BIRZEIT UNIVERSITY

Faculty of Engineering and Technology

Electrical & Computer Engineering Department

Artificial intelligence

Project1

Prepared by:

Name: mahmoud nobani   **Id:**1180729

Name: Ibrahim nobani   **Id:**1190278

Instructor: Dr. Adnan yahya

Section: 5

Date:5/3/2022

Project description and theory:

In this project we aimed to find the best route using the different search algorithm, we were tasked with doing 3 different search algorithm, (BFS, DFS, Astar) we also did an extra one which is the uniform cost search algorithm, now with a small preview about these different algorithm.

❖ Breadth first search (BFS):

It's an algorithm for searching a tree data structure for a node that satisfies a given property. It starts at the tree root and explores all nodes at the present depth prior to moving on to the nodes at the next depth level following queue data structure.

❖ Depth first search (DFS):

it's an algorithm for traversing or searching tree or graph data structures. The algorithm starts at the root node (selecting some arbitrary node as the root node in the case of a graph) and explores as far as possible along each branch before backtracking, using stack data structure.

❖ Astar:

A* is an informed search algorithm, or a best-first search, meaning that it is formulated in terms of weighted graphs: starting from a specific starting node of a graph, it aims to find a path to the given goal node having the smallest cost of f where f = heuristic(n) + g(n).
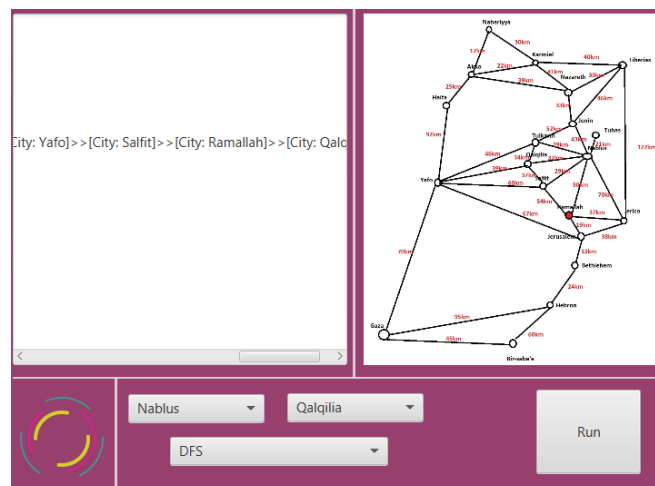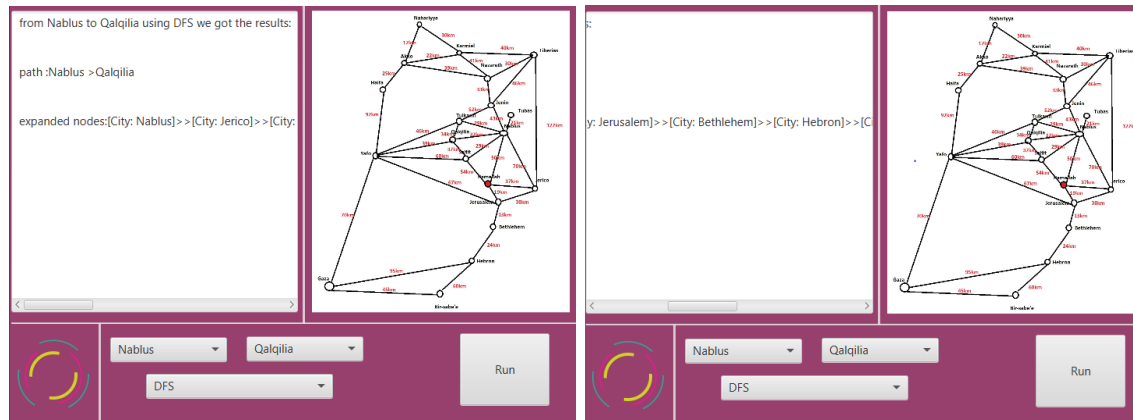
❖ Uniform cost search:

Uniform-cost search is *uninformed* search: it doesn't use any domain knowledge. It expands the least cost node, It can be viewed as a function $f(n) = g(n)$ where $g(n)$ is a path cost.

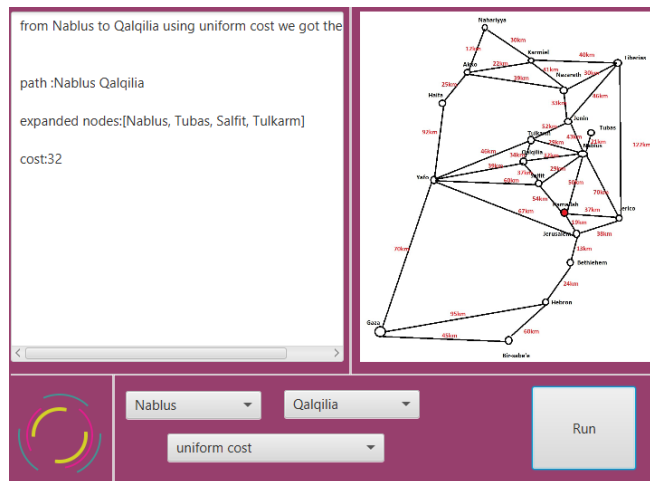# Project preview and run:

Now we start with a path from Nablus to Qalqilia using BFS which gave us the following result:
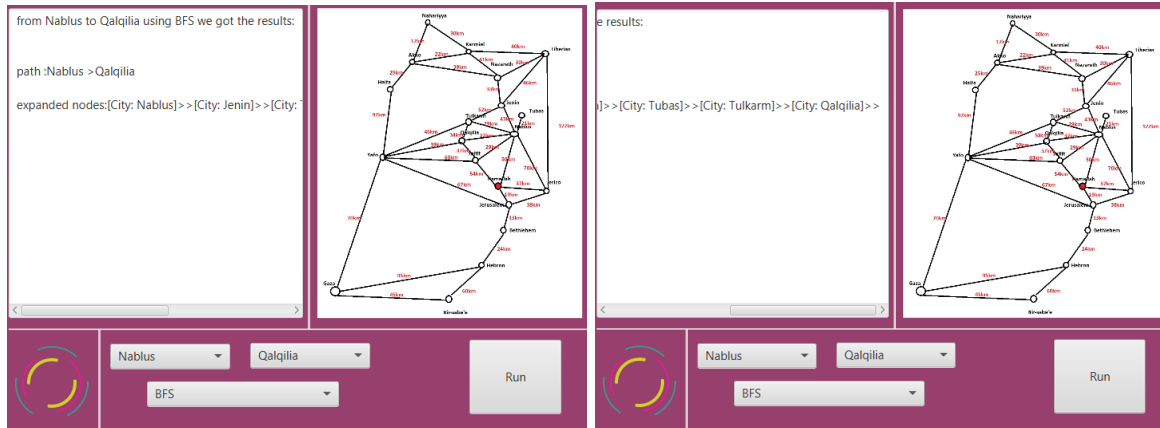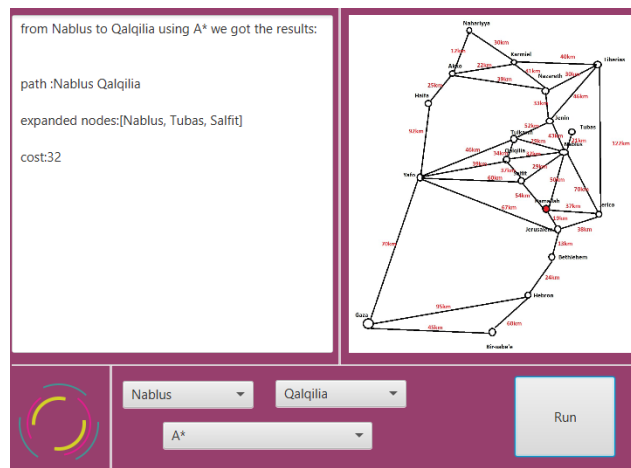

Now we do the same start and ending with DFS instead:

Now we perform unifrom cost search:

Now we perform A* for driving distance:

A* for walking distance.: