Project -1

Implementation of a small map (Home(Narayanganj) to UAP) using A* Search Algorithm

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Introduction:

A* algorithm is a searching algorithm that searches for the shortest path between the initial and the final state.It is used in various applications such as maps.

Idea: Avoid expanding paths that are already expensive but expands most promising paths first

Evaluation function f(n)= g(n)+h(n)

g(n) actual cost to reach n
h(n) estimated cost from n to goal
f(n) estimated total cost of path through n to goal

Objective:

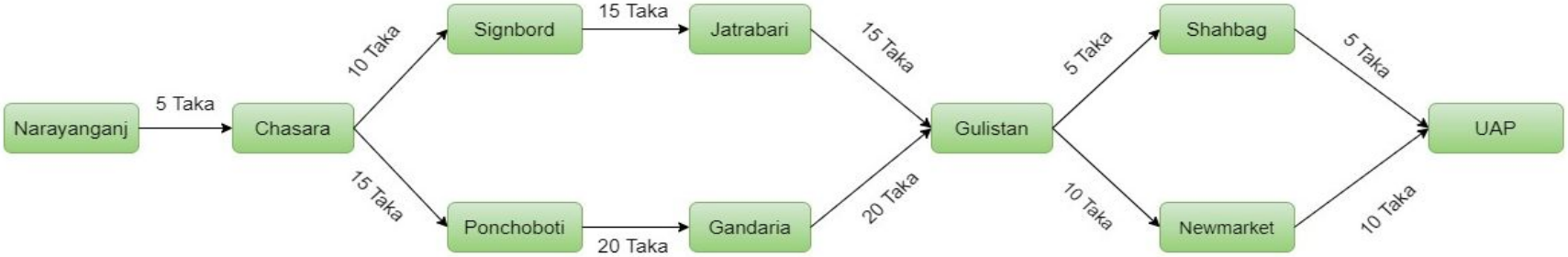
A* is a graph traversal and path search algorithm, which is often used in many fields of computer science due to its completeness, optimality, and optimal efficiency.

In this project the main idea is implementation of a small map (My own home to UAP) using A* Search Algorithms. And in this project we try to find an optimal result or path from my own home to UAP. In this case the start node home(Narayanganj) and goal node (UAP).

Designed Map:

Unit: Taka(BD) and Cost assume BD transport such as (Bus,Auto,rickshaw,etc).

Home(Narayanganj) to UAP.

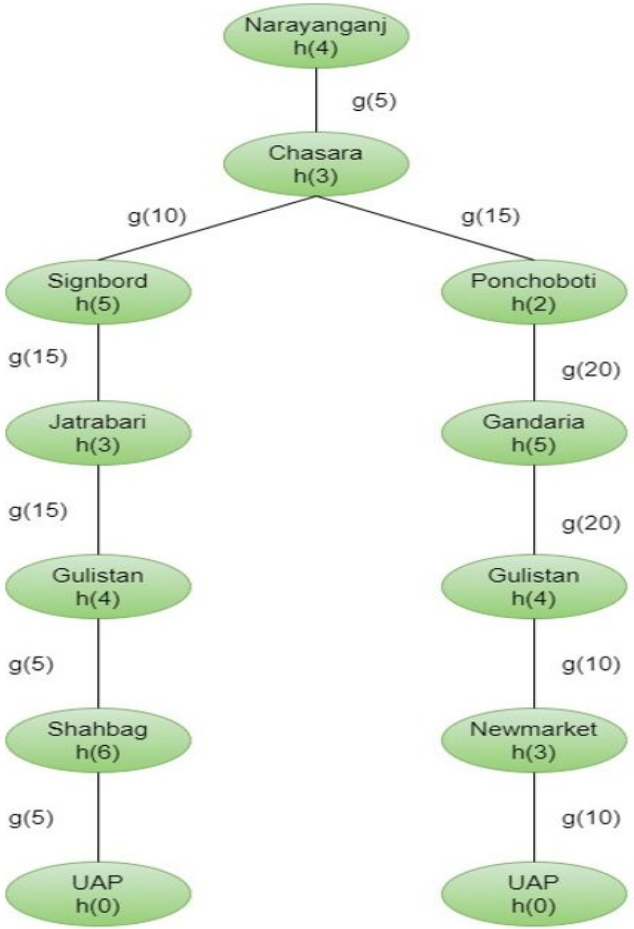


Search tree of the map:

The Corresponding search tree:

Convert State Space Graph to Search Tree according to location.

Home(Narayanganj) to UAP.



Implementation:

Now i am show my implementation and demonstration in colab.

Result analysis:

Now i am show my result analysis part in google docs report file.

conclusion:

In this project find an optimal way or path **A->B->C->E->G->I->K** (from Home(Narayanganj) to UAP).

Home(Narayanganj)->Chasara->Signbord->Jatrabari->Gulistan->Shahbag->UAP.

This is the optimal path or minimum path cost(55).

In this project my implementation result and calculation result are the same so I hopefully say that this optimal path is right.

Thank You...!