```
In [1]: import numpy as np
        import pandas as pd
        pd.__version__
```

Out[1]: '1.2.4'

一、加减乘除的广播机制

- 加法的广播机制
  以加法为例，其他一样。根据标签，补充成跟对方一样的形状，补充的数值为NaN，然后相加

```
In [2]: df1 = pd.DataFrame({'a':[1,3,21],'c':[11,14,130]},index=['a','c','b'])
        df2 = pd.DataFrame({'b':[1,3,21,2],'c':[11,14,13,3]},index=['a','b','c','e'])
        df1,df2,df1+df2
```

```
Out[2]: (    a    c
         a   1   11
         c   3   14
         b  21  130,
             b    c
         a   1   11
         b   3   14
         c  21   13
         e   2    3,
              a    b      c
         a  NaN  NaN   22.0
         b  NaN  NaN  144.0
         c  NaN  NaN   27.0
         e  NaN  NaN    NaN)
```

二、统计相关的运算——最大，最小，均值，方差

(1).按照某一轴求统计值,跟矩阵按两个轴求统计值一样

```
In [3]: df1.max(axis=0),df1.max(axis=1)
```

```
Out[3]: (a     21
         c    130
         dtype: int64,
         a     11
         c     14
         b    130
         dtype: int64)
```

```
In [4]: df1.mean(axis=0),df1.mean(axis=1)
```

```
Out[4]: (a     8.333333
         c    51.666667
         dtype: float64,
         a     6.0
         c     8.5
         b    75.5
         dtype: float64)
```

```
In [5]: df1.var(axis=0),df1.var(axis=1)
```

```
Out[5]: (a     121.333333
         c    4604.333333
         dtype: float64,
         a      50.0
         c      60.5
         b    5940.5
         dtype: float64)
```

(2).直接给出每列数据的常见统计值

```
In [6]: df1.describe()          ##返回DataFrame对象，行标签为统计名
```

Out[6]:

	a	c
count	3.000000	3.000000
mean	8.333333	51.666667
std	11.015141	67.855238
min	1.000000	11.000000
25%	2.000000	12.500000
50%	3.000000	14.000000
75%	12.000000	72.000000
max	21.000000	130.000000