lec3_step3

November 30, 2022

[1]:
```
## Python basics for novice data scientists, supported by Wagatsuma Lab@Kyutech
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#
# # @Time    : 2022-8-20
# # @Author  : Hiroaki Wagatsuma
# # @Site    : https://github.com/hirowgit/2A1_python_intermediate_course
# # @IDE     : Python 3.9.13 (main, Aug  7 2022, 01:33:23) [Clang 13.1.6␣
 ↪(clang-1316.0.21.2.5)] on darwin
# # @File    : lec3_step3.py
```

[2]:
```
import numpy as np
```

[12]:
```
NofD=10
randD=np.random.randint(2, size=(10,10))
randD
```

[12]:
```
array([[0, 0, 1, 1, 1, 1, 0, 0, 1, 1],
       [1, 0, 1, 0, 0, 1, 1, 1, 1, 0],
       [1, 0, 1, 1, 1, 0, 0, 0, 0, 1],
```

```
       [1, 0, 1, 0, 1, 1, 0, 0, 0, 0],
       [1, 0, 1, 0, 1, 1, 1, 0, 0, 1],
       [1, 1, 0, 1, 1, 0, 1, 1, 1, 1],
       [1, 1, 0, 0, 0, 1, 1, 0, 0, 0],
       [1, 1, 1, 1, 0, 0, 1, 0, 0, 1],
       [1, 0, 1, 0, 1, 1, 0, 0, 0, 1],
       [0, 1, 1, 1, 1, 1, 0, 1, 0, 1]])
```

[15]:
```
key=np.where(randD==0)
key
```

[15]:
```
(array([0, 0, 0, 0, 1, 1, 1, 1, 2, 2, 2, 2, 2, 3, 3, 3, 3, 3, 3, 4, 4, 4,
        4, 5, 5, 6, 6, 6, 6, 6, 6, 7, 7, 7, 7, 8, 8, 8, 8, 8, 9, 9, 9]),
 array([0, 1, 6, 7, 1, 3, 4, 9, 1, 5, 6, 7, 8, 1, 3, 6, 7, 8, 9, 1, 3, 7,
        8, 2, 5, 2, 3, 4, 7, 8, 9, 4, 5, 7, 8, 1, 3, 6, 7, 8, 0, 6, 8]))
```

[16]:
```
key[0]
```

[16]:
```
array([0, 0, 0, 0, 1, 1, 1, 1, 2, 2, 2, 2, 2, 3, 3, 3, 3, 3, 3, 4, 4, 4,
       4, 5, 5, 6, 6, 6, 6, 6, 6, 7, 7, 7, 7, 8, 8, 8, 8, 8, 9, 9, 9])
```

[17]:
```
key[1]
```

[17]:
```
array([0, 1, 6, 7, 1, 3, 4, 9, 1, 5, 6, 7, 8, 1, 3, 6, 7, 8, 9, 1, 3, 7,
       8, 2, 5, 2, 3, 4, 7, 8, 9, 4, 5, 7, 8, 1, 3, 6, 7, 8, 0, 6, 8])
```

[19]:
```
randD[key]=3
randD
```

[19]:
```
array([[3, 3, 1, 1, 1, 1, 3, 3, 1, 1],
       [1, 3, 1, 3, 3, 1, 1, 1, 1, 3],
       [1, 3, 1, 1, 1, 3, 3, 3, 3, 1],
       [1, 3, 1, 3, 1, 1, 3, 3, 3, 3],
       [1, 3, 1, 3, 1, 1, 1, 3, 3, 1],
       [1, 1, 3, 1, 1, 3, 1, 1, 1, 1],
       [1, 1, 3, 3, 3, 1, 1, 3, 3, 3],
       [1, 1, 1, 1, 3, 3, 1, 3, 3, 1],
       [1, 3, 1, 3, 1, 1, 3, 3, 3, 1],
       [3, 1, 1, 1, 1, 1, 3, 1, 3, 1]])
```

[84]:
```
NofD=10
rD1=np.random.randint(NofD,size=NofD)
rD2=np.random.randint(2, NofD,size=NofD)
rD=rD2+rD1
mixAry=[np.arange(rD1[i],rD[i]) for i in range(0,len(rD2))]
edgL=[[mixAry[i][0],mixAry[i][-1]] for i in range(0,len(mixAry))]
edgAry=np.array(edgL)
```

[85]:
```
mixAry
```

[85]:
```
[array([2, 3, 4, 5, 6, 7, 8]),
 array([2, 3, 4, 5, 6, 7, 8]),
 array([8, 9]),
 array([ 9, 10, 11, 12, 13, 14]),
 array([2, 3, 4, 5]),
 array([ 3,  4,  5,  6,  7,  8,  9, 10, 11]),
 array([5, 6, 7, 8, 9]),
 array([ 9, 10]),
 array([ 8,  9, 10, 11, 12, 13, 14, 15, 16]),
 array([0, 1, 2, 3])]
```

[86]:
```
edgL
```

[86]:
```
[[2, 8],
 [2, 8],
 [8, 9],
 [9, 14],
 [2, 5],
 [3, 11],
 [5, 9],
 [9, 10],
 [8, 16],
 [0, 3]]
```

[87]:
```
edgAry
```

[87]:
```
array([[ 2,  8],
       [ 2,  8],
       [ 8,  9],
       [ 9, 14],
       [ 2,  5],
       [ 3, 11],
       [ 5,  9],
       [ 9, 10],
       [ 8, 16],
       [ 0,  3]])
```

[29]:
```
np.random.randint(0,2, size=(1,3))
```

[29]:
```
array([[0, 1, 0]])
```

[35]:
```
rD1=np.random.randint(NofD,size=(NofD,1))
rD1.tolist()
```

[35]:
```
[[3], [9], [9], [0], [1], [9], [1], [2], [7], [0]]
```

[36]:
```
rD2=np.random.randint(2, NofD,size=NofD)
rD2
```

[36]:
```
array([4, 6, 9, 4, 3, 6, 2, 4, 3, 4])
```

[38]:
```
rD1=np.random.randint(NofD,size=NofD)
rD2=np.random.randint(2, NofD,size=NofD)
rD=rD2+rD1
rD
```

[38]:
```
array([ 9,  8, 15,  9,  5,  8, 12, 17, 10, 17])
```

[47]:
```
mixAry=[np.arange(rD1[i],rD[i]) for i in range(0,len(rD2))]
mixAry
```

[47]:
```
[array([4, 5, 6, 7, 8]),
 array([6, 7]),
 array([ 6,  7,  8,  9, 10, 11, 12, 13, 14]),
 array([6, 7, 8]),
 array([0, 1, 2, 3, 4]),
 array([5, 6, 7]),
 array([ 3,  4,  5,  6,  7,  8,  9, 10, 11]),
 array([ 9, 10, 11, 12, 13, 14, 15, 16]),
 array([6, 7, 8, 9]),
 array([ 9, 10, 11, 12, 13, 14, 15, 16])]
```

[52]:
```
edgAry=[[mixAry[i][0],mixAry[i][-1]] for i in range(0,len(mixAry))]
edgAry
```

[52]:
```
[[4, 8],
 [6, 7],
 [6, 14],
 [6, 8],
 [0, 4],
 [5, 7],
 [3, 11],
 [9, 16],
 [6, 9],
 [9, 16]]
```

[89]:
```
List_new=[item for item in TargetG if item not in ClosedList]
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
/var/folders/mg/w5t8lkhc8xj79f001s7kzpfh0000gp/T/ipykernel_87611/3123364148.py␣
 ↪in <module>
----> 1 List_new=[item for item in rDL_target if item not in rDL_clist]
```

```
NameError: name 'rDL_target' is not defined
```

[90]:
```
list(set(['A','B','C','D']))
```

[90]:
```
['A', 'B', 'C', 'D']
```

[91]:
```
list(set(['A','B','C','D'])-set(['A']))
```

[91]:
```
['B', 'C', 'D']
```

[95]:
```
list(set(['S','B','A','D'])-set(['D','B']))
```

[95]:
```
['S', 'A']
```