矩阵操作练习

In [1]:
```
import numpy as np
```

In [2]:
```
X = np.array([[1.2, 1.5, 1.8],
              [1.3, 1.4, 1.9],
              [1.1, 1.6, 1.7]])
```

In [3]:
```
X
```

Out[3]:
```
array([[1.2, 1.5, 1.8],
       [1.3, 1.4, 1.9],
       [1.1, 1.6, 1.7]])
```

In [4]:
```
y = np.array([5, 10, 9]).T
```

In [7]:
```
y
```

Out[7]:
```
array([ 5, 10,  9])
```

1、使用用循环的方方式计算每天的采购总金额得到结果为[37.2, 37.6, 36.8]，分别表示7/28、7/29、7/30这三天采购总额

In [36]:
```
sums = []
for i in range(3):
    value = 0
    for j in range(3):
        value += X[i][j]*y[j]
    sums.append(value)
sums
```

Out[36]:
```
[37.2, 37.599999999999994, 36.8]
```

2、使用矩阵点乘来计算每天的采购总金额

In [42]:
```
[np.sum(X[k]*y) for k in range(3)]
```

Out[42]:
```
[37.2, 37.599999999999994, 36.8]
```

3、测试两种方方式的性能

In [47]:
```
%%timeit
sums = []
for i in range(3):
    value = 0
    for j in range(3):
        value += X[i][j]*y[j]
    sums.append(value)
sums
```

```
8.03 µs ± 238 ns per loop (mean ± std. dev. of 7 runs, 100000 loop
s each)
```

In [48]:
```
%timeit [np.sum(X[i]*y) for i in range(3)]
```

```
17.6 µs ± 652 ns per loop (mean ± std. dev. of 7 runs, 100000 loop
s each)
```