

Motion Planning Lab

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Problem Lab Assignment

(points)

1. Dijkstra Note that multiple path with the same cost are possible. For this one, I pick one with the least turn.

Student name(s) – Motion Planning

2 Part A: Written assignment

Turn **Part A** in at the end of lab 1 of motion planning.

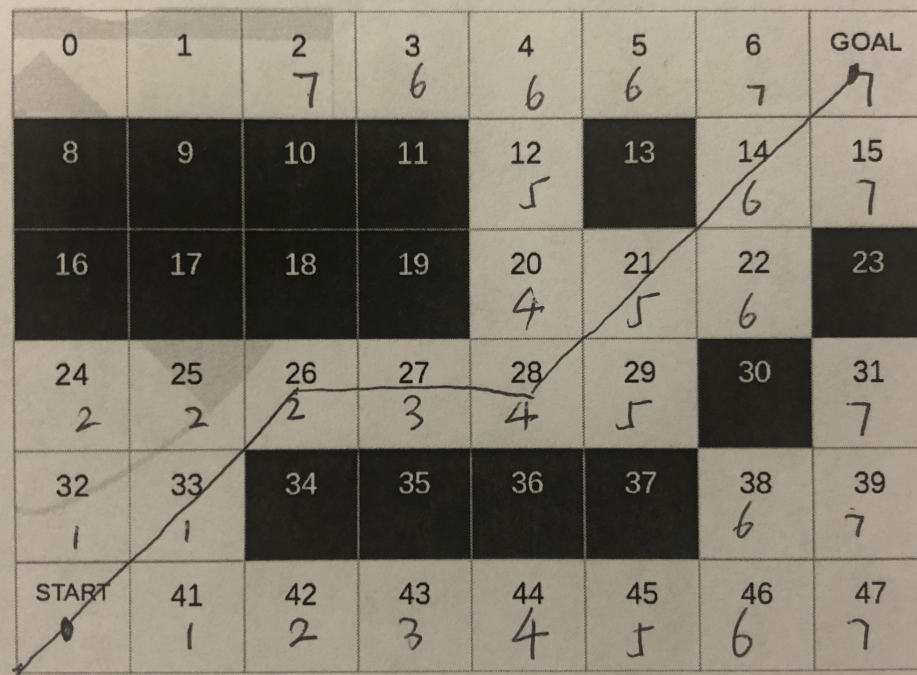


Figure 1: Grid World

2.1 Grid world planning with Dijkstra's

Figure 1: Grid for Dijkstra

step	visited nodes	cost	final path
1	41	1	start
2	33	1	33
3	32	1	26
4	42	2	27
5	26	2	28
6	25	2	21
7	24	2	14
8	43	3	goal
9	27	3	
10	44	4	
11	28	4	
12	20	4	
13	45	5	
14	29	5	
15	21	5	
16	12	5	
17	46	6	
18	38	6	
19	22	6	
20	14	6	
21	5	6	
22	4	6	
23	3	6	
24	47	7	
25	39	7	
26	31	7	
27	15	7	
28	goal	7	

2. A* Note that I search in counter clock wise order. In another word, when two grids have the same cost, I would start from the largest index. Since we use mahattan distance, there could be multiple path with the same cost.

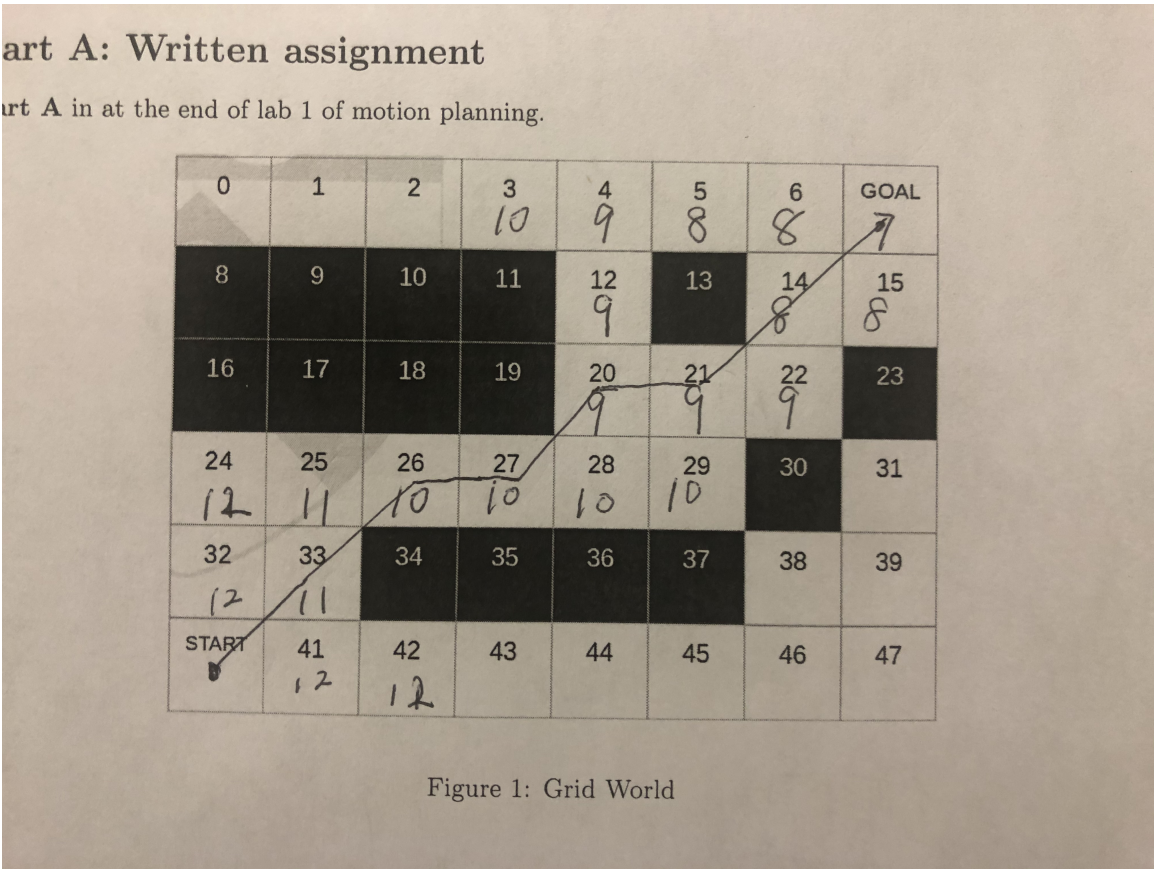


Figure 2: Grid for A*

step	visited nodes	open nodes	cost	heuristics	f value	final path
1	start	32,33,41	0	12	12	start
2	33	24,25,26,32,41,4	1	10	11	33
3	26	25,27	2	8	10	26
4	27	20,28	3	7	10	27
5	20	12,21,28,29	4	5	9	20
6	12	3,4,5	5	4	9	21
7	21	14,22,28,29	5	4	9	14
8	14	5,6,goal,15	7	1	8	goal
9	5	4,6	6	2	8	
10	goal				7	