project_notebook-zh

January 10, 2019

1 123

A*“Google-maps”

```
In [19]: # Run this cell first!

         from helpers import Map, load_map, show_map
         from helper import Maps, load_maps, show_maps
         from student_code import shortest_path

         %load_ext autoreload
         %autoreload 2
```

```
The autoreload extension is already loaded. To reload it, use:
  %reload_ext autoreload
```

1.0.1 Map

```
In [20]: map_10 = load_map('map-10.pickle')
         show_map(map_10)
```

show_maps(map_10)Jupyter.html
1022
MapA *intersectionsroads
Intersections
intersections
10xy

```
In [21]: map_10.intersections
```

```
Out[21]: {0: [0.7798606835438107, 0.6922727646627362],
          1: [0.7647837074641568, 0.3252670836724646],
          2: [0.7155217893995438, 0.20026498027300055],
          3: [0.7076566826610747, 0.3278339270610988],
          4: [0.8325506249953353, 0.02310946309985762],
          5: [0.49016747075266875, 0.5464878695400415],
```

```
 6: [0.8820353070895344, 0.6791919587749445],
 7: [0.46247219371675075, 0.6258061621642713],
 8: [0.11622158839385677, 0.11236327488812581],
 9: [0.1285377678230034, 0.3285840695698353]}
```

Roads

roadsi roads[i]i

```
In [22]: # this shows that intersection 0 connects to intersections 7, 6, and 5
         map_10.roads[0]
```

```
Out[22]: [7, 6, 5]
```

```
In [23]: # This shows the full connectivity of the map
         map_10.roads
```

```
Out[23]: [[7, 6, 5],
          [4, 3, 2],
          [4, 3, 1],
          [5, 4, 1, 2],
          [1, 2, 3],
          [7, 0, 3],
          [0],
          [0, 5],
          [9],
          [8]]
```

```
In [24]: # map_40 is a bigger map than map_10
         map_40 = load_map('map-40.pickle')
         show_map(map_40)
```

show_maps(map_40)Jupyter.html

1.0.2

40039

show_map

- start - “”
- goal - “”
- path -

```
In [25]: # run this code, note the effect of including the optional
         # parameters in the function call.
         show_map(map_40, start=8, goal=24, path=[8, 14, 16, 37, 12, 17, 10, 24])
```

```
In [26]: show_map(map_40, start=8, goal=24, path=[8, 33, 30, 14, 16, 37, 12, 34, 31, 10, 24])
```

1.0.3

```
student_code.pyFile > Open
   show_mappath[5, 16, 37, 12, 34]
```

```
In [34]: %%bash
         > shortest_path(map_40, 5, 34)
         [5, 16, 37, 12, 34]
```

```
bash: line 1: syntax error near unexpected token `('
bash: line 1: `> shortest_path(map_40, 5, 34)'
```

```
In [35]: path = shortest_path(map_40, 5, 34)
         if path == [5, 16, 37, 12, 34]:
             print("great! Your code works for these inputs!")
         else:
             print("something is off, your code produced the following:")
             print(path)
```

```
great! Your code works for these inputs!
```

```
In [38]: p = shortest_path(map_40, 8, 3)
         p
```

```
Out[38]: [8, 14, 16, 37, 12, 17, 15, 3]
```

```
In [39]: show_map(map_40, start=8, goal=24, path=p)
```

1.0.4

1.
2. A*
3.
4.

“”

```
In [40]: from test import test

         test(shortest_path)
```

```
All tests pass! Congratulations!
```