

## 修改的程序代码

In [ ]:

```
1      def edge2cell(self):
2
3          nx = self.nx
4          ny = self.ny
5
6          NC = self.NC
7          NE = self.NE
8
9          edge2cell = np.zeros((NE, 4), dtype=np.int)
10
11         idx = np.arange(NC).reshape(nx, ny).T
12
13         # y direction
14         idx0 = np.arange((NE/2), dtype=np.int).reshape(nx+1, ny).T
15         #left element
16         edge2cell[idx0[:,1:], 0] = idx
17         edge2cell[idx0[:,1:], 2] = 1
18         edge2cell[idx0[:,0], 0] = idx[:,0]
19         edge2cell[idx0[:,0], 2] = 3
20
21
22         #right element
23         edge2cell[idx0[:, :-1], 1] = idx
24         edge2cell[idx0[:, :-1], 3] = 3
25         edge2cell[idx0[:, -1], 1] = idx[:, -1]
26         edge2cell[idx0[:, -1], 3] = 1
27
28         # x direction
29         idx1 = np.arange((NE/2), dtype=np.int).reshape(nx, ny+1).T
30         NE0 = ny*(nx+1)
31         #left element
32         edge2cell[NE0+idx1[:, -1], 0] = idx
33         edge2cell[NE0+idx1[:, -1], 2] = 0
34         edge2cell[NE0+idx1[-1], 0] = idx[-1]
35         edge2cell[NE0+idx1[-1], 2] = 2
36
37         #right element
38         edge2cell[NE0+idx1[1:], 1] = idx
39         edge2cell[NE0+idx1[1:], 3] = 2
40         edge2cell[NE0+idx1[0], 1] = idx[0]
41         edge2cell[NE0+idx1[0], 3] = 0
42
43         return edge2cell
```

## 运行结果

In [ ]:

```
1 Point:
2 [[ 0.  0. ]
3 [ 0.  0.5]
4 [ 0.  1. ]
5 [ 0.5 0. ]
6 [ 0.5 0.5]
7 [ 0.5 1. ]
8 [ 1.  0. ]
9 [ 1.  0.5]
10 [ 1.  1. ]]
11 Cell:
12 [[0 3 4 1]
13 [1 4 5 2]
14 [3 6 7 4]
15 [4 7 8 5]]
16 Edge and Edge2cell:
17 [[1 0 0 0 3 3]
18 [2 1 1 1 3 3]
19 [3 4 0 2 1 3]
20 [4 5 1 3 1 3]
21 [6 7 2 2 1 1]
22 [7 8 3 3 1 1]
23 [0 3 0 0 0 0]
24 [1 4 1 0 0 2]
25 [5 2 1 1 2 2]
26 [3 6 2 2 0 0]
27 [4 7 3 2 0 2]
28 [8 5 3 3 2 2]]
29 Cell2edge:
30 [[ 6  2  7  0]
31 [ 7  3  8  1]
32 [ 9  4 10  2]
33 [10  5 11  3]]
34
```

1