

project_notebook-zh

September 21, 2019

1 123

A*“Google-maps”

In [80]: *# 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 [83]: `map_10 = load_map('map-10.pickle')`
`show_map(map_10)`

show_maps(map_10)Jupyter.html

1022

MapA *intersectionsroads

Intersections

intersections

10xy

In [84]: `map_10.intersections`

Out[84]: {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 [85]: # this shows that intersection 0 connects to intersections 7, 6, and 5
map_10.roads[0]
```

```
Out[85]: [7, 6, 5]
```

```
In [86]: # This shows the full connectivity of the map
map_10.roads
```

```
Out[86]: [[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 [87]: # 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 [122]: # run this code, note the effect of including the optional
# parameters in the function call.
show_map(map_40, start=5, goal=34, path=[5,16,37,12,34])
```

1.0.3

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

```
In [89]: %%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 [123]: import time
start = time.clock()

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)

elapsed = (time.clock() - start)
print("Time used:",elapsed)
```

```
shortest path called
great! Your code works for these inputs!
Time used: 0.0017569999999977881
```

1.0.4

- 1.
 2. A*
 - 3.
 - 4.
- """

```
In [125]: from test import test

start = time.clock()

test(shortest_path)

elapsed = (time.clock() - start)
print("Time used:",elapsed)
```

```
shortest path called  
shortest path called  
shortest path called  
All tests pass! Congratulations!  
Time used: 0.004848000000009733
```

```
In [ ]:
```