**UNIVERSITY OF ASIA PACIFIC**

Department of Computer Science and Engineering



**Course Title :**

**Artificial Intelligence and Expert Systems Lab**

**Course Code : CSE 404**

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# Project Name: Solving Maze Problem using A\* Algorithm

**Introduction:**

The project problem is to Solving Maze Problem, using A\* search algorithm and then find out the optimal path. A\* algorithm is a searching algorithm that searches for the shortest path between the initial state to the final state. In this project, I will find the most optimal path from starting to the destination(goal node) using A\* search algorithm.

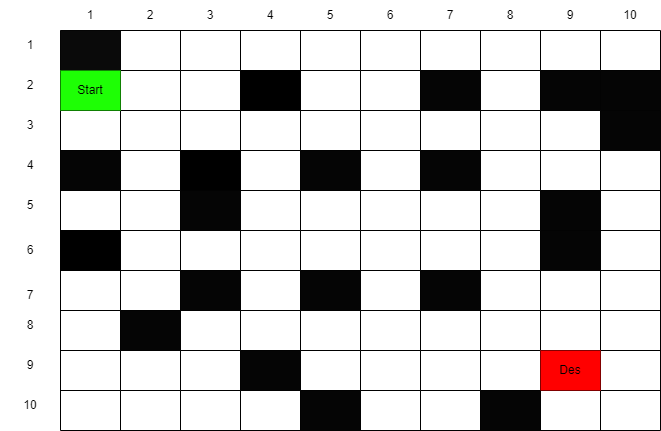
**Objective:**

The objective of this project is to find an optimal path from starting to the goal node.

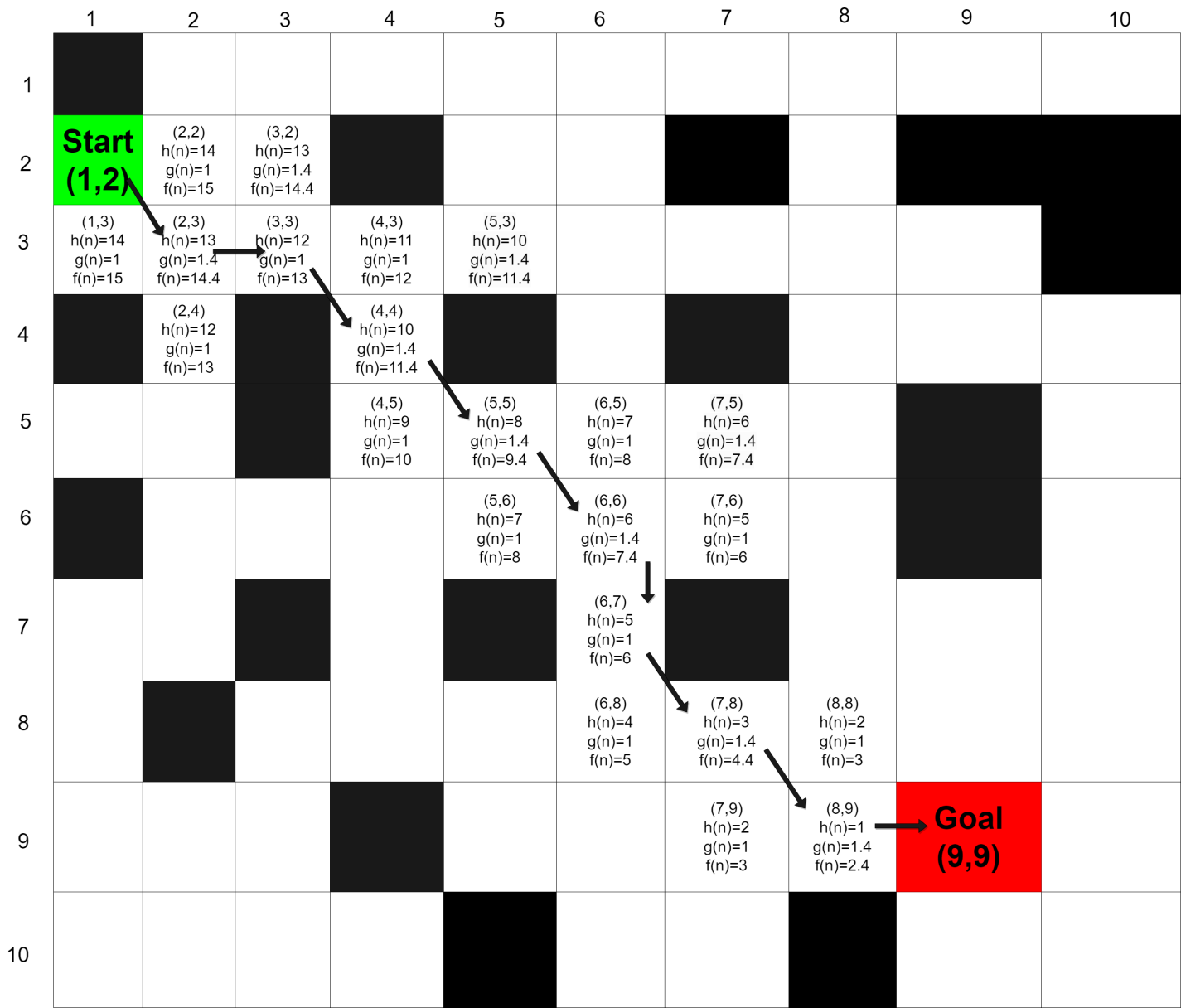
**Tools And Languages:**

* **Map Designing:** Draw.io
* **IDE:** PyCharm
* **Programing Language:** Python

**Designed Grid:**



**Final Grid:**

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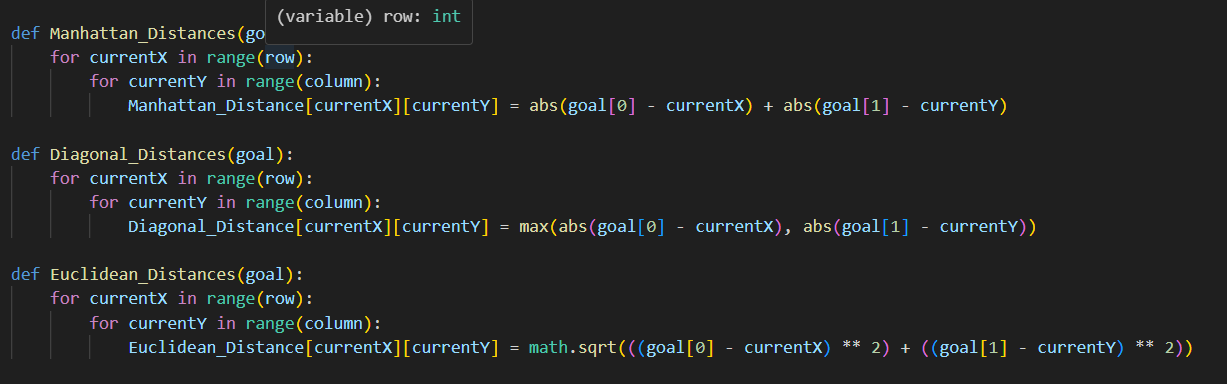
Here,

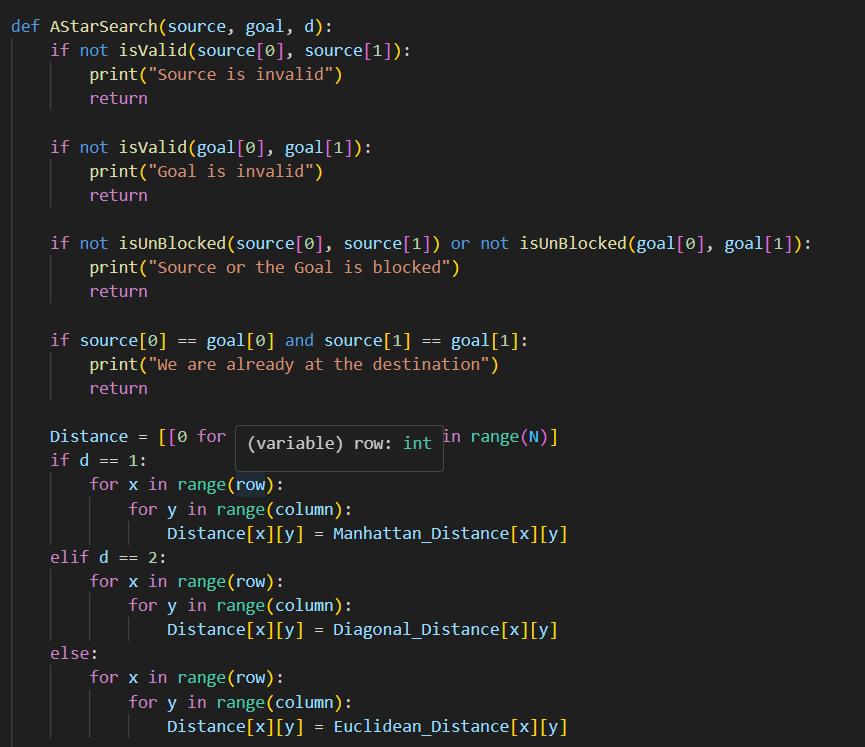
**Start Node** : Green

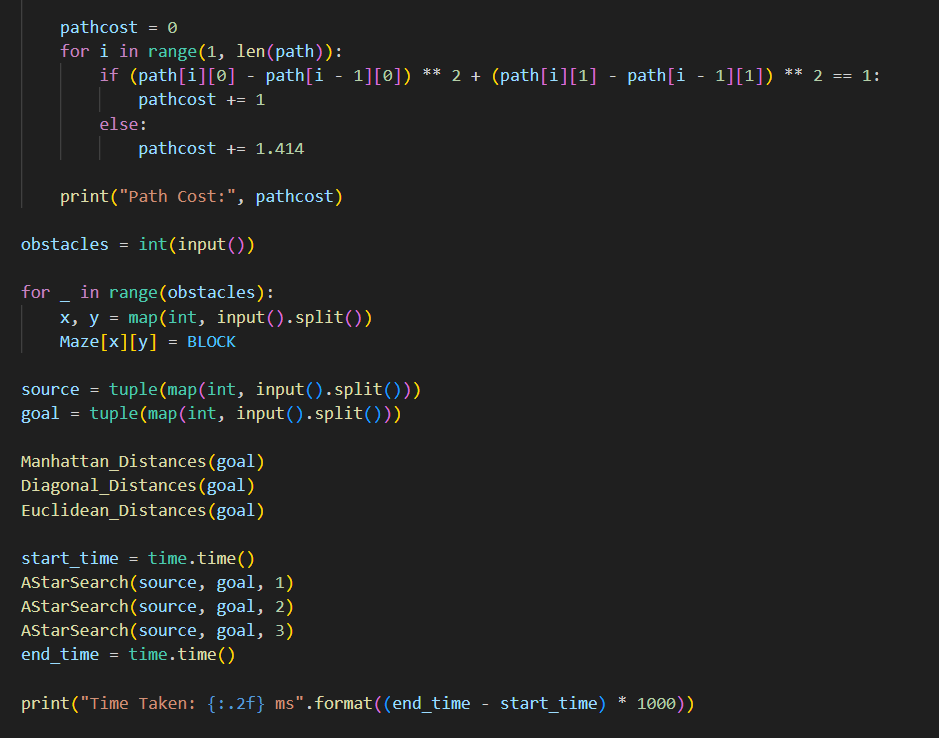
**Goal Node** : Red

Cost in Distance : kilometer (km)

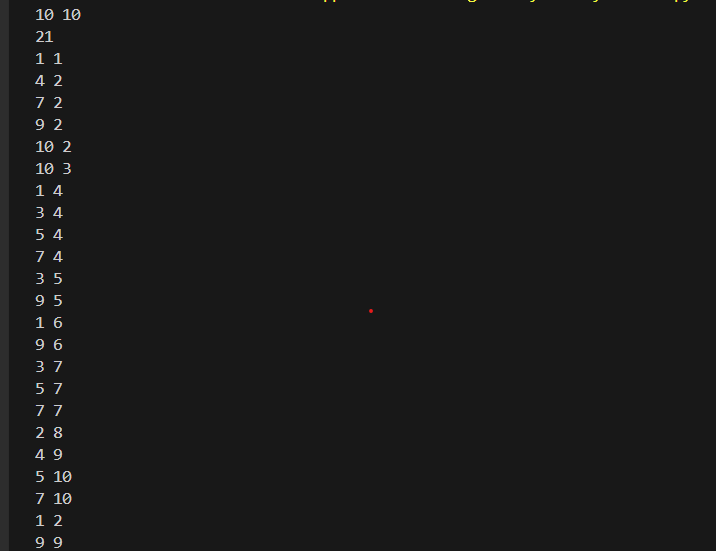
**Implemented using python:**



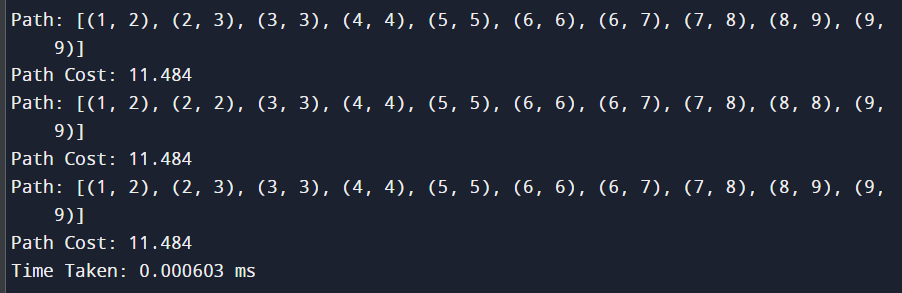




**INPUIT:**



**Output:**



**Result Analysis:**

After Using A\* Search Algorithm on this designed map, on output we can find the shortest path:

So, we can say that that is the most optimal and shortest path.

**Conclusion:**

In this project, after successful implementation, A\* search algorithm gives the most optimal path as output. In conclusion, A\* search algorithm is a powerful and beneficial algorithm with all the potential. So we can use this algorithm for approximate the shortest path in real-life situation, like - in maps, games etc.