

# Project 3

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We implemented Dijkstra's as a separate function. While running the program please enter 0 for A\* or 1 for Dijkstra's.

## 1. A\*

1) Cost[1,1,10] Start[4,3,0] Goal[2,0,1]

```
Enter 0 for A* and 1 for Dijkstra 0
Cost: [1, 1, 10]
['@', '@', '@', 'R', 'F', 'R']
['@', '@', '@', 'F', '@', 'F']
['*', 'F', 'F', 'F', 'F', 'R']
['@', '@', '@', 'F', '@', '@']
['@', '@', '@', 'F', '@', '@']

Expanded Nodes
(4, 3, 0)
(3, 3, 0)
(2, 3, 0)
(2, 4, 3)
(1, 3, 0)
(2, 5, 3)
(0, 3, 0)
(0, 4, 3)
(0, 5, 3)
(1, 5, 2)
(2, 5, 2)
(2, 4, 1)
(2, 3, 1)
(2, 2, 1)
(2, 1, 1)
(2, 0, 1)
```

2) Cost[10,1,1] Start[4,3,0] Goal[2,0,1]

```
Enter 0 for A* and 1 for Dijkstra 0
Cost: [10, 1, 1]
['@', '@', '@', 'O', 'O', 'O']
['@', '@', '@', 'O', '@', 'O']
['*', 'F', 'F', 'L', 'O', 'O']
['@', '@', '@', 'F', '@', '@']
['@', '@', '@', 'F', '@', '@']

Expanded Nodes
(4, 3, 0)
(3, 3, 0)
(2, 3, 0)
(2, 2, 1)
(2, 1, 1)
(2, 0, 1)

(cpsc8810) C:\Users\saral\Desktop\Motion Planning\project3\astar\p3>
```

3) Cost[1,1,1] Start[4,3,0] Goal[2,0,1]

```
(cpssc8810) C:\Users\saral\Desktop\Motion Planning\project3\astar\p3>astar.py
Enter 0 for A* and 1 for Dijkstra 0
Cost: [1, 1, 1]
['@', '@', '@', 'O', 'O', 'O']
['@', '@', '@', 'O', '@', 'O']
['*', 'F', 'F', 'L', 'O', 'O']
['@', '@', '@', 'F', '@', '@']
['@', '@', '@', 'F', '@', '@']

Expanded Nodes
(4, 3, 0)
(3, 3, 0)
(2, 3, 0)
(2, 2, 1)
(2, 1, 1)
(2, 0, 1)

(cpsc8810) C:\Users\saral\Desktop\Motion Planning\project3\astar\p3>
```

## 2. Dijkstra's

1) Cost[1,1,10] Start[4,3,0] Goal[2,0,1]

```
(cpssc8810) C:\Users\saral\Desktop\Motion Planning\project3\astar\p3>astar.py
```

```
Enter 0 for A* and 1 for Dijkstra 1
```

```
Cost: [1, 1, 10]
```

```
['@', '@', '@', 'R', 'F', 'R']
```

```
['@', '@', '@', 'F', '@', 'F']
```

```
['*', 'F', 'F', 'F', 'F', 'R']
```

```
['@', '@', '@', 'F', '@', '@']
```

```
['@', '@', '@', 'F', '@', '@']
```

```
Expanded Nodes
```

```
(2, 0, 1)
```

```
(2, 1, 2)
```

```
(2, 1, 1)
```

```
(2, 2, 2)
```

```
(2, 2, 1)
```

```
(2, 3, 2)
```

```
(2, 3, 1)
```

```
(1, 3, 3)
```

```
(1, 3, 2)
```

```
(2, 4, 2)
```

```
(2, 4, 1)
```

```
(0, 3, 3)
```

2) Cost[10,1,1] Start[4,3,0] Goal[2,0,1]

```
(cpssc8810) C:\Users\saral\Desktop\Motion Planning\project3\astar\p3>astar.py
```

```
Enter 0 for A* and 1 for Dijkstra 1
```

```
Cost: [10, 1, 1]
```

```
['@', '@', '@', 'O', 'O', 'O']
```

```
['@', '@', '@', 'O', '@', 'O']
```

```
['*', 'F', 'F', 'L', 'O', 'O']
```

```
['@', '@', '@', 'F', '@', '@']
```

```
['@', '@', '@', 'F', '@', '@']
```

```
Expanded Nodes
```

```
(2, 0, 1)
```

```
(2, 1, 1)
```

```
(2, 1, 0)
```

```
(2, 2, 1)
```

```
(2, 2, 0)
```

```
(2, 3, 1)
```

```
(2, 3, 0)
```

```
(2, 4, 1)
```

```
(2, 4, 0)
```

3) Cost[1,1,1] Start[4,3,0] Goal[2,0,1]

```
(cpsc8810) C:\Users\sara1\Desktop\Motion Planning\project3\astar\p3>astar.py
```

```
Enter 0 for A* and 1 for Dijkstra 1
```

```
Cost: [1, 1, 1]
```

```
['0', '0', '0', '0', '0', '0']
```

```
['0', '0', '0', '0', '0', '0']
```

```
['*', 'F', 'F', 'L', '0', '0']
```

```
['0', '0', '0', 'F', '0', '0']
```

```
['0', '0', '0', 'F', '0', '0']
```

```
Expanded Nodes
```

```
(2, 0, 1)
```

```
(2, 1, 2)
```

```
(2, 1, 1)
```

```
(2, 1, 0)
```

```
(2, 2, 2)
```

```
(2, 2, 1)
```

```
(2, 2, 0)
```

```
(2, 3, 2)
```

```
(2, 3, 1)
```

```
(2, 3, 0)
```

```
(1, 3, 3)
```

```
(1, 3, 2)
```

```
(1, 3, 1)
```

```
(2, 4, 2)
```

```
(2, 4, 1)
```

```
(2, 4, 0)
```

```
(3, 3, 1)
```

```
(3, 3, 0)
```

```
(3, 3, 3)
```

```
(0, 3, 3)
```