In [1]:
```
import pandas as pd
import numpy as np
df = pd.read_csv("weather.csv")
df
```

Out[1]:

	date	city	temperature	humidity
0	5/1/2017	new york	65	56
1	5/2/2017	new york	66	58
2	5/3/2017	new york	68	60
3	5/1/2017	mumbai	75	80
4	5/2/2017	mumbai	78	83
5	5/3/2017	mumbai	82	85
6	5/1/2017	beijing	80	26
7	5/2/2017	beijing	77	30
8	5/3/2017	beijing	79	35

In [2]:
```
df.pivot(index='city',columns='date')
```

Out[2]:

	temperature			humidity		
date	**5/1/2017**	**5/2/2017**	**5/3/2017**	**5/1/2017**	**5/2/2017**	**5/3/2017**
city						
beijing	80	77	79	26	30	35
mumbai	75	78	82	80	83	85
new york	65	66	68	56	58	60

In [3]:
```
df.pivot(index='city',columns='date',values="humidity")
```

Out[3]:

date	**5/1/2017**	**5/2/2017**	**5/3/2017**
city			
beijing	26	30	35
mumbai	80	83	85
new york	56	58	60

In [4]:
```
df.pivot(index='date',columns='city')
```

Out[4]:

	temperature			humidity		
city	**beijing**	**mumbai**	**new york**	**beijing**	**mumbai**	**new york**
date						
5/1/2017	80	75	65	26	80	56

	temperature			humidity		
city	beijing	mumbai	new york	beijing	mumbai	new york
date						
5/2/2017	77	78	66	30	83	58
5/3/2017	79	82	68	35	85	60

In [5]:
```
df.pivot(index='humidity',columns='city')
```

Out[5]:

	date			temperature		
city	beijing	mumbai	new york	beijing	mumbai	new york
humidity						
26	5/1/2017	NaN	NaN	80.0	NaN	NaN
30	5/2/2017	NaN	NaN	77.0	NaN	NaN
35	5/3/2017	NaN	NaN	79.0	NaN	NaN
56	NaN	NaN	5/1/2017	NaN	NaN	65.0
58	NaN	NaN	5/2/2017	NaN	NaN	66.0
60	NaN	NaN	5/3/2017	NaN	NaN	68.0
80	NaN	5/1/2017	NaN	NaN	75.0	NaN
83	NaN	5/2/2017	NaN	NaN	78.0	NaN
85	NaN	5/3/2017	NaN	NaN	82.0	NaN

Pivot Table

In [6]:
```
df = pd.read_csv("weather2.csv")
df
```

Out[6]:

	date	city	temperature	humidity
0	5/1/2017	new york	65	56
1	5/1/2017	new york	61	54
2	5/2/2017	new york	70	60
3	5/2/2017	new york	72	62
4	5/1/2017	mumbai	75	80
5	5/1/2017	mumbai	78	83
6	5/2/2017	mumbai	82	85
7	5/2/2017	mumbai	80	26

In [7]:
```
# by default it calculate mean
df.pivot_table(index="city",columns="date")
# df.pivot_table(index="city",columns="date", aggfunc="mean")
```

Out[7]:

	humidity		temperature	
date	**5/1/2017**	**5/2/2017**	**5/1/2017**	**5/2/2017**
city				
mumbai	81.5	55.5	76.5	81.0
new york	55.0	61.0	63.0	71.0

In [8]:
```
df.pivot_table(index="city",columns="date", margins = "true")
```

Out[8]:

	humidity			temperature		
date	**5/1/2017**	**5/2/2017**	**All**	**5/1/2017**	**5/2/2017**	**All**
city						
mumbai	81.50	55.50	68.50	76.50	81.0	78.750
new york	55.00	61.00	58.00	63.00	71.0	67.000
All	68.25	58.25	63.25	69.75	76.0	72.875

In [9]:
```
df.pivot_table(index="city",columns="date", aggfunc="sum")
```

Out[9]:

	humidity		temperature	
date	**5/1/2017**	**5/2/2017**	**5/1/2017**	**5/2/2017**
city				
mumbai	163	111	153	162
new york	110	122	126	142