ Ceti is -280, 1568, 40*

*The euclidean distance between them is 2028 but the distance file shows that the distance is 2273. So, you see that the actual distance isn't actually the euclidean distance due to the fact that the void between two stars are filled with meteorites etc.*

distances.csv file contains distance from a source star to a destination if and only if there's a "space bridge" from the source to the destination. If no such entry is found then there isn't a direct way between those stars (might be a path but no direct edge/way i.e you can't go directly from those two stars you might need to visit some intermediary stars first).

Think of the stars as vertices and the actual distance between them as edges. Now, you can create an adjacency list out of this information.

Now, you are on a spaceship & you start from the Sun. Find the shortest path from the **Sun** to the **Upsilon Andromedae** using **Dijkstra's algorithm** and **A\*** then find out how these two differ in terms of result and/or time? Were you able to reach there? If not then try to reach **61 Virginis**

Another good test case is: Src: TRAPPIST-1

Dst: 55 Cancri

Possible output:

A star algorithm:

Path: TRAPPIST-1 -> Andro -> ... -> Sun -> 55 Cancri

Cost: 99

Time: 35

Dijkstra algorithm:

Path: TRAPPIST-1 -> Andro -> ... -> Sun -> 55 Cancri

Cost: 99

Time: 135

**How to get system time: Search on Google "get system current time in milliseconds python"**