Faculty of Engineering & Technology
Electrical & Computer Engineering Department

ARTIFICIAL INTELLIGENCE

ENCS3340

Project #1 Search Algorithms

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Choosing algorithms group based on our IDs: 1190747 and 1191375, 1190747 < 1191375

747 mod 4 = 3.

A* search

It is a searching algorithm that is used to find the shortest path between an initial and a final point.

the Algorithm calculates the cost to all its immediate neighboring nodes, n, and chooses the one incurring the least cost. This process repeats until no new nodes can be chosen and all paths have been traversed. Then, you should consider the best path among them. If f(n) represents the final cost, then it can be denoted as
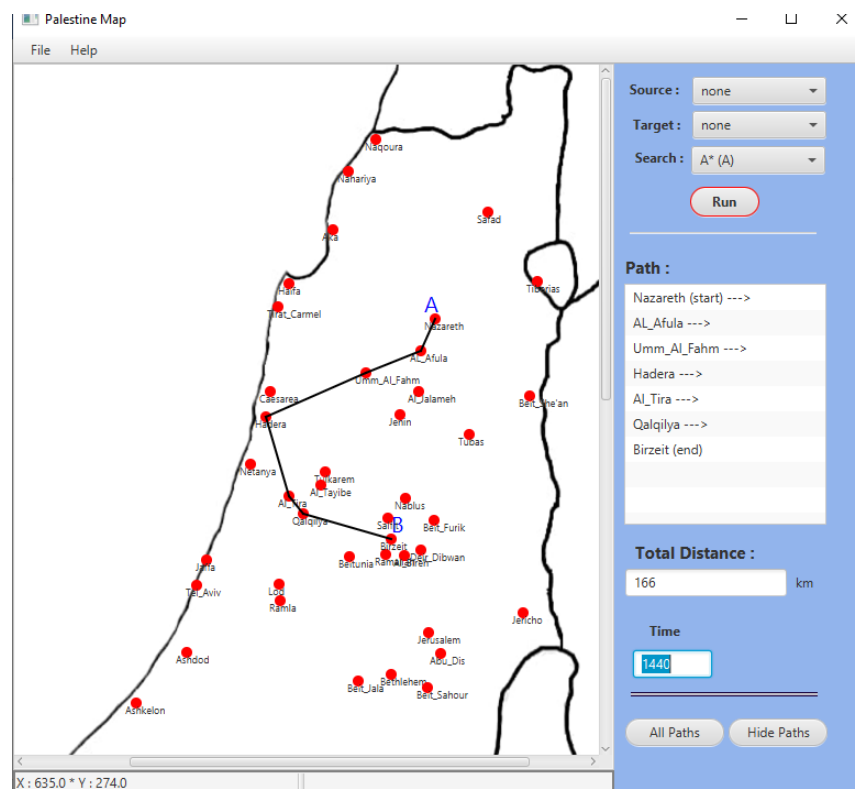
f(n) = g(n) + h(n).

where g(n) is the real distance, and h(t) is the heuristic distance.
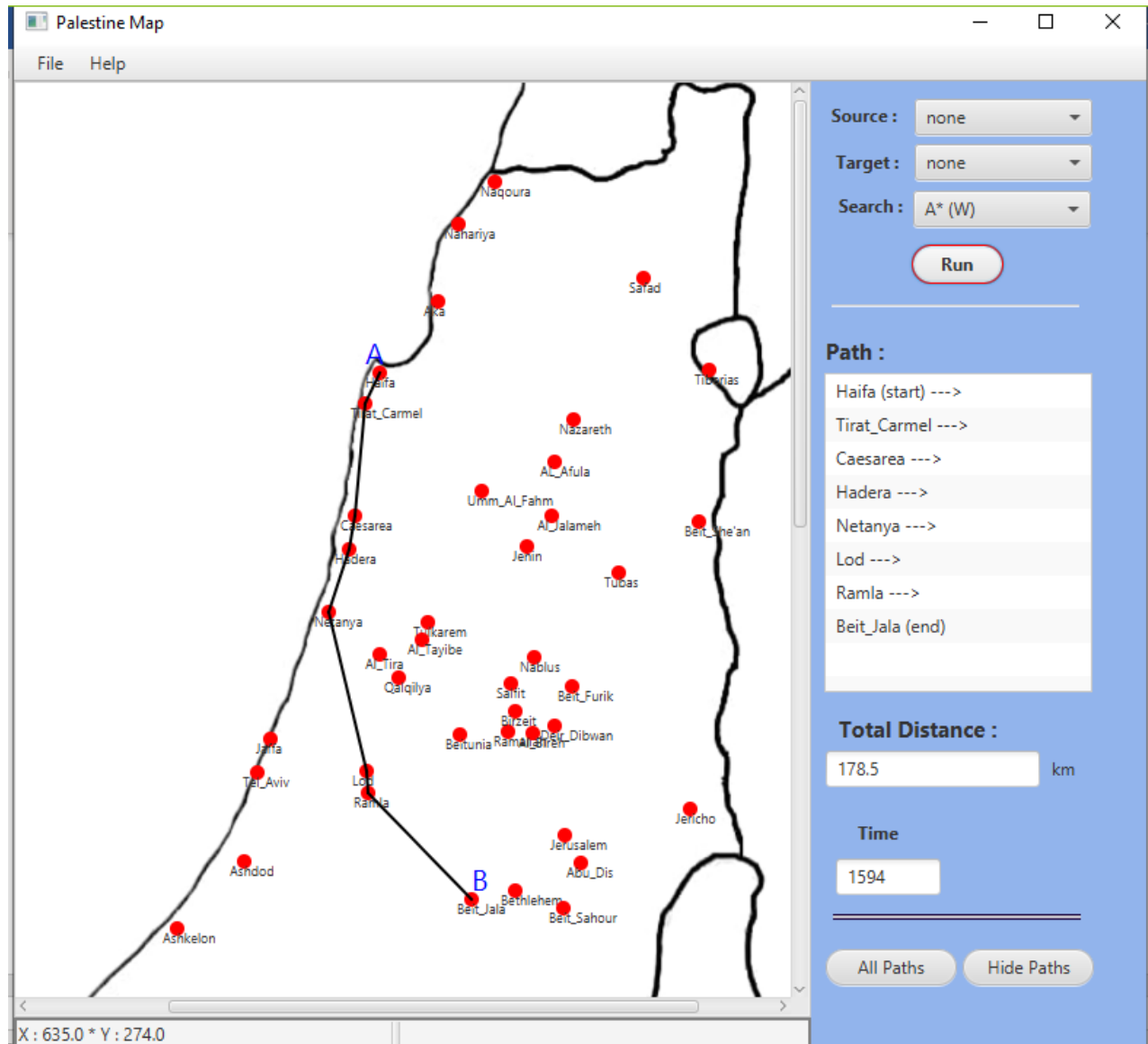
A* algorithm will be implemented in two ways:

Car distance:

In this way g(n) is the real car road distance and h(n) is the aerial (straight line distance) between n and G.

Walk distance:

In this way g(n) is the real car road distance and h(n) is the walking distance (average between car distance and aerial distance).

Uniform cost search:

The primary goal of the uniform-cost search is to find a path to the goal node which has the lowest cumulative cost. Uniform-cost search expands nodes according to their path costs form the root node. It can be used to solve any graph/tree where the optimal cost is in demand.
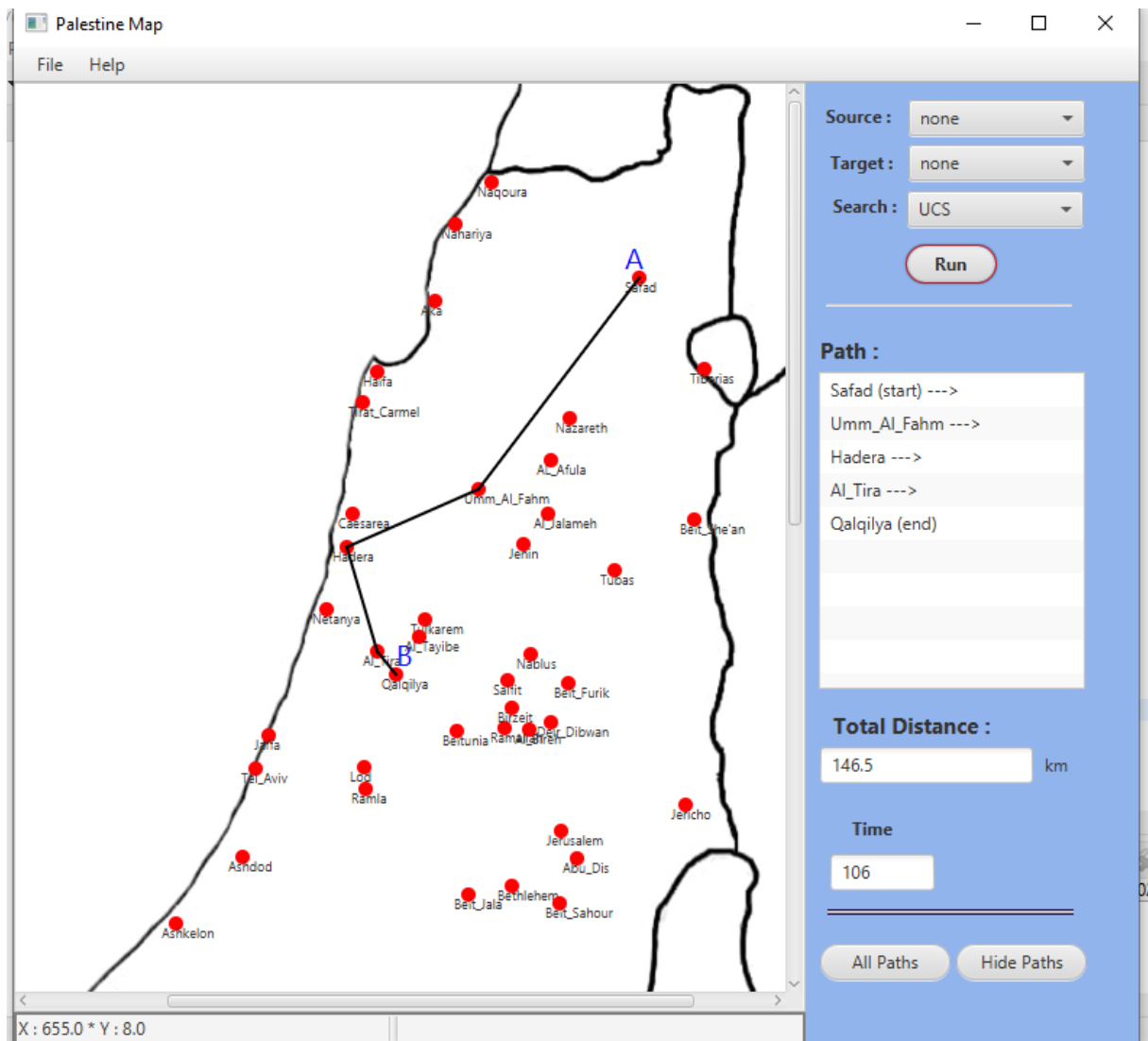
Greedy search

The same as A* algorithm, but f(n) = h(n).