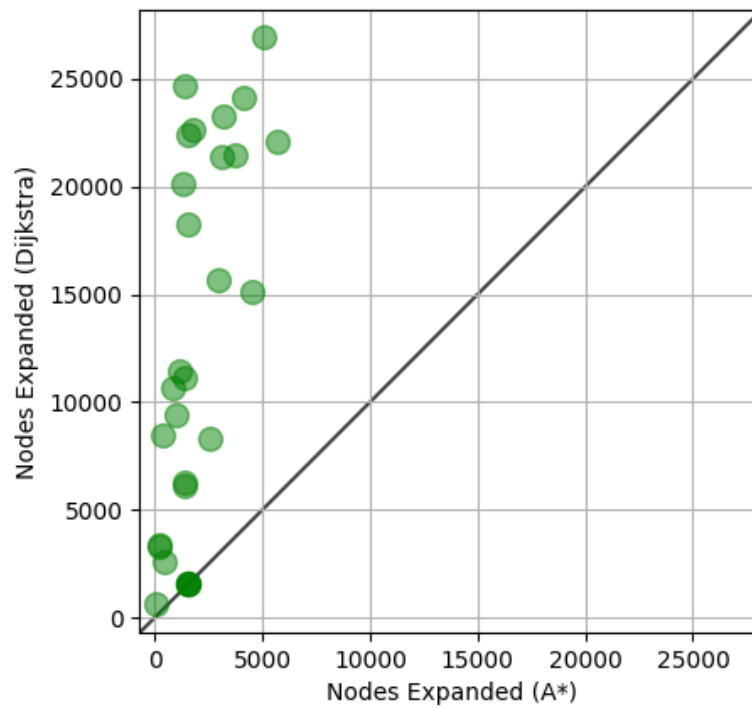
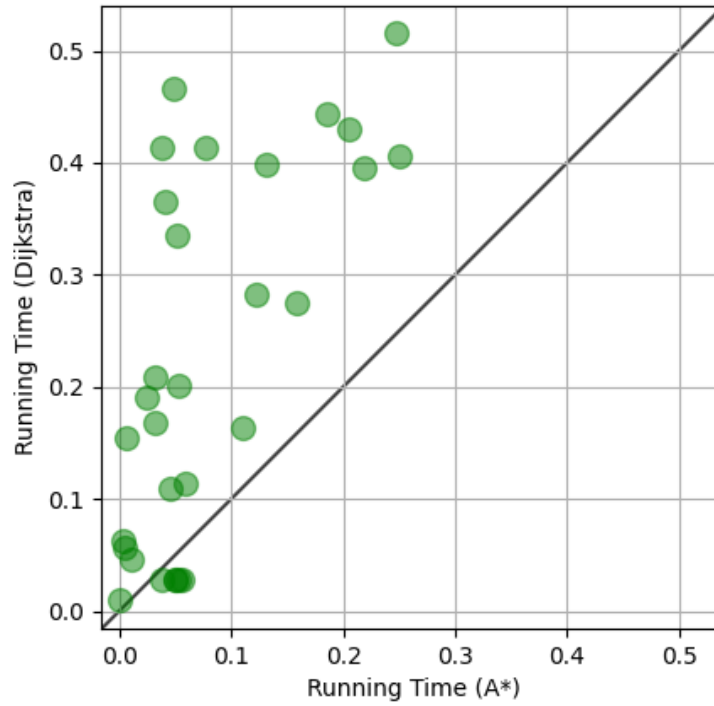


CMPUT 366 – Assign 1
David Schroeder



1.
 - a. Points clustered near the diagonal line indicate scenarios where both algorithms perform similarly. Points above the line indicate that A* performed better than Dijkstra's. Points below the line indicate that Dijkstra's performed better than A*. In the nodes expanded graph, A* outperformed or matched dijkstra's in every test. Similarly, in the runnings time graph, A* almost always had a shorter running time than dijkstra's. The reason for this is that A* operates in an almost identical manner as dijkstra's, where it expands the lowest cost node, with the added benefit of a heuristic function which helps to focus its search in more promising directions, thereby reducing the overall time and nodes expanded needed to find a goal.
 - b. The points are in the same relative locations on the two plots because running time increases roughly proportional to the number of nodes expanded. So tests that expand more nodes also have an increased running time.

2.

Since the WA* implementation is continuously returning higher solution costs than the correctly implemented Dijkstra's algorithm for the same problem instances, it suggests that the weight value is set to a value above 1. This weight factor would give more emphasis to the heuristic value which would decrease overall search times but likely produce solutions with higher than optimal costs.