

Notebook

December 9, 2021

<https://github.com/secoba/pandas-official-tutorials-zh/blob/master/1.md>

```
0    1.0
1    3.0
2    5.0
3    NaN
4    6.0
5    8.0
dtype: float64
```

	A	B	C	D
2013-01-01	0.596462	-2.732415	0.831367	1.625882
2013-01-02	0.891882	-1.551125	1.984004	-2.039676
2013-01-03	0.306306	-1.149720	0.118886	0.003813
2013-01-04	0.057772	-0.409757	-1.405612	1.057843
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001
2013-01-06	-0.033860	0.356555	-1.396845	-0.407166

```
array([[ -0.12032765,  0.37833769,  0.36917581,  0.95051421],
       [ 0.91929634, -0.38522512, -1.19724556,  0.5534407 ],
       [-0.34152425,  0.54298021, -0.95032175,  0.18626812],
       [-1.2803597 ,  0.79686743, -0.319169  , -1.14462261],
       [ 2.04128959,  1.19857205,  0.87810112, -0.51006708],
       [-0.06772589, -1.01754986,  0.71675477, -0.09759832]])
```

	A	B	C	D	E	F
0	1.0	2013-01-02	1.0	3	test	foo
1	1.0	2013-01-02	1.0	3	train	foo
2	1.0	2013-01-02	1.0	3	test	foo
3	1.0	2013-01-02	1.0	3	train	foo

A	float64
B	datetime64[ns]
C	float32
D	int32
E	category
F	object

dtype: object

	A	B	C	D
2013-01-01	0.596462	-2.732415	0.831367	1.625882
2013-01-02	0.891882	-1.551125	1.984004	-2.039676
2013-01-03	0.306306	-1.149720	0.118886	0.003813
2013-01-04	0.057772	-0.409757	-1.405612	1.057843
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001

	A	B	C	D
2013-01-04	0.057772	-0.409757	-1.405612	1.057843
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001
2013-01-06	-0.033860	0.356555	-1.396845	-0.407166

```
array([[ 0.59646199, -2.73241497,  0.83136694,  1.62588183],  
       [ 0.89188187, -1.5511246 ,  1.98400443, -2.03967608],  
       [ 0.30630649, -1.14971972,  0.11888596,  0.00381334],  
       [ 0.05777229, -0.40975665, -1.4056119 ,  1.05784347],  
       [ 0.24882205, -0.79867337, -0.77994322, -1.29400075],  
       [-0.03385964,  0.35655502, -1.39684546, -0.40716646]])
```

	A	B	C	D
count	6.000000	6.000000	6.000000	6.000000
mean	0.344564	-1.047522	-0.108024	-0.175551
std	0.346148	1.052903	1.349577	1.384062
min	-0.033860	-2.732415	-1.405612	-2.039676
25%	0.105535	-1.450773	-1.242620	-1.072292
50%	0.277564	-0.974197	-0.330529	-0.201677
75%	0.523923	-0.506986	0.653247	0.794336
max	0.891882	0.356555	1.984004	1.625882

	2013-01-01	2013-01-02	2013-01-03	2013-01-04	2013-01-05	2013-01-06
A	0.596462	0.891882	0.306306	0.057772	0.248822	-0.033860
B	-2.732415	-1.551125	-1.149720	-0.409757	-0.798673	0.356555
C	0.831367	1.984004	0.118886	-1.405612	-0.779943	-1.396845
D	1.625882	-2.039676	0.003813	1.057843	-1.294001	-0.407166

	D	C	B	A
2013-01-01	1.625882	0.831367	-2.732415	0.596462
2013-01-02	-2.039676	1.984004	-1.551125	0.891882
2013-01-03	0.003813	0.118886	-1.149720	0.306306
2013-01-04	1.057843	-1.405612	-0.409757	0.057772
2013-01-05	-1.294001	-0.779943	-0.798673	0.248822
2013-01-06	-0.407166	-1.396845	0.356555	-0.033860

	A	B	C	D
2013-01-06	-0.033860	0.356555	-1.396845	-0.407166
2013-01-04	0.057772	-0.409757	-1.405612	1.057843
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001
2013-01-03	0.306306	-1.149720	0.118886	0.003813
2013-01-01	0.596462	-2.732415	0.831367	1.625882
2013-01-02	0.891882	-1.551125	1.984004	-2.039676

2013-01-01	0.596462
2013-01-02	0.891882
2013-01-03	0.306306
2013-01-04	0.057772
2013-01-05	0.248822
2013-01-06	-0.033860

Freq: D, Name: A, dtype: float64

	A	B	C	D
2013-01-02	0.891882	-1.551125	1.984004	-2.039676
2013-01-03	0.306306	-1.149720	0.118886	0.003813
2013-01-04	0.057772	-0.409757	-1.405612	1.057843

A	0.596462
B	-2.732415
C	0.831367
D	1.625882

Name: 2013-01-01 00:00:00, dtype: float64

	A	B
2013-01-01	0.596462	-2.732415
2013-01-02	0.891882	-1.551125
2013-01-03	0.306306	-1.149720
2013-01-04	0.057772	-0.409757
2013-01-05	0.248822	-0.798673
2013-01-06	-0.033860	0.356555

	A	B
2013-01-02	0.891882	-1.551125
2013-01-03	0.306306	-1.149720
2013-01-04	0.057772	-0.409757

A	0.891882
B	-1.551125

Name: 2013-01-02 00:00:00, dtype: float64

0.5964619873009371

0.5964619873009371

A 0.057772
B -0.409757
C -1.405612
D 1.057843

Name: 2013-01-04 00:00:00, dtype: float64

	A	B
2013-01-04	0.057772	-0.409757
2013-01-05	0.248822	-0.798673

	B	C
2013-01-01	-2.732415	0.831367
2013-01-02	-1.551125	1.984004
2013-01-03	-1.149720	0.118886
2013-01-04	-0.409757	-1.405612
2013-01-05	-0.798673	-0.779943
2013-01-06	0.356555	-1.396845

-1.5511246041389541

-1.5511246041389541

	A	B	C	D
2013-01-01	0.596462	-2.732415	0.831367	1.625882
2013-01-02	0.891882	-1.551125	1.984004	-2.039676
2013-01-03	0.306306	-1.149720	0.118886	0.003813
2013-01-04	0.057772	-0.409757	-1.405612	1.057843
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001

	A	B	C	D
2013-01-01	0.596462	NaN	0.831367	1.625882
2013-01-02	0.891882	NaN	1.984004	NaN
2013-01-03	0.306306	NaN	0.118886	0.003813
2013-01-04	0.057772	NaN	NaN	1.057843
2013-01-05	0.248822	NaN	NaN	NaN
2013-01-06	NaN	0.356555	NaN	NaN

	A	B	C	D	E
2013-01-03	0.306306	-1.149720	0.118886	0.003813	two
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001	four

	A	B	C	D	F
2013-01-01	0.596462	-2.732415	0.831367	1.625882	NaN
2013-01-02	0.891882	-1.551125	1.984004	-2.039676	1.0

2013-01-03	0.306306	-1.149720	0.118886	0.003813	2.0
2013-01-04	0.057772	-0.409757	-1.405612	1.057843	3.0
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001	4.0
2013-01-06	-0.033860	0.356555	-1.396845	-0.407166	5.0

	A	B	C	D	F
2013-01-01	0.000000	-2.732415	0.831367	1.625882	NaN
2013-01-02	0.891882	-1.551125	1.984004	-2.039676	1.0
2013-01-03	0.306306	-1.149720	0.118886	0.003813	2.0
2013-01-04	0.057772	-0.409757	-1.405612	1.057843	3.0
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001	4.0
2013-01-06	-0.033860	0.356555	-1.396845	-0.407166	5.0

	A	B	C	D	F
2013-01-01	0.000000	0.000000	0.831367	1.625882	NaN
2013-01-02	0.891882	-1.551125	1.984004	-2.039676	1.0
2013-01-03	0.306306	-1.149720	0.118886	0.003813	2.0
2013-01-04	0.057772	-0.409757	-1.405612	1.057843	3.0
2013-01-05	0.248822	-0.798673	-0.779943	-1.294001	4.0
2013-01-06	-0.033860	0.356555	-1.396845	-0.407166	5.0

	A	B	C	D	F
2013-01-01	0.000000	0.000000	0.831367	5	NaN
2013-01-02	0.891882	-1.551125	1.984004	5	1.0
2013-01-03	0.306306	-1.149720	0.118886	5	2.0
2013-01-04	0.057772	-0.409757	-1.405612	5	3.0
2013-01-05	0.248822	-0.798673	-0.779943	5	4.0
2013-01-06	-0.033860	0.356555	-1.396845	5	5.0

	A	B	C	D	F
2013-01-01	0.000000	0.000000	-0.831367	-5	NaN
2013-01-02	-0.891882	-1.551125	-1.984004	-5	-1.0
2013-01-03	-0.306306	-1.149720	-0.118886	-5	-2.0
2013-01-04	-0.057772	-0.409757	-1.405612	-5	-3.0
2013-01-05	-0.248822	-0.798673	-0.779943	-5	-4.0
2013-01-06	-0.033860	-0.356555	-1.396845	-5	-5.0

	A	B	C	D	F	E
2013-01-01	0.000000	0.000000	0.831367	5	NaN	1.0
2013-01-02	0.891882	-1.551125	1.984004	5	1.0	1.0
2013-01-03	0.306306	-1.149720	0.118886	5	2.0	NaN
2013-01-04	0.057772	-0.409757	-1.405612	5	3.0	NaN

Pandas loc iloc + https://blog.csdn.net/W_weiying/article/details/81411257

	A	B	C	D	F	E
2013-01-02	0.891882	-1.551125	1.984004	5	1.0	1.0

	A	B	C	D	F	E
2013-01-01	0.000000	0.000000	0.831367	5	5.0	1.0
2013-01-02	0.891882	-1.551125	1.984004	5	1.0	1.0
2013-01-03	0.306306	-1.149720	0.118886	5	2.0	5.0
2013-01-04	0.057772	-0.409757	-1.405612	5	3.0	5.0

	A	B	C	D	F	E
2013-01-01	False	False	False	False	True	False
2013-01-02	False	False	False	False	False	False
2013-01-03	False	False	False	False	False	True
2013-01-04	False	False	False	False	False	True

A 0.245154
 B -0.592120
 C -0.108024
 D 5.000000
 F 3.000000
 dtype: float64

2013-01-01 1.457842
 2013-01-02 1.464952
 2013-01-03 1.255095
 2013-01-04 1.248481
 2013-01-05 1.534041
 2013-01-06 1.785170
 Freq: D, dtype: float64

	A	B	C	D	F
2013-01-01	NaN	NaN	NaN	NaN	NaN
2013-01-02	NaN	NaN	NaN	NaN	NaN
2013-01-03	-0.693694	-2.149720	-0.881114	4.0	1.0
2013-01-04	-2.942228	-3.409757	-4.405612	2.0	0.0
2013-01-05	-4.751178	-5.798673	-5.779943	0.0	-1.0
2013-01-06	NaN	NaN	NaN	NaN	NaN

	A	B	C	D	F
2013-01-01	0.000000	0.000000	0.831367	5	NaN
2013-01-02	0.891882	-1.551125	1.984004	5	1.0
2013-01-03	0.306306	-1.149720	0.118886	5	2.0
2013-01-04	0.057772	-0.409757	-1.405612	5	3.0
2013-01-05	0.248822	-0.798673	-0.779943	5	4.0
2013-01-06	-0.033860	0.356555	-1.396845	5	5.0

A 0.925742
 B 1.907680
 C 3.389616

```
D    0.000000
F    4.000000
dtype: float64
```

```
0    5
1    5
2    1
3    2
4    1
5    0
6    3
7    4
8    5
9    6
dtype: int64
```

```
5    3
1    2
2    1
0    1
3    1
4    1
6    1
dtype: int64
```

```
0      a
1      b
2      c
3    aaba
4    baca
5     NaN
6    caba
7     dog
8     cat
dtype: object
```

```
      0      1      2      3
0  1.803316 -0.820869  0.264350 -0.330665
1 -0.483594  1.637338  0.463343  0.567892
2 -0.342497  0.005507 -0.982421  0.686427
3 -2.105689  1.014737  0.771744  0.084011
4 -0.619881 -0.059782  0.932379  1.253148
5 -1.256238  0.759818  0.214886 -0.320345
6 -1.359079 -0.036793 -0.228833  0.308704
7 -1.480075 -1.129451 -0.054105  0.655369
8 -0.272660  0.485317 -0.367624 -0.507312
9  1.233913 -1.178890 -1.006422 -0.792650
```

	key	lval	rval
0	foo	1	4
1	foo	1	5
2	foo	2	4
3	foo	2	5

	key	lval	rval
0	foo	1	4
1	bar	2	5

	A	B	C	D
0	0.074311	1.226729	0.241182	-0.925821
1	-0.577949	0.928480	0.142600	1.458472
2	0.251732	-0.044680	-0.797844	-0.555498
3	-1.780383	1.028887	-0.385258	-0.517573
4	0.474414	-0.537868	-0.387816	0.015440
5	0.279888	0.781172	-0.286661	1.298523
6	-0.085501	0.696570	-0.417099	0.148519
7	-0.740907	-0.027447	0.345492	-0.850789
8	-1.780383	1.028887	-0.385258	-0.517573

	A	B	C	D
0	foo	one	0.396495	0.843540
1	bar	one	-1.082530	-0.802859
2	foo	two	-1.002106	-0.050793
3	bar	three	1.166171	-1.205498
4	foo	two	-0.674943	1.620700
5	bar	two	0.431722	-1.923083
6	foo	one	1.085179	0.906128
7	foo	tree	-0.256600	1.364884

	C	D
A		
bar	0.515363	-3.931440
foo	-0.451975	4.684459

	A	B	C	D
bar	one	-1.082530	-0.802859	
	three	1.166171	-1.205498	
	two	0.431722	-1.923083	
foo	one	1.481674	1.749669	
	tree	-0.256600	1.364884	
	two	-1.677049	1.569907	

		A	B
first	second		
bar	one	-0.744211	-0.210649
	two	0.296087	-1.004431
baz	one	-0.173896	-0.009551
	two	-1.503435	-0.001699

first	second		
bar	one	A	-0.744211
		B	-0.210649
	two	A	0.296087
		B	-1.004431
baz	one	A	-0.173896
		B	-0.009551
	two	A	-1.503435
		B	-0.001699

dtype: float64

		A	B
first	second		
bar	one	-0.744211	-0.210649
	two	0.296087	-1.004431
baz	one	-0.173896	-0.009551
	two	-1.503435	-0.001699

		one	two
second			
first			
bar	A	-0.744211	0.296087
	B	-0.210649	-1.004431
baz	A	-0.173896	-1.503435
	B	-0.009551	-0.001699

		bar	baz
first			
second			
one	A	-0.744211	-0.173896
	B	-0.210649	-0.009551
two	A	0.296087	-1.503435
	B	-1.004431	-0.001699

		A	B	C	D	E
0	one	A	foo	-1.080484	0.126886	
1	one	B	foo	-0.638967	-0.127862	
2	two	C	foo	0.683069	-0.231913	
3	three	A	bar	-0.075820	0.230342	
4	one	B	bar	0.252309	0.887787	
5	one	C	bar	-0.663176	1.106679	

6	two	A	foo	0.656691	-0.200818
7	three	B	foo	0.459517	-0.142919
8	one	C	foo	0.213900	-0.374571
9	one	A	bar	0.751087	1.608510
10	two	B	bar	1.369864	-0.515912
11	three	C	bar	0.075263	0.336570

C		bar	foo
A	B		
one	A	0.751087	-1.080484
	B	0.252309	-0.638967
	C	-0.663176	0.213900
three	A	-0.075820	NaN
	B	NaN	0.459517
	C	0.075263	NaN
two	A	NaN	0.656691
	B	1.369864	NaN
	C	NaN	0.683069

	sum		mean	
	D		D	
C	bar	foo	bar	foo
A				
one	0.34022	-1.505551	0.113407	-0.50185

```
frozenset({'ACOS', 'ISODD', 'PROPER', 'IMLOG10', 'SUBTOTAL', 'FORECAST',
'FVSCCHEDULE', 'ERROR.TYPE', 'GROWTH', 'CRITBINOM', 'MULTINOMIAL',
'CUBEMEMBERPROPERTY', 'SYD', 'SIN', 'IMLOG2', 'YIELDMAT', 'PI', 'MINUTE',
'MIDB', 'ISPMT', 'OFFSET', 'NA', 'BIN2OCT', 'MID', 'IMCONJUGATE', 'HYPGEOMDIST',
'GAMMAINV', 'DATE', 'MATCH', 'MINA', 'IMREAL', 'FACT', 'REPLACE',
'CUBEKPIMEMBER', 'LEFT', 'TEXT', 'FTEST', 'INFO', 'YEARFRAC', 'CUBEVALUE',
'NOMINAL', 'ODDLYIELD', 'GEOMEAN', 'OCT2HEX', 'CEILING', 'TRIM', 'CUBESETCOUNT',
'DGET', 'XIRR', 'GAMMALN', 'OCT2DEC', 'CONVERT', 'DSTDEV', 'CODE', 'AVERAGEA',
'DATEDIF', 'MAXA', 'SUMIFS', 'HEX2OCT', 'TYPE', 'IMLN', 'FINV', 'INT',
'PEARSON', 'ASINH', 'SEARCH', 'UPPER', 'ISTEXT', 'FACTDOUBLE', 'CHIDIST',
'SINH', 'ISNA', 'DMIN', 'DEVSQ', 'EXACT', 'NOT', 'MONTH', 'IMPOWER', 'ATANH',
'VAR', 'ERFC', 'SUMX2PY2', 'KURT', 'PHONETIC', 'SUMIF', 'COUNT', 'SKEW',
'STDEVPA', 'STEYX', 'MODE', 'N', 'TBILLYIELD', 'FIND', 'COVAR', 'IMSUB', 'DDB',
'PPMT', 'DVARP', 'COUPDAYBS', 'AMORLINC', 'EDATE', 'COUNTIF', 'NORMSINV', 'RSQ',
'IF', 'BESSELY', 'STDEV', 'SUMSQ', 'BESSELI', 'BAHTTEXT', 'GETPIVOTDATA',
'BIN2DEC', 'HEX2BIN', 'DEC2OCT', 'DURATION', 'MIN', 'IPMT', 'SECOND', 'TAN',
'VARPA', 'RAND', 'ACCRINT', 'NPER', 'IFERROR', 'COUNTBLANK', 'RECEIVED',
'FDIST', 'COUPDAYS', 'TINV', 'NOW', 'NORMSDIST', 'AND', 'DPRODUCT', 'COUPNUM',
'PRODUCT', 'SMALL', 'COSH', 'TIMEVALUE', 'FISHER', 'FINDB', 'QUARTILE', 'IMSUM',
'INDEX', 'ISERR', 'DOLLAR', 'AVERAGE', 'TRANSPOSE', 'MINVERSE', 'BINOMDIST',
'LENB', 'SLOPE', 'TIME', 'SUMX2MY2', 'ROUNDUP', 'TTEST', 'DEGREES', 'SLN',
'ISNUMBER', 'ISBLANK', 'IMABS', 'BETADIST', 'VDB', 'PRICE', 'FREQUENCY', 'DISC',
```

'AVERAGEIF', 'HOUR', 'REPT', 'DMAX', 'COLUMNS', 'ABS', 'TREND', 'HLOOKUP', 'TRUE
 ADDRESS', 'OR', 'CUMPRINC', 'INDIRECT', 'PMT', 'ROW', 'DCOUNTA', 'VLOOKUP',
 'EOMONTH', 'LOGINV', 'COLUMN', 'ODDFYIELD', 'DAY', 'ATAN2', 'DCOUNT', 'LOG10',
 'YEAR', 'MDURATION', 'DEC2HEX', 'ISREF', 'ACOSH', 'SUMPRODUCT', 'CONFIDENCE',
 'LOG', 'COUPPCD', 'ISLOGICAL', 'CLEAN', 'LOOKUP', 'YIELD', 'CUMIPMT', 'PROB',
 'TDIST', 'ROMAN', 'AVERAGEIFS', 'TRIMMEAN', 'MIRR', 'ISNONTEXT', 'ODDLPRICE',
 'CHIINV', 'LINEST', 'NPV', 'REPLACEB', 'AMORDEGRC', 'IMDIV', 'SUBSTITUTE',
 'PRICEMAT', 'COUNTA', 'AREAS', 'CORREL', 'STANDARDIZE', 'DAYS360', 'ASC',
 'CELL', 'AVEDEV', 'ERF', 'COMPLEX', 'MMULT', 'LEFTB', 'DSTDEVP', 'IMSQRT', 'PV',
 'WEIBULL', 'HYPERLINK', 'ODDFPRICE', 'ISERROR', 'DEC2BIN', 'NORMINV',
 'CONCATENATE', 'FLOOR', 'TBILLPRICE', 'FISHERINV', 'LARGE', 'ROWS', 'PRICEDISC',
 'RIGHTB', 'VARA', 'SIGN', 'IMAGINARY', 'IMPRODUCT', 'COMBIN', 'ZTEST',
 'LOGNORMDIST', 'INTRATE', 'EXPONDIST', 'POISSON', 'OCT2BIN', 'DSUM', 'CHAR',
 'LOWER', 'POWER', 'CUBEMEMBER', 'XNPV', 'MDTERM', 'T', 'WEEKNUM', 'SUMXMY2',
 'COUPNCD', 'ASIN', 'LOGEST', 'RANDBETWEEN', 'SEARCHB', 'DOLLARFR', 'DVAR',
 'ODD', 'EVEN', 'DELTA', 'PERCENTRANK', 'ISO.CEILING', 'PERMUT', 'MOD',
 'HEX2DEC', 'TBILLEQ', 'NETWORKDAYS.INTL', 'ROUNDOWN', 'FIXED', 'RIGHT', 'COS',
 'QUOTIENT', 'ACCRINTM', 'ECMA.CEILING', 'DAVERAGE', 'NEGBINOMDIST', 'IRR',
 'TODAY', 'HARMEAN', 'BETAINV', 'IMCOS', 'ATAN', 'LN', 'EFFECT', 'SERIESSUM',
 'WEEKDAY', 'FV', 'IMEXP', 'RADIANS', 'DOLLARDE', 'LCM', 'FALSE', 'EXP', 'SUM',
 'NORMDIST', 'WORKDAY.INTL', 'TRUNC', 'YIELDDISC', 'BESSELK', 'SQRTPI',
 'PERCENTILE', 'VARP', 'JIS', 'BESSELJ', 'GCD', 'RATE', 'MAX', 'SQRT',
 'INTERCEPT', 'COUPDAYSNC', 'DATEVALUE', 'RTD', 'CHOOSE', 'RANK', 'CUBESET',
 'CHITEST', 'ROUND', 'LEN', 'IMSIN', 'NETWORKDAYS', 'VALUE', 'BIN2HEX', 'WORKDAY',
 'IMARGUMENT', 'GAMMADIST', 'GESTEP', 'STDEV STDEVA', 'ISEVEN', 'MEDIAN',
 'CUBERANKEDMEMBER', 'COUNTIFS', 'MROUND', 'TANH', 'DB'})

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