Tutorial 12 - Stack Unstack

In [1]:
```
import pandas as pd
```

In [2]:
```
# Observe que no arquivo excel há 2 níveis do título ou 2 linhas de título (linha 1
 e 2 = index 0 e 1 -> header[0,1])
# O arquivo precisa ser .xlsx caso contrário ele não verá as células mescladas e o
 título em 2 níveis
df = pd.read_excel('sample_data_tutorial_12.xlsx', sheet_name='sample_1', header=[0
,1])
df
```

Out[2]:

	Price			Price to earnings ration (P/E)		
Company	**Facebook**	**Google**	**Microsoft**	**Facebook**	**Google**	**Microsoft**
2017-06-05	155	955	66	37.10	32.0	30.31
2017-06-06	150	987	69	36.98	31.3	30.56
2017-06-07	153	963	62	36.78	31.7	30.46
2017-06-08	155	1000	61	36.11	31.2	30.11
2017-06-09	156	1012	66	37.07	30.0	31.00

In [3]:
```
# DataFrame.stack(level=-1, dropna=True)
#level : int, str, list, default -1
# Level(s) to stack from the column axis onto the index axis, defined as one index
 or label, or a list of indices or labels.
df.stack()
```

Out[3]:

		Price	Price to earnings ration (P/E)
	Company		
2017-06-05	**Facebook**	155	37.10
	Google	955	32.00
	Microsoft	66	30.31
2017-06-06	**Facebook**	150	36.98
	Google	987	31.30
	Microsoft	69	30.56
2017-06-07	**Facebook**	153	36.78
	Google	963	31.70
	Microsoft	62	30.46
2017-06-08	**Facebook**	155	36.11
	Google	1000	31.20
	Microsoft	61	30.11
2017-06-09	**Facebook**	156	37.07
	Google	1012	30.00
	Microsoft	66	31.00

In [4]:
```
df.stack(level=0)
```

Out[4]:

	Company	Facebook	Google	Microsoft
2017-06-05	**Price**	155.00	955.0	66.00
	Price to earnings ration (P/E)	37.10	32.0	30.31
2017-06-06	**Price**	150.00	987.0	69.00
	Price to earnings ration (P/E)	36.98	31.3	30.56
2017-06-07	**Price**	153.00	963.0	62.00
	Price to earnings ration (P/E)	36.78	31.7	30.46
2017-06-08	**Price**	155.00	1000.0	61.00
	Price to earnings ration (P/E)	36.11	31.2	30.11
2017-06-09	**Price**	156.00	1012.0	66.00
	Price to earnings ration (P/E)	37.07	30.0	31.00

In [5]:
```
df_stacked = df.stack()
df_stacked.unstack()
```

Out[5]:

	Price			Price to earnings ration (P/E)		
Company	**Facebook**	**Google**	**Microsoft**	**Facebook**	**Google**	**Microsoft**
2017-06-05	155	955	66	37.10	32.0	30.31
2017-06-06	150	987	69	36.98	31.3	30.56
2017-06-07	153	963	62	36.78	31.7	30.46
2017-06-08	155	1000	61	36.11	31.2	30.11
2017-06-09	156	1012	66	37.07	30.0	31.00

In [6]:
```
# Observe que no arquivo excel há 3 níveis do título ou 3 linhas de título (linha
 1, 2 e 3 = index 0, 1 e 2)
df2 = pd.read_excel('sample_data_tutorial_12.xlsx', sheet_name='sample_2', header=[
0,1,2])
df2
```

Out[6]:

	Price Ratios						Income Statement		
	Price			Price to earnings ration (P/E)			Net Sales		
Company	**Facebook**	**Google**	**Microsoft**	**Facebook**	**Google**	**Microsoft**	**Facebook**	**Google**	**Mic**
Q1 2016	155	955	66	37.10	32.0	30.31	2.6	20	18.7
Q2 2016	150	987	69	36.98	31.3	30.56	3.1	22	21.3
Q3 2016	153	963	62	36.78	31.7	30.46	4.3	24	21.4
Q4 2016	155	1000	61	36.11	31.2	30.11	6.7	26	21.8
Q1 2017	156	1012	66	37.07	30.0	31.00	8.1	31	22.3

In [7]:
```
df2.stack()
```

Out[7]:

		Income Statement		Price Ratios	
		Net Profit	Net Sales	Price	Price to earnings ration (P/E)
	Company				
Q1 2016	Facebook	0.80	2.60	155	37.10
	Google	5.43	20.00	955	32.00
	Microsoft	4.56	18.70	66	30.31
Q2 2016	Facebook	0.97	3.10	150	36.98
	Google	5.89	22.00	987	31.30
	Microsoft	5.10	21.30	69	30.56
Q3 2016	Facebook	1.20	4.30	153	36.78
	Google	6.10	24.00	963	31.70
	Microsoft	5.43	21.45	62	30.46
Q4 2016	Facebook	1.67	6.70	155	36.11
	Google	6.50	26.00	1000	31.20
	Microsoft	5.89	21.88	61	30.11
Q1 2017	Facebook	2.03	8.10	156	37.07
	Google	6.40	31.00	1012	30.00
	Microsoft	6.09	22.34	66	31.00

In [8]:
```
df2.stack(0)
```

Out[8]:

		Net Profit			Net Sales			Price	
	Company	Facebook	Google	Microsoft	Facebook	Google	Microsoft	Facebook	Goog
Q1 2016	Income Statement	0.80	5.43	4.56	2.6	20.0	18.70	NaN	NaN
	Price Ratios	NaN	NaN	NaN	NaN	NaN	NaN	155.0	955.0
Q2 2016	Income Statement	0.97	5.89	5.10	3.1	22.0	21.30	NaN	NaN
	Price Ratios	NaN	NaN	NaN	NaN	NaN	NaN	150.0	987.0
Q3 2016	Income Statement	1.20	6.10	5.43	4.3	24.0	21.45	NaN	NaN
	Price Ratios	NaN	NaN	NaN	NaN	NaN	NaN	153.0	963.0
Q4 2016	Income Statement	1.67	6.50	5.89	6.7	26.0	21.88	NaN	NaN
	Price Ratios	NaN	NaN	NaN	NaN	NaN	NaN	155.0	1000.
Q1 2017	Income Statement	2.03	6.40	6.09	8.1	31.0	22.34	NaN	NaN
	Price Ratios	NaN	NaN	NaN	NaN	NaN	NaN	156.0	1012.

In [9]:
```
df2.stack(1)
```

Out[9]:

		Income Statement			Price Ratios		
	Company	**Facebook**	**Google**	**Microsoft**	**Facebook**	**Google**	**Microsoft**
Q1 2016	**Net Profit**	0.80	5.43	4.56	NaN	NaN	NaN
	Net Sales	2.60	20.00	18.70	NaN	NaN	NaN
	Price	NaN	NaN	NaN	155.00	955.0	66.00
	Price to earnings ration (P/E)	NaN	NaN	NaN	37.10	32.0	30.31
Q2 2016	**Net Profit**	0.97	5.89	5.10	NaN	NaN	NaN
	Net Sales	3.10	22.00	21.30	NaN	NaN	NaN
	Price	NaN	NaN	NaN	150.00	987.0	69.00
	Price to earnings ration (P/E)	NaN	NaN	NaN	36.98	31.3	30.56
Q3 2016	**Net Profit**	1.20	6.10	5.43	NaN	NaN	NaN
	Net Sales	4.30	24.00	21.45	NaN	NaN	NaN
	Price	NaN	NaN	NaN	153.00	963.0	62.00
	Price to earnings ration (P/E)	NaN	NaN	NaN	36.78	31.7	30.46
Q4 2016	**Net Profit**	1.67	6.50	5.89	NaN	NaN	NaN
	Net Sales	6.70	26.00	21.88	NaN	NaN	NaN
	Price	NaN	NaN	NaN	155.00	1000.0	61.00
	Price to earnings ration (P/E)	NaN	NaN	NaN	36.11	31.2	30.11
Q1 2017	**Net Profit**	2.03	6.40	6.09	NaN	NaN	NaN
	Net Sales	8.10	31.00	22.34	NaN	NaN	NaN
	Price	NaN	NaN	NaN	156.00	1012.0	66.00
	Price to earnings ration (P/E)	NaN	NaN	NaN	37.07	30.0	31.00