第2~3章

判断: FFFTF FTTTF FFFFT TFTFT FTTFT FFTTF FFFFF

选择: AABBD BAABC CBDDA DBCDB DBCCA DCDAC DCDBA CBB

简答题：

1. [name for names in all_data for name in names if len(set(name))<len(name)]

2. {1: 'red', 2: 'blue', 3: 'green', 4: 'white'}

3. a=1, b=2, c=3

   a=4,b=5, c=6

   a=7,b=8, c=9

4. strings = ['foo', 'card', 'bar', 'aaaa', 'abab']

   strings.sort(key=lambda x: len(set(list(x))))

   strings

5. [x for x in range(2,101) if not [y for y in range(2,x) if x % y == 0]]

6. [[i*j for j in range(5)] for i in range(4)]

7. [name for names in all_data for name in names if name.count('e')>=2]

8. a = {1:1, 2:2, 3:3}

   print(",".join('%s' %id for id in a.keys()))

9. [x for tup1 in some_tuples for tup2 in tup1 for x in tup2 if (x.count('M') + x.count('m')) > 0]

10. 5 [1,2,2,3,3,3,4,4,5]

11. all = {key: ", ".join([sex[key], age[key], job[key]]) for key in sex if key in age and key in

job}

第 4 章

判断: FTTTT　TTFFF　TTFFF　FFTFF　TFTFF　FFFTF　TTFFF　FF

选择：CABCD　CACBA　DAAAD　ACBBD

CCBCB　CCCBA　BDAAB　ACBCD

AA

简答题：

1. [2　6　5 13]

2. data[index!='red']

3. array([[6, 6, 6, 6],

    [6, 6, 6, 6],

    [6, 6, 6, 6]])

4. result = [(x if c else y) for x, y, c in zip(xarr, yarr, cond)]

   Result（这种方法比较慢，而且对多维数组不起作用）

   Or：

   result= np.where(cond, xarr, yarr)（这种方法更好）

   result

5. import numpy as np

   Z = np.ones((10,10))

   Z[1:-1,1:-1] = 0

```
print(Z)
```

6. np.where(np.random.randint(0,2,1000)>0,1,-1).cumsum()

7.
```
import numpy as np
a=np.random.randint(1,11,size=[10])
a.sort()
max=a.max()
min=a.min()
var=a.var()
```

8. 1)整数部分：arrInt = np.modf(arr)[1],arrInt

小数部分：arrFloat = np.modf(arr)[0],arrFloat

2) arr = np.where(arr>0, arrFloat, np.abs(arrInt))

9. 1）arr[arr>0].cumsum()

2）np.where(arr>0,arr,0).cumsum(0)

10.
```
[[0 1 2]
 [3 4 5]
 [6 7 8]]
```

11.
```
array([[ 9, 11, 10],
       [ 1,  3,  2],
       [ 5,  7,  6]])
```

12. [True False]

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

    [[ 0 1 2 3]
    [ 4 5 6 7]
    [ 8 9 10 11]
    [12 13 14 15]]
17. array([[[42, 42, 42],
         [42, 42, 42]],
         [[ 7,   8,   9],
          [10, 11, 12]]])
18. a = np.eye(5)；np.where(a == 1, '#', '$')
19. array([[1, 2, 3], [4, 5, 6]])
    array([[[ 7,   8,   9], [10, 11, 12]]])
    array([[ 7,   8,   9], [10, 11, 12]])
20. array([1, 2, 3, 4, 5, 6])
```

21.
```
[[ 0   1   2   3   4   5]
 [18 19 20 21 22 23]]
```

第 5 章

判断：TTTTF FTFTT TTTFF FFFTT FFFTF FFTTF

选择：ADCDD C（ABCD）DB A CDDDB BBCBA CBBCB BCCB(CD)

简答题：

1. 1，frame1 = pd.DataFrame([[1,2,3],[4,5,6],[7,8,9]],index = ['a', 'b', 'c'],columns = ['d','f','g'])

   2，frame = pd.DataFrame({'d':{'a':1, 'b':4, 'c':7},'f':{'a':2, 'b':5, 'c':8},'g':{'a':3, 'b':6, 'c':9}})

2.
```
    year      team    score
3   2003.0    Alex      7.0
4   2004.0  Thomson    10.0
5     NaN      NaN      NaN
1   2001.0    Alice     8.0
2   2002.0     Bob      9.0
```

3.
```
ser1 = pd.Series(list('abcdefghijklmnopqrstuvwxyz'))
     [pd.Index(ser1).get_loc(i) for i in list('adhz')]
     [list(ser1.values).index(i) for i in list('adhz')]
```

4.
```
          b  a
     2   -3  0
     0    4  0
     3    2  1
     1    7  1
```

5.
```
 a      12.0
 b       NaN
 c       NaN
 d      11.0
 e       NaN
```

6.

	b	d	e
Utah	0.0	0.0	0.0
Ohio	3.0	3.0	3.0
Texas	6.0	6.0	6.0
Oregon	9.0	9.0	9.0

7. s.drop_duplicates().sort_values(ascending=False)

8.
```
0      NaN
1      NaN
2      4.0
3      4.0
4      5.0
dtype: float64
```

9.
```
             d        c            b         a
```

```
three        0      3        2      1

one          4      7        6      5
```

10.

```
   b     a

2  -3  0

0  4     0

3  2     1

1  7     1
```

11.

```
import pandas as pd

data
={'Chinese':[66,95,95,90,80,80],'English':[65,85,92,88,90,90],'Math':[None,98,96,77,9
0,90]}

df=pd.DataFrame(data,index=['张飞','关羽','赵云','黄忠','典韦','典韦
'],columns=['Chinese','Math','English'])

df = df.drop_duplicates()

df.rename(columns={'Chinese':'语文','English':'英语','Math':'数学'},inplace = True)

def total_score(df):

df['总分'] = df['语文']+df['数学']+df['英语']

return df

df['数学'].fillna(df['数学'].mean())

df.sort_values(['总分'],ascending=False,inplace=True)

print(df)
```

12.

```
        Nevada  Ohio
2000     NaN     1.5
2001     2.4     1.7
2002     2.9     3.6
```

13.

```
0    5.0
1    3.0
2    6.5
3    1.0
4    3.0
5    6.5
6    3.0
```

14.

```
dti = pd.date_range(start='2018-01-01',end='2018-12-31',freq='D')
s = pd.Series(np.random.rand(len(dti)),index=dti)
s[s.index.weekday == 2].sum()
s.resample('M').mean()
```

15.

```
     year       team   score
3  2003.0       Alex     7.0
4  2004.0    Thomson    10.0
5     NaN        NaN     NaN
1  2001.0      Alice     8.0
2  2002.0        Bob     9.0
```

第 6 章

判断：: FTTTF　TFFTT　TFFFT　TFTTF　TTTFF　TFTTF　TTTF

选择：: BBCDD　DDBAA　CDBAB　B~~B~~（第 17 题作废）DBC　DA

简答题：

1.
```
data.to_csv(‘data.csv’, sep=’|’)

data.to_excel(‘data.xls’)
```

2.
```
import pandas as pd

import requests

url = 'http://api.github.com/repos/test'

response = requests.get(url)

data = response.json()

a = pd.DataFrame(data, columns = ['number','title','labels','state'])
```

3.
```
        row 1   row 2

col 1     a       c

col 2     b       d
```

4.
```
import sqlalchemy as sqla

db=sqla.create_engine('sqlite:///mydata.sqlite')

Pd.read_sql(‘select * from test’,db)
```

5.
```
chunker=pd.read_csv('ex6.csv',chunksize=1000)

tot=pd.Series([])

for piece in chunker:
```

tot=tot.add(piece['key'].value_counts(),fill_value=0)

6. pd.read_csv('examples/ex2.csv', names=['a', 'b', 'c', 'd', 'index'], index_col='index')

7. import pandas as pd

   frame = pd.read_csv('C:/test/ex1.csv', names=['a','b','c'], skiprows=[0,1])

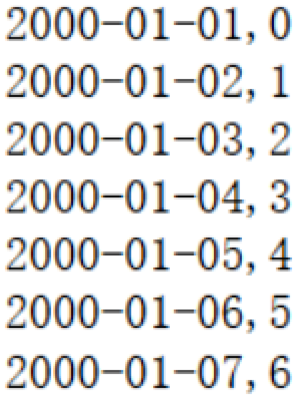
8. import pandas as pd

   data.to_csv(’C:/data.csv', sep='、', na_rep='null')

9. pd.read_csv('example.csv',skiprows=[0,2])

10. pd.read_csv(‘example.csv’,index_col=[‘key1’,’key2’])

11.



```
2000-01-01, 0
2000-01-02, 1
2000-01-03, 2
2000-01-04, 3
2000-01-05, 4
2000-01-06, 5
2000-01-07, 6
```

12. chunker=pd.read_csv('ex6.csv',chunksize=1000)

    tot=pd.Series([])

    for piece in chunker:

    tot=tot.add(piece['key'].value_counts(),fill_value=0)

13. lines = [['a', 'b', 'c'], ['1', '2', '3'], ['1', '2', '3']]

    header, values = lines[0], lines[1:]

    data_dict = {h: v for h, v in zip(header, zip(*values))}

    data_dict

14.
```
import pandas as pd

import numpy as np

frame = pd.read_csv('../examples/ex1.csv')

frame.to_pickle('../examples/frame_pickle')
```

第 7 章

判断：FTFTF　FTTTF　FTTFF　FFFTT　TTFFT　FFTT

选择：DABDC　DCCBB　DBADA　DCABA　ACA（BD）D　AADBA　DA

简答题：

1.
```
     one   two   three
a    1.0   NaN    1.0
c    NaN   NaN    5.0
d    4.0    9.0   7.0
e    5.0   10.0   9.0
```

2.
```
   k1  k2  k3
0   1   2   3
1   2   3   1
3   3   3   2
```

3. [(10, 18], (18, 25], (10, 18], (25, 30], (25, 30], NaN]

4.
```
ages = [17, 22, 25, 27, 21, 23, 37, 31, 61, 45, 41, 132]

bins = [18, 25, 35, 60, 100]
```

```
cats = pd.cut(ages, bins)

pd.value_counts(cats)
```

5.

```
import re

text = "foo       bar\t baz    \tqux,ok"

','.join(re.split('\s+', text)).split(',')
```

6.

```
sampler=np.random.permutation(5)

df.take(sampler)

df.sample(n=3)
```

7.

```
0       1.0

1       NaN

2       2.0

3       NaN

4       0.0

5       3.0
```

8.

```
data.rename(index=str.title,columns=str.upper,inplace=True)
```

9.

```
'::'.join([x.strip() for x in s.split(',')])
```

10.

```
import re

re.findall(r'[1-9]\d{5}',text)
```

11.

```
import pandas as pd

from numpy import nan as NA

data=pd.Series([1,NA,1.0,NA,1])
```

```
data=data.dropna()
```

结果：

```
0 1.0

2 1.0

4 1.0
```

12.
```
df.fillna({1:df[1].mean(), 2:df[2].mean()},inplace = True)
```

13.
```
data['animal']=data['food'].map(lambda x: meat_to_animal[x.lower()])

data['animal']=data['food'].apply(lambda x: meat_to_animal[x.lower()])

data['animal']=data['food'].transform(lambda x: meat_to_animal[x.lower()])
```

14.
```
data['b']=data['a'].map(lambda x : 'positive' if x > 0 else 'negative')
```

15.
```
array([-1,   0,   2,   3, -1], dtype=int8)
```

16.
```
      0        1        2

0     1        6.5      3

1     1        NaN    NaN

2     NaN      NaN    NaN

3     NaN      6.5      3
```

17.
```
data=np.random.ranf(1000)

category=(0.0,0.08,0.24,0.48,1.0)

labels=('一等奖','二等奖','三等奖','参与奖')

result=pd.cut(data,category,labels=labels)

result=pd.value_counts(result)

result
```

```
18. 0    1.0
    1    NaN
    2    2.0
    3    NaN
    4    NaN
    5    3.0
19. 0    1.0
    1    2.0
    2    2.0
    3    3.0
```

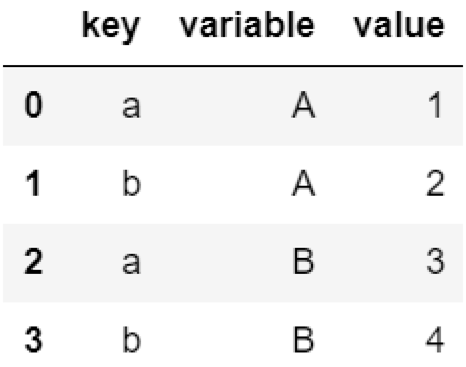
第 8 章

判断：TFTTF   FTTFT   TTFTT FFTTF   TTTFT   TFTFF   TFFT

选择：BAAAD   CABBA   CABDC   CBDDB   BDBAB   CD

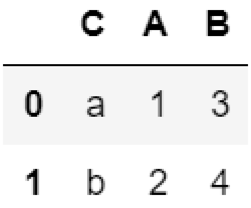
简答题：

1.



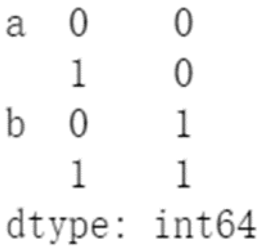
	key	variable	value
0	a	A	1
1	b	A	2
2	a	B	3
3	b	B	4

2.



	C	A	B
0	a	1	3
1	b	2	4

3.



```
a  0    0
   1    0
b  0    1
   1    1
dtype: int64
```

4.

```
         0     1     2     3     4
k1
a      2.5   3.5   4.5   5.5   6.5
b     10.0  11.0  12.0  13.0  14.0
```

5.

```
   key  data1  data2
0  a      1      2
1  b      3      4
2  c      5      6
```

```
   3   d       7       8
```

6.

```
     lkey  data1  rkey   data2
  0   b     0      b     1
  1   b      1     b     1
  2   b      6     b     1
  3   a      2     a      0
  4   a      4     a      0
  5   a      5     a      0
```

7.

```
    level1 level
     one   two  three four
  a    0   1    5.0   6.0
  b    2   3    NaN    NaN
  c    4   5    7.0   8.0
```

8. pd.melt(df, ['key'])

```
  key   variable   value
  0   foo         A        1
  1   bar         A        3
  2   foo         B        5
  3   bar         B        6
```

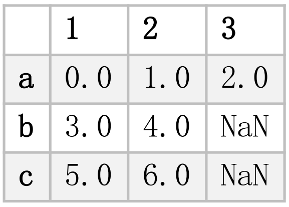
9.

```
       key   value    group_val
```

```
0    a    0         3.5

2    a    2         3.5

3    a    3         3.5

1    b    1         7.0

4    b    4         7.0

5    c    5         NaN
```

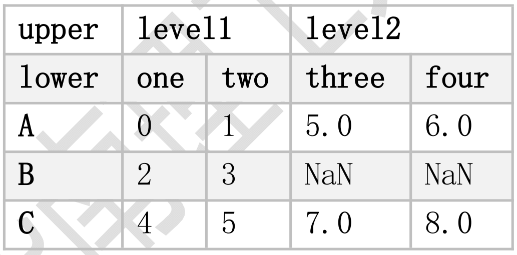
10.
```
     0    1

a    0    0

b    1    1
```

11.



	1	2	3
a	0.0	1.0	2.0
b	3.0	4.0	NaN
c	5.0	6.0	NaN

12.



upper	level1		level2	
lower	one	two	three	four
A	0	1	5.0	6.0
B	2	3	NaN	NaN
C	4	5	7.0	8.0

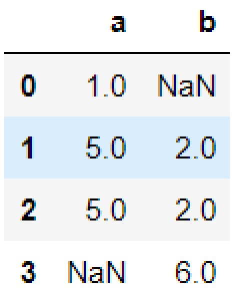
13. pd.pivot_table(df,index=["年代","产地"],values=["评分"])

14. pd.pivot_table(df,index=["产地"],values=["投票人数","评分"],aggfunc={"投票人数":np.sum,"评分":np.mean})

15. ①pd.merge(left2, right2, how='inner', left_index=True, right_index=True)

②left2.join(right2, how='inner')

16.

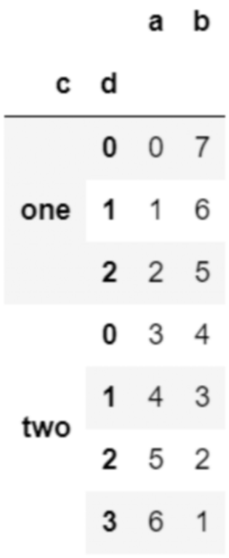


	a	b
0	1.0	NaN
1	5.0	2.0
2	5.0	2.0
3	NaN	6.0

17. data.swaplevel(1,0).unstack()

18. 4

19.



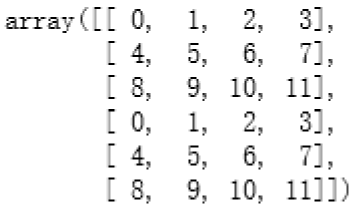
		a	b
c	**d**		
one	**0**	0	7
	1	1	6
	2	2	5
two	**0**	3	4
	1	4	3
	2	5	2
	3	6	1

20. a   1

c   6

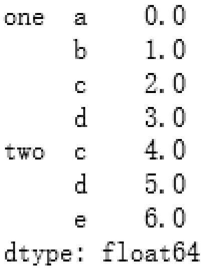
d   7

21.



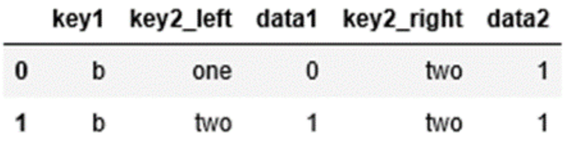
```
array([[ 0,  1,  2,  3],
       [ 4,  5,  6,  7],
       [ 8,  9, 10, 11],
       [ 0,  1,  2,  3],
       [ 4,  5,  6,  7],
       [ 8,  9, 10, 11]])
```

22.



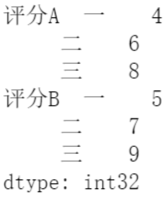
```
one   a     0.0
      b     1.0
      c     2.0
      d     3.0
two   c     4.0
      d     5.0
      e     6.0
dtype: float64
```

23.



	key1	key2_left	data1	key2_right	data2
0	b	one	0	two	1
1	b	two	1	two	1

24.



```
评分A  一    4
       二    6
       三    8
评分B  一    5
       二    7
       三    9
dtype: int32
```

第 9 章

判断：TTTTT TFTFT TTTFF FTTFF TTFFF TFTFF F

选择：ABACB DCDCB BDACA ACDBA BCCBB ABB

简答题：

1. 参考答案：绘制一个图片，输出服从 N~(0, 1)分布下的 50 次随机值的累加值，使用实线，颜色为红色，标记点为红点。

2. df = pd.DataFrame(np.random.rand(10, 4), columns=['a', 'b', 'c', 'd'])

   df.plot.bar(stacked=True)

3.
```
import numpy as np

import matplotlib.pyplot as plt

t = np.arange(0., 6.,0.001)

plt.plot(t, t**2, 'b')

plt.show()
```

4.
```
import matplotlib.pyplot as plt

import numpy as np

fig, axes = plt.subplots(2, 2, sharex=True, sharey=True)

for i in range(2):

    for j in range(2):

        axes[i, j].hist(np.random.randn(50),bins=5, color='b')

plt.subplots_adjust(wspace=0, hspace=0)
```

5.
```
import matplotlib.pyplot as plt

import numpy as np

fig = plt.figure()

ax = fig.add_subplot(1, 1, 1)

ax.plot(np.random.randn(1000).cumsum())

ticks = ax.set_xticks([0, 250, 500, 750, 1000])

labels = ax.set_xticklabels(['one', 'two', 'three', 'four', 'five'])
```

6. 答：
```
import matplotlib.pyplot as plt

     import numpy as np

     fig,axes=plt.subplots(2,2)
```

```
    axes[0,0].plot(np.random.randn(100),'k--')
```

或

```
    import matplotlib.pyplot as plt
    import numpy as np
    fig=plt.figure()
    ax1=fig.add_subplot(2,2,1)
    ax1.plot(np.random.randn(100),'k--')
```

7.
```
import matplotlib.pyplot as plt
 import numpy as np
 import pandas as pd
    s=pd.Series(np.random.randn(1000).cumsum(),index=np.arange(0,1000))
fig=s.plot()
fig.set_xticks([0,250,500,750,1000])
fig.set_xticklabels(['one','two','three','four','five'],rotation=30)
fig.set_xlabel('stage')
fig.set_title('random')
```

8.
```
sns.catplot(data=tips[tips['tip_pct']<1],x='day',y='tip_pct',hue='time',col='smoker',kind='bar')
```

9.
```
for a,b in zip(x[::10],y[::10]):
    plt.text(a,b+20,b,ha='center',fontsize=10)
plt.annotate("2012年达到最大值",xy=(2012,data[2012]),xytext=(2020,2030),arrowprops=dict(facecolor="black"))
```

```
    plt.text(1980,1000,"电影数量开始增长")

10. plt.hist(df["评分"],bins=20,edgecolor='k',alpha=0.5)

    plt.show()

11. fig,axes=plt.subplots(2,2)

    plt.subplots_adjust(wspace=0.5,hspace=0.5)

    for i in range(2):

        axes[0,i].set_title('data%d'%(i+1))

        axes[1,i].set_title('data%d'%(i+3))

    data1 = pd.Series([23,41,56,34,52,78],index=['A','B','C','D','E','F'])

    data2 = pd.Series([21,42,56,21,12,34],index=['A','B','C','D','E','F'])

    data3 = pd.Series([67,35,24,75,23,11],index=['A','B','C','D','E','F'])

    data4 = pd.Series([45,64,23,11,24,67],index=['A','B','C','D','E','F'])

    data1.plot.bar(ax=axes[0,0])

    data2.plot.bar(ax=axes[0,1])

    data3.plot.barh(ax=axes[1,0])

    data4.plot.barh(ax=axes[1,1])

12. fig,axes = plt.subplots()

    axes.scatter(Ser,Ser.index)

    Labels = axes.set_xticks([0,1,2,3,4])

    ticks = axes.set_yticks([0,1,2,3,4])

    for i in Ser:

        text = axes.text(i,i,'(' + str(i) + ',' + str(i) +')')
```

13.
```
x = np.linspace(-5,5,100)
y = np.where(x<0,0,x)
plt.plot(x,y)
```

14.
```
x=np.linspace(0,2*np.pi,50)
y=np.sin(x)
plt.plot(x,y)
plt.show()
```

15.
```
import numpy as np
import matplotlib.pyplot as plt
import seaborn

x = np.random.randn(10000)
plt.hist(x, 25, normed=1, facecolor='b', edgecolor = 'black')
seaborn.kdeplot(x)
plt.show()
```

16.
```
import numpy as np
import matplotlib.pyplot as plt
t = np.arange(0., 6.,0.001)
plt.plot(t, t**2, 'b')
plt.show()
```

17.
```
import matplotlib.pyplot as plt
fig = plt.figuru()
```

```
ax = fig.add_subplot(1,1,1)

rect = plt.Rectangle((0.2,0.75), 0.4, 0.15, color = 'k', alpha = 0.3)

ax.add_patch(rect)
```

第 10 章

判断：FTTFT　TTTTT　TTFFF　FTFTT　TFFTT　FFTFT　TF

选择：DBADA　CDBBD　ABAAC　ACBC

简答题：

1.
```
       data1   data2
key
a        3.0     6.0
b        1.5     3.0
c        3.0     6.0
```

2.
```
(1) grouped = data.groupby('group').mean()
    print(grouped)
(2) tempdata1 = {'average': (data['part 1'] + data['part 2'] + data['part 3']) / 3}
    data2 = pd.DataFrame(tempdata1)
    print(data2.sort_values(by='average'))
(3) data['total'] = data['part 1'] + data['part 2'] + data['part 3']
    tmp = data.sort_values(by = 'total', ascending = False)
    print(tmp.iloc[0])
```

3.

```
    a   b   c   d   e
3   25  28  31  34  37
5   5   6   7   8   9
6   20  21  22  23  24
```

4. grouped = df.groupby('category')

   get_wavg = lambda g: np.average(g['data'], weights=g['weights'])

   grouped.apply(get_wavg)

5. fill_values={'East':0.5,'West':-1}

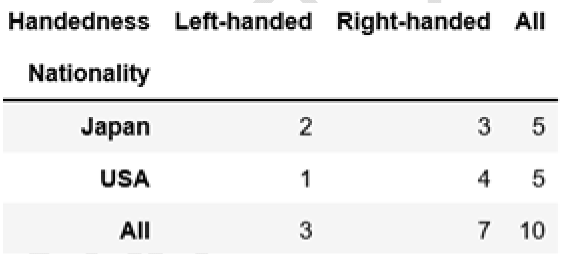
   fill_func=lambda g:g.fillna(fill_values[g.name])

   data.groupby(group_key).apply(fill_func)

6. df.groupby(['key1','key2'])['data1'].m

   或 df['data1'].groupby([df['key1'],df['key2']]).mean()

7.



Handedness	Left-handed	Right-handed	All
Nationality			
Japan	2	3	5
USA	1	4	5
All	3	7	10

8. df.groupby('key1').agg(lambda x: x.mean() - x.median())

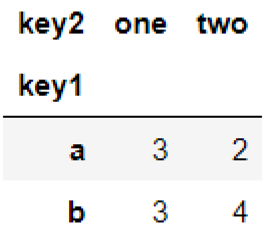
9. data=pd.DataFrame({'key1':['a','a','b','b','a'],'key2':['one','two','one','two','one'],'data1':[12,11,46,74,23],'data2':[15,11,24,7,35]})

   grouped = data.groupby(['key1','key2'])

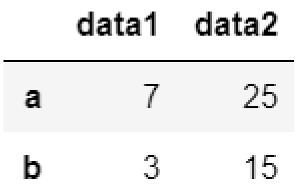
   grouped.agg({'data1':'max','data2':'min'})

10. def get_stats(group):

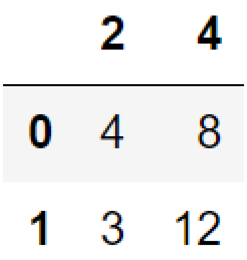
```
    return
  {'min':group.min(),'max':group.max(),'count':group.count(),'mean':group.mean()}
```

11. 

key2	one	two
key1		
a	3	2
b	3	4

12. 

	data1	data2
a	7	25
b	3	15

13. 

	2	4
0	4	8
1	3	12

14.

第 11 章

判断：TFTTT TFTTF TFTTF FTFFF FTTTF TFTFT

选择：CABBD ACBAB DCBBD DAACD BADAC DDDAC CCADA

简答题：

1. 2011-01-02 0

   2011-01-05 1

   2011-01-07 2

   2011-01-08 3

```
2011-01-10    4
2011-01-12    5
```

2.

```
2019-01-27    3
2019-02-03    4
2019-02-10    5
2019-02-17    6
2019-02-24    7
2019-03-03    8
```

3.

```
 2019-01    11
2019-01    12
2019-01    13
2019-01    14
2019-02    15
2019-02    16
2019-02    17
2019-02    18
2019-03    19
2019-03    20
```

4. ts.resample('5min',closed='right',label='right').sum()

5. frame.resample('D').ffill()

6.

```
close_px[’AAPL’].rolling(100).mean().plot()
```

7.

```
time_zones=[line['tz'] for line in records if 'tz' in line]
from collections import Counter
Counter(time_zones)
```

或

```
import pandas as pd
time_zones=[line['tz'] for line in records if 'tz' in line]
s=pd.Series(time_zones)
s.value_counts()
```

8.

```
2019-08-31      0
2019-09-30      1
2019-10-31      2
2019-11-30      3
2019-12-31      4
```

9. （1）Period('2007-06-30', 'D')

（2）Period('2006-07', 'M')

10.

```
from datetime import datetime
now = datetime.now()
now.strftime('%Y.%m.%d-%H:%M:%S')
```

11.

```
grouped = df.groupby(level=0)
grouped.mean()
```

12.

```
ser_period = ser.to_period('M')
ser_period.groupby(ser_period.index).sum()
```

13.

```
2019-11-30    0
2019-12-31    1
2020-01-31    2
2020-02-29    3
2020-03-31    4
Freq: M, dtype: int32
```

14.

```
from datetime import date,timedelta
def getDate(year,weeks,weekday):
    start = date(year,1,1)
    for i in range(7):
        if start.isoweekday() == weekday:
            break
        start = start +timedelta(days=1)
    return start + timedelta(weeks=weeks-1)
print(getDate(2020,2,5))
```

15.

```
2000-03-31    0
2000-04-30    1
2000-05-31    2
2000-06-30    3
Freq: M, dtype: int32
```

16. 2019-01-27   3

    2019-02-03   4

    2019-02-10   5

    2019-02-17   6

    2019-02-24   7

    2019-03-03   8

17. 2019-10-31   4

    2019-11-30   11

    2019-12-31   17

第 12 章

判断：FTTFT　TFTTT　FTFTF　TTTFF　FTTTT　FTFTF　F

选择：CCDAB　CBCAA　AAABB　CCACC　C

简答题：

1.
```
g = data.groupby('key').value
print(g.transform(lambda x: x * x))
```

2.
```
[foo, bar, baz, foo, foo, bar]
Categories (3, object): [foo < bar < baz]
```

3.
```
              num
```

```
2019-01-31    0
2019-03-31    3
2019-05-31    7
```

4.

```
time_key=pd.Grouper(freq='5min')
resampled=(df.set_index('time').groupby(['key',time_key]).sum())
```

或

```
time_key=pd.TimeGrouper('5min')
resampled=(df.set_index('time').groupby(['key',time_key]).sum())
```

5.

```
bins=pd.qcut(draws,4,labels=['Q1','Q2','Q3','Q4'])
bins=pd.Series(bins,name='quartile')
results=(pd.Series(draws)
          .groupby(bins)
          .agg(['count','mean'])
          .reset_index())
```

6.

```
result=(df.pipe(f,arg1=v1)
          .pipe(g,v2,arg3=v3)
          .pipe(h,arg4=v4))
```

7.

```
data.drop('category',axis=1).join(pd.get_dummies(data['category'],prefix='category'))
```

8.

```
results=(pd.Series(draws).groupby(bins).agg(['count','min','max']).reset_index())
```

9.

```
0    地铁
0    地铁
1    高铁
```

```
0      地铁

0      地铁

1      高铁
```

10. pd.Categorical.from_codes([0, 0, 0, 1, 1, 1, 2, 2, 2], categories)

11. time_key = pd.TimeGrouper('15min')

```
resampled = df.set_index('time').groupby(['fruit',time_key]).sum()
```

12. df.groupby('key').value.transform(lambda x: x.mean())

13.
```
0    1.5

1    2.5

2    3.5

3    1.5

4    2.5

5    3.5
```

14.
```
d     2

c     2

b     2

a     2

dtype: int64
```

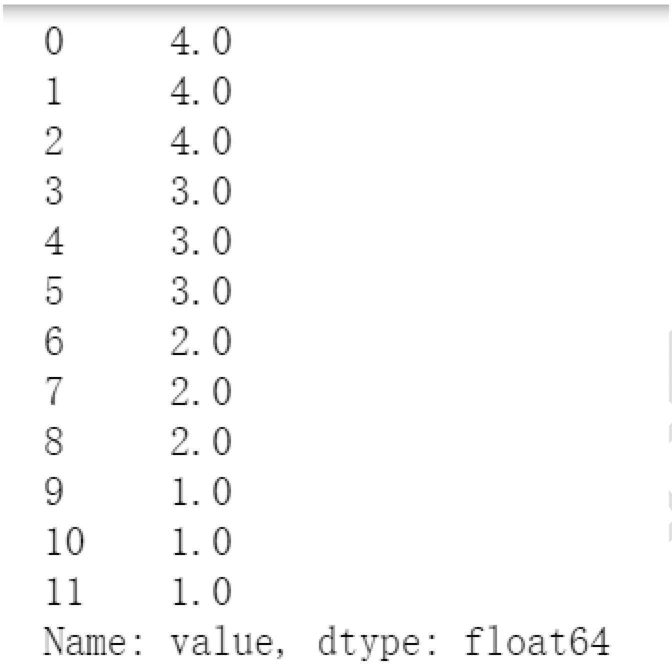
15. df['gender'] = pd.Categorical.from_codes(

```
[1 if x == 'Female' else 0 for x in df['gender']],

['Female', 'Male'])
```

16.   num

```
2019-01-31    0

2019-03-31    3

2019-05-31    7
```

17.



```
0     4.0
1     4.0
2     4.0
3     3.0
4     3.0
5     3.0
6     2.0
7     2.0
8     2.0
9     1.0
10    1.0
11    1.0
Name: value, dtype: float64
```