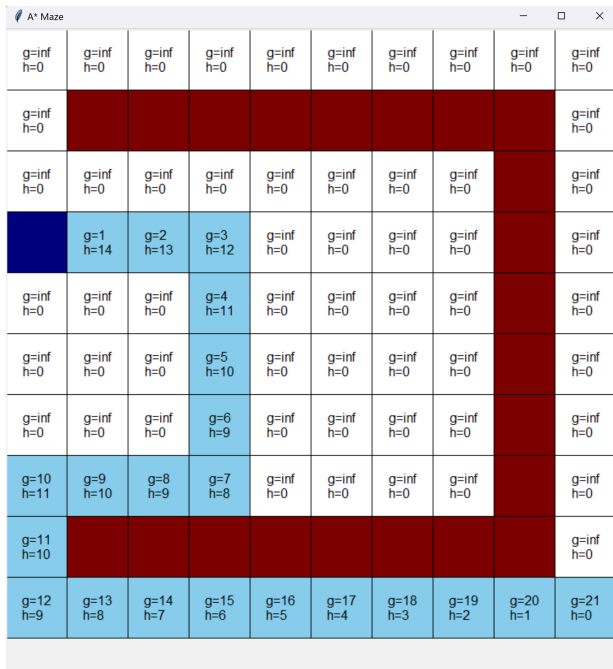
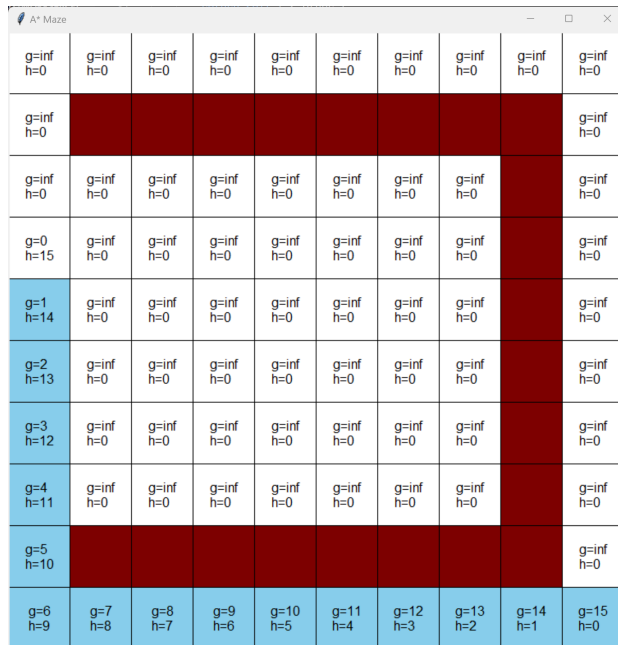


[Q1] A*

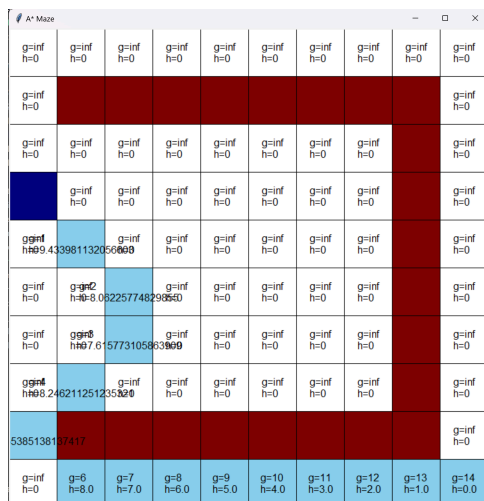
Greedy Best-First Search



- Here we can observe that the path taken by the agent in A* search tends to be the shortest path from the start to the goal, considering both the actual cost incurred so far ($g(n)$) and the estimated remaining cost ($h(n)$). The Greedy Best-first search always expands the node that is closest to the goal according to the heuristic function, without considering the actual path cost.

[Q2]

A* using Euclidean Distance Heuristic



the path taken by the algorithm tends to follow a route that minimizes the total estimated cost, which includes both the actual path length (g -value) and the estimated remaining distance to the goal (h -value)

g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0
g=inf h=0									g=inf h=0
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
	g=1 h=10.0	9544457292800	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=7 h=9.0	g=6 h=8.0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
53851381	17417								g=inf h=0
g=10 h=9.0	g=11 h=8.0	g=12 h=7.0	g=13 h=6.0	g=14 h=5.0	g=15 h=4.0	g=16 h=3.0	g=17 h=2.0	g=18 h=1.0	g=19 h=0.0

Greedy Best-First With Euclidean

GBFS prioritizes cells based solely on their heuristic values (h-values), without considering the actual cost to reach each cell (g-values). This means that the algorithm always selects the cell that appears to be closest to the goal, regardless of the actual path cost.

[Q3]

Alpha	Beta	Observation
1	2	The path moved over a row before moving down and continuing the path
2	1	The path did not change
2	3	The path did not change

Alpha 1 Beta 2

g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0
g=inf h=0									g=inf h=0
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
	g=1 h=14	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=inf h=0	g=2 h=13	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=inf h=0	g=3 h=12	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=inf h=0	g=4 h=11	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=6 h=11	g=5 h=10	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0		g=inf h=0
g=7 h=10									g=inf h=0
g=8 h=9	g=9 h=8	g=10 h=7	g=11 h=6	g=12 h=5	g=13 h=4	g=14 h=3	g=15 h=2	g=16 h=1	g=17 h=0

Alpha 2 Beta 1

A* Maze										-	□	×
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0			
g=inf h=0												g=inf h=0
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=1 h=14	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=2 h=13	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=3 h=12	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=4 h=11	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=5 h=10												g=inf h=0
g=6 h=9	g=7 h=8	g=8 h=7	g=9 h=6	g=10 h=5	g=11 h=4	g=12 h=3	g=13 h=2	g=14 h=1	g=15 h=0			

Alpha 2 Beta 3

A* Maze										-	□	×
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0			
g=inf h=0												g=inf h=0
g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=1 h=14	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=2 h=13	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=3 h=12	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=4 h=11	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0	g=inf h=0				g=inf h=0
g=5 h=10												g=inf h=0
g=6 h=9	g=7 h=8	g=8 h=7	g=9 h=6	g=10 h=5	g=11 h=4	g=12 h=3	g=13 h=2	g=14 h=1	g=15 h=0			