

```
In [2]: import pandas as pd
```

```
In [3]: data = pd.read_csv("Weather.csv")
data
```

Out[3]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Wea
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	
2	1/1/2012 2:00	-1.8	-3.4	89	7	4.0	101.26	Free Drizzle
3	1/1/2012 3:00	-1.5	-3.2	88	6	4.0	101.27	Free Drizzle
4	1/1/2012 4:00	-1.5	-3.3	88	7	4.8	101.23	
...	...	...	...	...	...	...	...	
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	S
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	S
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	S
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	S
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	S

8784 rows x 8 columns

```
In [4]: data.describe()
```

Out[4]:

	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
count	8784.000000	8784.000000	8784.000000	8784.000000	8784.000000	8784.000000
mean	8.798144	2.555294	67.431694	14.945469	27.664447	101.051623
std	11.687883	10.883072	16.918881	8.688696	12.622688	0.844005
min	-23.300000	-28.500000	18.000000	0.000000	0.200000	97.520000
25%	0.100000	-5.900000	56.000000	9.000000	24.100000	100.560000
50%	9.300000	3.300000	68.000000	13.000000	25.000000	101.070000
75%	18.800000	11.800000	81.000000	20.000000	25.000000	101.590000
max	33.000000	24.400000	100.000000	83.000000	48.300000	103.650000

Print the head of the csv file (print the data of the first row)

In [5]: `data.head()` *#as a default it is set to return first 5 data*

Out[5]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	1/1/2012 2:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	1/1/2012 3:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	1/1/2012 4:00	-1.5	-3.3	88	7	4.8	101.23	Fog

In [6]: `data.head(10)` *#now we can visually see whatever data we want*

Out[6]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	1/1/2012 2:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	1/1/2012 3:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	1/1/2012 4:00	-1.5	-3.3	88	7	4.8	101.23	Fog
5	1/1/2012 5:00	-1.4	-3.3	87	9	6.4	101.27	Fog
6	1/1/2012 6:00	-1.5	-3.1	89	7	6.4	101.29	Fog
7	1/1/2012 7:00	-1.4	-3.6	85	7	8.0	101.26	Fog
8	1/1/2012 8:00	-1.4	-3.6	85	9	8.0	101.23	Fog
9	1/1/2012 9:00	-1.3	-3.1	88	15	4.0	101.20	Fog

Print the shape of data

In [7]: `data.shape`

```
Out[7]: (8784, 8)
```

Print the index of the dataframe

```
In [8]: data.index
```

```
Out[8]: RangeIndex(start=0, stop=8784, step=1)
```

Print the column names

```
In [9]: data.columns
```

```
Out[9]: Index(['Date/Time', 'Temp_C', 'Dew Point Temp_C', 'Rel Hum_%',  
              'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather'],  
             dtype='object')
```

Print the datatype of each columns

```
In [10]: data.dtypes
```

```
Out[10]: Date/Time      object  
Temp_C                float64  
Dew Point Temp_C      float64  
Rel Hum_%             int64  
Wind Speed_km/h       int64  
Visibility_km          float64  
Press_kPa             float64  
Weather               object  
dtype: object
```

In a columns it shows how many values are unique

```
In [11]: data['Temp_C'].unique()
```

```

Out[11]: array([ -1.8,  -1.5,  -1.4,  -1.3,  -1. ,  -0.5,  -0.2,   0.2,   0.8,
    1.8,   2.6,   3. ,   3.8,   3.1,   3.2,   4. ,   4.4,   5.3,
    5.2,   4.6,   3.9,   3.7,   2.9,   2.3,   2. ,   1.9,   1.5,
    2.2,   1.7,   1.1,   0. ,  -0.7,  -2.1,  -4.1,  -4.8,  -5.6,
   -5.8,  -7. ,  -7.4,  -9. ,  -9.7, -10.5, -11.3, -12.6, -12.9,
  -13.3, -14. , -14.8, -15. , -15.3, -14.9, -15.1, -15.8, -16.3,
  -16.9, -17.3, -17. , -17.1, -17.5, -17.9, -18.1, -18.5, -18.6,
  -18.2, -17.8, -16.8, -15.2, -14.2, -13.7, -12.4, -10.2,  -9.4,
   -8.9,  -8.4,  -7.8,  -7.6,  -9.5,  -9.6,  -8.8,  -7.5,  -5.4,
   -5. ,  -8.2,  -7.1,  -6.1,  -6.6,  -6. ,  -4.7,  -4.4,  -5.1,
   -4.3,  -6.7,  -9.2,  -9.8,  -9.9, -10. , -10.6, -11.8, -12. ,
  -14.4, -12.3, -12.5, -11.7, -11.9, -11.2, -11.5, -11.6,  -9.3,
   -8.7,  -8.5,  -8.1,  -6.9,  -6.4,  -5.7,  -5.5,  -3.7,  -3.6,
   -3.1,  -3.2,  -3. ,   0.4,   0.6,  -0.6,  -1.7,  -3.5,  -5.9,
   -6.5,  -7.2,  -8. ,  -8.3,  -7.7,  -6.8,  -2.5,  -1.1,  -0.3,
    2.5,   1.4,   1.6,   1.2,   0.7,  -4. ,  -4.9,  -7.3,  -8.6,
  -10.7, -12.7, -13.4, -13.9, -14.7, -14.3, -12.2, -11.4, -10.8,
   -6.2,  -5.2,  -4.6,  -4.5,  -2.9, -18. , -16.7, -17.4, -17.7,
  -18.3, -19.6, -20. , -19.9, -20.3, -21.2, -21.1, -21.4, -20.7,
  -21. , -21.3, -23.2, -22.8, -23.3, -22.2, -20.6, -19.3, -16. ,
  -15.4, -16.2, -19.2, -18.7, -19.1, -13.6, -10.1, -10.4,  -5.3,
   -3.3,  -1.6,   2.1,   0.5, -10.9, -11.1, -11. , -10.3, -16.6,
  -14.6,  -4.2,  -3.9,  -6.3, -15.5, -15.9, -16.4, -16.1, -12.1,
  -13. , -17.6, -18.4, -17.2, -19.5, -19. , -14.5, -13.2,   2.7,
    3.3,   3.6,   3.5,   5. ,   4.2,   3.4,   2.8,   2.4,   1.3,
    1. ,  -0.1,  -0.4,  -2.8,  -7.9,  -3.4,  -3.8,  -0.8,   0.3,
    0.1,  -1.2,   0.9,  -0.9,  -2. ,  -1.9,  -2.2,  -2.3, -15.7,
  -13.5, -13.8,  -2.4, -13.1, -12.8,  -2.7,   5.8,   6.1,   5.4,
    6.5,   4.3,   6.4,   8.9,   9.3,   9.7,  11.4,   9.9,   5.5,
    6. ,   7.6,   6.8,   4.8,   6.2,   7.9,  10.1,  10. ,   5.7,
   10.3,   6.7,  10.2,  12.1,  12.7,  11.7,  11.5,  11.6,  11.3,
   10.5,  -2.6,   5.9,   9. ,   9.5,  10.9,  10.7,   9.1,   7.4,
    8.3,  10.6,  10.8,  12.3,  12.4,  11.8,   8.7,   9.2,   8.4,
    6.6,   7.5,   5.1,   4.9,   4.1,   8.1,   9.8,   8.8,   7.7,
   10.4,  11.9,  14.1,  17.3,  20. ,  21.7,  22.2,  22.7,  21.8,
   18.4,  17.1,  12.8,  13.4,  12.6,  11.2,  13.9,  15.6,  17.8,
   19.8,  18.5,  17. ,  16.3,  16.6,  15.9,  12.5,   7.2,   7.1,
    8. ,  14.9,  16.5,  21.5,  22.5,  23.3,  22. ,  19.7,  17.5,
   18.1,  16. ,  14.2,  14.3,  14. ,  13.8,  18.2,  20.2,  22.3,
   23.8,  24.7,  25.4,  25.5,  25.2,  20.7,  17.2,  16.4,  18. ,
   15.5,  15. ,  11. ,  13.2,  13.7,  15.4,  19.6,  20.4,  23. ,
   22.8,  21.4,  16.7,  15.1,  14.5,  16.2,  16.8,  14.7,   7.3,
    4.7,   6.3,   4.5,   8.2,   7. ,   6.9,   7.8,   5.6,   8.5,
    8.6,   9.4,  12.2,  13.5,  16.1,  13.6,  15.3,  14.8,  12. ,
   12.9,  13.1,  19.4,  14.6,  15.7,  14.4,  15.2,  19.3,  24.9,
   24.1,  24.8,  26.6,  27.4,  27.8,  27.3,  26.7,  26.4,  20.5,
   19.5,  19. ,  18.9,  17.4,  11.1,  15.8,  18.7,   9.6,  13. ,
   13.3,  16.9,  20.1,  20.6,  20.9,  21. ,  19.9,  19.2,  17.6,
   17.9,  18.6,  22.4,  23.9,  23.6,  18.8,  21.2,  21.9,  23.2,
   23.4,  23.5,  22.9,  18.3,  20.3,  20.8,  17.7,  19.1,  25.6,
   25.8,  26. ,  24.3,  21.6,  26.8,  28.6,  29.5,  30.9,  31.2,
   30.8,  29.2,  26.9,  25.9,  24. ,  28. ,  28.4,  28.8,  28.9,
   28.2,  27.7,  26.5,  21.1,  24.6,  26.1,  27.1,  27.6,  28.1,
   24.4,  23.1,  27.2,  26.2,  21.3,  22.1,  22.6,  24.2,  23.7,
   25.3,  28.7,  29.4,  30.1,  29.6,  29.1,  25. ,  24.5,  25.7,
   27. ,  27.9,  26.3,  28.5,  29.7,  31.7,  32.2,  32.3,  32.4,
   30.6,  25.1,  31.8,  31.6,  32.6,  33. ,  32.5,  32.1,  31.1,
   30.3,  27.5,  29. ,  29.8,  30.7,  30.2,  29.9,  28.3,  30.5,
   30.4,  31.9,  31.4,  32.7,  32.9,  31.5,  29.3,  30. ,  32. ,
   32.8,  -9.1])

```

Print total number of unique values in each column

```
In [12]: data.nunique()
```

```
Out[12]: Date/Time      8784  
Temp_C      533  
Dew Point Temp_C    489  
Rel Hum_%      83  
Wind Speed_km/h     34  
Visibility_km     24  
Press_kPa      518  
Weather        50  
dtype: int64
```

Print the total number of non null in each column. it can be applied to 1 column or entire dataframe

```
In [13]: data.count() #here we are running for whole dataframe
```

```
Out[13]: Date/Time      8784  
Temp_C      8784  
Dew Point Temp_C    8784  
Rel Hum_%      8784  
Wind Speed_km/h     8784  
Visibility_km     8784  
Press_kPa      8784  
Weather        8784  
dtype: int64
```

Print the unique values with their count, it can be applied to a single column only

```
In [14]: data['Weather'].value_counts()
```

```

Out[14]: Weather
Mainly Clear 2106
Mostly Cloudy 2069
Cloudy 1728
Clear 1326
Snow 390
Rain 306
Rain Showers 188
Fog 150
Rain,Fog 116
Drizzle,Fog 80
Snow Showers 60
Drizzle 41
Snow,Fog 37
Snow,Blowing Snow 19
Rain,Snow 18
Thunderstorms,Rain Showers 16
Haze 16
Drizzle,Snow,Fog 15
Freezing Rain 14
Freezing Drizzle,Snow 11
Freezing Drizzle 7
Snow,Ice Pellets 6
Freezing Drizzle,Fog 6
Snow,Haze 5
Freezing Fog 4
Snow Showers,Fog 4
Moderate Snow 4
Rain,Snow,Ice Pellets 4
Freezing Rain,Fog 4
Freezing Drizzle,Haze 3
Rain,Haze 3
Thunderstorms,Rain 3
Thunderstorms,Rain Showers,Fog 3
Freezing Rain,Haze 2
Drizzle,Snow 2
Rain Showers,Snow Showers 2
Thunderstorms 2
Moderate Snow,Blowing Snow 2
Rain Showers,Fog 1
Thunderstorms,Moderate Rain Showers,Fog 1
Snow Pellets 1
Rain,Snow,Fog 1
Moderate Rain,Fog 1
Freezing Rain,Ice Pellets,Fog 1
Drizzle,Ice Pellets,Fog 1
Thunderstorms,Rain,Fog 1
Rain,Ice Pellets 1
Rain,Snow Grains 1
Thunderstorms,Heavy Rain Showers 1
Freezing Rain,Snow Grains 1
Name: count, dtype: int64

```

Print basic info about our dataframe

```
In [15]: data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8784 entries, 0 to 8783
Data columns (total 8 columns):
#   Column                Non-Null Count  Dtype
---  -
0   Date/Time              8784 non-null   object
1   Temp_C                 8784 non-null   float64
2   Dew Point Temp_C       8784 non-null   float64
3   Rel Hum_%              8784 non-null   int64
4   Wind Speed_km/h        8784 non-null   int64
5   Visibility_km           8784 non-null   float64
6   Press_kPa              8784 non-null   float64
7   Weather                8784 non-null   object
dtypes: float64(4), int64(2), object(2)
memory usage: 549.1+ KB
```

## Q1) Find all unique "Wind Speed" values in data

In [16]: `data.head(1)`

Out[16]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog

In [17]: `data['Wind Speed_km/h'].nunique()`  
`print(data['Wind Speed_km/h'].nunique())` *#this printed number of unique values*  
 34

In [18]: `data['Wind Speed_km/h'].unique()`

Out[18]: `array([ 4, 7, 6, 9, 15, 13, 20, 22, 19, 24, 30, 35, 39, 32, 33, 26, 44, 43, 48, 37, 28, 17, 11, 0, 83, 70, 57, 46, 41, 52, 50, 63, 54, 2])`

## Q2) Find the number of times when "Whether is exactly Clear"

In [19]: `data.head(1)`

Out[19]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog

There are 3 methods to solve this type of problem

Value\_Count()

In [20]: `data.Weather.value_counts()`

```
Out[20]: Weather
Mainly Clear 2106
Mostly Cloudy 2069
Cloudy 1728
Clear 1326
Snow 390
Rain 306
Rain Showers 188
Fog 150
Rain,Fog 116
Drizzle,Fog 80
Snow Showers 60
Drizzle 41
Snow,Fog 37
Snow,Blowing Snow 19
Rain,Snow 18
Thunderstorms,Rain Showers 16
Haze 16
Drizzle,Snow,Fog 15
Freezing Rain 14
Freezing Drizzle,Snow 11
Freezing Drizzle 7
Snow,Ice Pellets 6
Freezing Drizzle,Fog 6
Snow,Haze 5
Freezing Fog 4
Snow Showers,Fog 4
Moderate Snow 4
Rain,Snow,Ice Pellets 4
Freezing Rain,Fog 4
Freezing Drizzle,Haze 3
Rain,Haze 3
Thunderstorms,Rain 3
Thunderstorms,Rain Showers,Fog 3
Freezing Rain,Haze 2
Drizzle,Snow 2
Rain Showers,Snow Showers 2
Thunderstorms 2
Moderate Snow,Blowing Snow 2
Rain Showers,Fog 1
Thunderstorms,Moderate Rain Showers,Fog 1
Snow Pellets 1
Rain,Snow,Fog 1
Moderate Rain,Fog 1
Freezing Rain,Ice Pellets,Fog 1
Drizzle,Ice Pellets,Fog 1
Thunderstorms,Rain,Fog 1
Rain,Ice Pellets 1
Rain,Snow Grains 1
Thunderstorms,Heavy Rain Showers 1
Freezing Rain,Snow Grains 1
Name: count, dtype: int64
```

### Filtering

```
In [21]: data.Weather == 'Clear' #This will return in boolean
```

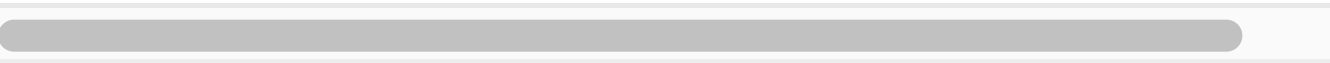
```
Out[21]: 0      False
          1      False
          2      False
          3      False
          4      False
          ...
          8779   False
          8780   False
          8781   False
          8782   False
          8783   False
          Name: Weather, Length: 8784, dtype: bool
```

```
In [22]: data[data.Weather == 'Clear']
```

Out[22]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weath
67	1/3/2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Cle
114	1/5/2012 18:00	-7.1	-14.4	56	11	25.0	100.71	Cle
115	1/5/2012 19:00	-9.2	-15.4	61	7	25.0	100.80	Cle
116	1/5/2012 20:00	-9.8	-15.7	62	9	25.0	100.83	Cle
117	1/5/2012 21:00	-9.0	-14.8	63	13	25.0	100.83	Cle
...	...	...	...	...	...	...	...	...
8646	12/26/2012 6:00	-13.4	-14.8	89	4	25.0	102.47	Cle
8698	12/28/2012 10:00	-6.1	-8.6	82	19	24.1	101.27	Cle
8713	12/29/2012 1:00	-11.9	-13.6	87	11	25.0	101.31	Cle
8714	12/29/2012 2:00	-11.8	-13.1	90	13	25.0	101.33	Cle
8756	12/30/2012 20:00	-13.8	-16.5	80	24	25.0	101.52	Cle

1326 rows × 8 columns



Grpupby

```
In [23]: data.groupby("Weather").get_group("Clear")
```

Out [23]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weath
67	1/3/2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Cle
114	1/5/2012 18:00	-7.1	-14.4	56	11	25.0	100.71	Cle
115	1/5/2012 19:00	-9.2	-15.4	61	7	25.0	100.80	Cle
116	1/5/2012 20:00	-9.8	-15.7	62	9	25.0	100.83	Cle
117	1/5/2012 21:00	-9.0	-14.8	63	13	25.0	100.83	Cle
...	...	...	...	...	...	...	...	...
8646	12/26/2012 6:00	-13.4	-14.8	89	4	25.0	102.47	Cle
8698	12/28/2012 10:00	-6.1	-8.6	82	19	24.1	101.27	Cle
8713	12/29/2012 1:00	-11.9	-13.6	87	11	25.0	101.31	Cle
8714	12/29/2012 2:00	-11.8	-13.1	90	13	25.0	101.33	Cle
8756	12/30/2012 20:00	-13.8	-16.5	80	24	25.0	101.52	Cle

1326 rows x 8 columns

### Q3) Find number of times when "wind speed is exactly 4km/h"

```
In [24]: data.head(1)
```

Out [24]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog

```
In [25]: data[data['Wind Speed_km/h'] == 4] #Using filtering
```

Out [25]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weath
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	F
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	F
96	1/5/2012 0:00	-8.8	-11.7	79	4	9.7	100.32	Sn
101	1/5/2012 5:00	-7.0	-9.5	82	4	4.0	100.19	Sn
146	1/7/2012 2:00	-8.1	-11.1	79	4	19.3	100.15	Clo
...	...	...	...	...	...	...	...	
8768	12/31/2012 8:00	-8.6	-10.3	87	4	3.2	101.14	Sn Show
8769	12/31/2012 9:00	-8.1	-9.6	89	4	2.4	101.09	Sn
8770	12/31/2012 10:00	-7.4	-8.9	89	4	6.4	101.05	Snow,F
8772	12/31/2012 12:00	-5.8	-7.5	88	4	12.9	100.78	Sn
8773	12/31/2012 13:00	-4.6	-6.6	86	4	12.9	100.63	Sn

474 rows x 8 columns

In [26]: `data.groupby("Wind Speed_km/h").get_group(4) #using getgroup`

Out[26]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	F
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	F
96	1/5/2012 0:00	-8.8	-11.7	79	4	9.7	100.32	Sn
101	1/5/2012 5:00	-7.0	-9.5	82	4	4.0	100.19	Sn
146	1/7/2012 2:00	-8.1	-11.1	79	4	19.3	100.15	Clo
...	...	...	...	...	...	...	...	...
8768	12/31/2012 8:00	-8.6	-10.3	87	4	3.2	101.14	Sn Show
8769	12/31/2012 9:00	-8.1	-9.6	89	4	2.4	101.09	Sn
8770	12/31/2012 10:00	-7.4	-8.9	89	4	6.4	101.05	Snow,F
8772	12/31/2012 12:00	-5.8	-7.5	88	4	12.9	100.78	Sn
8773	12/31/2012 13:00	-4.6	-6.6	86	4	12.9	100.63	Sn

474 rows x 8 columns

## Q4) Find out the null values in data

In [27]: `data.isnull().sum()` *#no null value in any column*

Out[27]:

```

Date/Time      0
Temp_C         0
Dew Point Temp_C  0
Rel Hum_%      0
Wind Speed_km/h  0
Visibility_km   0
Press_kPa      0
Weather        0
dtype: int64

```

In [28]: `data.notnull().sum()` *#every value is full*

Out[28]:

```

Date/Time      8784
Temp_C         8784
Dew Point Temp_C  8784
Rel Hum_%      8784
Wind Speed_km/h  8784
Visibility_km   8784
Press_kPa      8784
Weather        8784
dtype: int64

```

## Q5) Rename the column "Weather" to "Weather Conditions"

In [29]: `data.head(1)`

Out[29]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog

In [30]: `data.rename(columns = {'Weather' : 'Weather Condition'})` *#column name change*

Out[30]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	
2	1/1/2012 2:00	-1.8	-3.4	89	7	4.0	101.26	Free Drizzle
3	1/1/2012 3:00	-1.5	-3.2	88	6	4.0	101.27	Free Drizzle
4	1/1/2012 4:00	-1.5	-3.3	88	7	4.8	101.23	
...	...	...	...	...	...	...	...	
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	S
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	S
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	S
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	S
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	S

8784 rows × 8 columns

In [31]: `data.head(1)` *#we can see that the column name was changed temporarily, to c*

Out[31]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog

In [32]: `data.rename(columns = {'Weather' : 'Weather Condition'} , inplace = True)`In [33]: `data.head(1)` *#column name changed permanently*

Out[33]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog

## Q6) What is mean "visibility"

In [34]: `data.head(5)`

Out[34]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	1/1/2012 2:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	1/1/2012 3:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	1/1/2012 4:00	-1.5	-3.3	88	7	4.8	101.23	Fog

In [35]: `data['Visibility_km'].mean()`

Out[35]: 27.6644446721311478

In [36]: `data.Visibility_km.mean()`

Out[36]: 27.6644446721311478

## Q7) What is Standard Deviation of "Pressure" in this data

In [37]: `data.head(2)`

Out [37]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	Fog

In [38]: `data.Press_kPa.std()`

Out [38]: 0.8440047459486474

## Q8) What is Variance of "Relative Humidity" in this data

In [39]: `data['Rel Hum_%'].var()`

Out [39]: 286.2485501984998

## Q9) Find all instance when 'snow' was recorded

In [40]: `data.head(2)`

Out [40]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	Fog

In [41]: `data[data['Weather Condition'] == 'Snow']`

Out [41]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weat Condit
55	1/3/2012 7:00	-14.0	-19.5	63	19	25.0	100.95	Sr
84	1/4/2012 12:00	-13.7	-21.7	51	11	24.1	101.25	Sr
86	1/4/2012 14:00	-11.3	-19.0	53	7	19.3	100.97	Sr
87	1/4/2012 15:00	-10.2	-16.3	61	11	9.7	100.89	Sr
88	1/4/2012 16:00	-9.4	-15.5	61	13	19.3	100.79	Sr
...	...	...	...	...	...	...	...	
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Sr
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Sr
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Sr
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Sr
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Sr

390 rows × 8 columns

str.containe

```
In [42]: data[data['Weather Condition'].str.contains('Snow')]
```

Out [42]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weat Condit
41	1/2/2012 17:00	-2.1	-9.5	57	22	25.0	99.66	Sr Show
44	1/2/2012 20:00	-5.6	-13.4	54	24	25.0	100.07	Sr Show
45	1/2/2012 21:00	-5.8	-12.8	58	26	25.0	100.15	Sr Show
47	1/2/2012 23:00	-7.4	-14.1	59	17	19.3	100.27	Sr Show
48	1/3/2012 0:00	-9.0	-16.0	57	28	25.0	100.35	Sr Show
...	...	...	...	...	...	...	...	
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Sr
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Sr
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Sr
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Sr
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Sr

583 rows x 8 columns

```
In [43]: data[data['Weather Condition'].str.contains('Snow')].head(10) #shows first 10 rows
```

Out [43]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
41	1/2/2012 17:00	-2.1	-9.5	57	22	25.0	99.66	Snow Shower:
44	1/2/2012 20:00	-5.6	-13.4	54	24	25.0	100.07	Snow Shower:
45	1/2/2012 21:00	-5.8	-12.8	58	26	25.0	100.15	Snow Shower:
47	1/2/2012 23:00	-7.4	-14.1	59	17	19.3	100.27	Snow Shower:
48	1/3/2012 0:00	-9.0	-16.0	57	28	25.0	100.35	Snow Shower:
50	1/3/2012 2:00	-10.5	-15.8	65	22	12.9	100.53	Snow Shower:
51	1/3/2012 3:00	-11.3	-18.7	54	33	25.0	100.61	Snow Shower:
53	1/3/2012 5:00	-12.9	-19.1	60	22	25.0	100.76	Snow Shower:
54	1/3/2012 6:00	-13.3	-19.3	61	19	25.0	100.85	Snow Shower:
55	1/3/2012 7:00	-14.0	-19.5	63	19	25.0	100.95	Snow

```
In [44]: data[data['Weather Condition'].str.contains('Snow')].tail(10) #shows last 10
```

Out [44]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weat Condit
8774	12/31/2012 14:00	-3.4	-5.7	84	6	11.3	100.57	Sr
8775	12/31/2012 15:00	-2.3	-4.6	84	9	9.7	100.47	Sr
8776	12/31/2012 16:00	-1.4	-4.0	82	13	12.9	100.40	Sr
8777	12/31/2012 17:00	-1.1	-3.3	85	19	9.7	100.30	Sr
8778	12/31/2012 18:00	-1.3	-3.1	88	17	9.7	100.19	Sr
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Sr
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Sr
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Sr
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Sr
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Sr

Q10)Find all instances when "wind speed is above 24" and "visibility is 25"

```
In [46]: data.head(2)
```

Out [46]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	1/1/2012 1:00	-1.8	-3.7	87	4	8.0	101.24	Fog

```
In [47]: data [ (data['Wind Speed_km/h'] > 4) & (data['Visibility_km'] == 25) ] #Us:
```

Out [47]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weat Condit
20	1/1/2012 20:00	3.2	1.3	87	19	25.0	99.50	Clo
21	1/1/2012 21:00	4.0	1.7	85	20	25.0	99.39	Clo
23	1/1/2012 23:00	5.3	2.0	79	30	25.0	99.31	Clo
24	1/2/2012 0:00	5.2	1.5	77	35	25.0	99.26	F Show
25	1/2/2012 1:00	4.6	0.0	72	39	25.0	99.26	Clo
...	...	...	...	...	...	...	...	
8761	12/31/2012 1:00	-10.7	-14.0	77	15	25.0	101.50	Clo
8762	12/31/2012 2:00	-10.1	-13.4	77	9	25.0	101.45	Clo
8763	12/31/2012 3:00	-11.8	-14.4	81	6	25.0	101.42	Mo Clo
8764	12/31/2012 4:00	-10.5	-12.8	83	11	25.0	101.34	Clo
8765	12/31/2012 5:00	-10.2	-12.4	84	6	25.0	101.28	Clo

2927 rows x 8 columns

## Q11) What is the mean value of each column against 'Weather Condition'

In [49]: `data.head(1)`

Out [49]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog

In [52]: `data[['Temp_C', 'Dew Point Temp_C', 'Rel Hum_%', 'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather Condition']] = pd.to_datetime(data['Date/Time'], format='%m/%d/%Y %H:%M')`

In [53]: `data.groupby('Weather Condition').mean()`

Out [53]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	W Speed_kr
Weather Condition					
Clear	2012-06-25 18:03:12.760180992	6.825716	0.089367	64.497738	10.5575
Cloudy	2012-07-01 16:51:29.583333376	7.970544	2.375810	69.592593	16.1275
Drizzle	2012-09-17 15:00:00.000000000	7.353659	5.504878	88.243902	16.0975
Drizzle,Fog	2012-06-30 00:44:15.000000000	8.067500	7.033750	93.275000	11.8625
Drizzle,Ice Pellets,Fog	2012-12-17 09:00:00.000000000	0.400000	-0.700000	92.000000	20.0000
Drizzle,Snow	2012-12-18 16:30:00.000000000	1.050000	0.150000	93.500000	14.0000
Drizzle,Snow,Fog	2012-12-19 20:56:00.000000000	0.693333	0.120000	95.866667	15.5333
Fog	2012-06-24 21:08:00.000000000	4.303333	3.159333	92.286667	7.9466
Freezing Drizzle	2012-03-05 23:25:42.857142784	-5.657143	-8.000000	83.571429	16.5714
Freezing Drizzle,Fog	2012-04-30 06:20:00.000000000	-2.533333	-4.183333	88.500000	17.0000
Freezing Drizzle,Haze	2012-02-01 12:00:00.000000000	-5.433333	-8.000000	82.000000	10.3333
Freezing Drizzle,Snow	2012-06-27 12:32:43.636363520	-5.109091	-7.072727	86.090909	16.2727
Freezing Fog	2012-02-22 06:45:00.000000000	-7.575000	-9.250000	87.750000	4.7500
Freezing Rain	2012-02-14 01:34:17.142857216	-3.885714	-6.078571	84.642857	19.2142
Freezing Rain,Fog	2012-06-28 15:45:00.000000000	-2.225000	-3.750000	89.500000	15.5000
Freezing Rain,Haze	2012-02-01 14:30:00.000000000	-4.900000	-7.450000	82.500000	7.5000
Freezing Rain,Ice Pellets,Fog	2012-12-17 03:00:00.000000000	-2.600000	-3.700000	92.000000	28.0000
Freezing Rain,Snow Grains	2012-01-13 09:00:00.000000000	-5.000000	-7.300000	84.000000	32.0000
Haze	2012-06-06 00:37:30.000000000	-0.200000	-2.975000	81.625000	10.4375
Mainly Clear	2012-07-12 06:48:08.888888832	12.558927	4.581671	60.667142	14.1448
Moderate Rain,Fog	2012-12-10 08:00:00.000000000	1.700000	0.800000	94.000000	17.0000
Moderate Snow	2012-07-05 12:00:00.000000000	-5.525000	-7.250000	87.750000	33.7500
Moderate Snow,Blowing Snow	2012-12-27 11:00:00.000000000	-5.450000	-6.500000	92.500000	40.0000

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	W Speed_kr
Weather Condition					
Mostly Cloudy	2012-07-01 10:42:53.417109760	10.574287	3.131174	62.102465	15.8139
Rain	2012-07-02 07:18:02.352941056	9.786275	7.042810	83.624183	19.2549
Rain Showers	2012-07-14 17:25:51.063829760	13.722340	9.187766	75.159574	17.1329
Rain Showers,Fog	2012-10-20 03:00:00.000000000	12.800000	12.100000	96.000000	13.0000
Rain Showers,Snow Showers	2012-11-19 21:00:00.000000000	2.150000	-1.500000	76.500000	22.5000
Rain,Fog	2012-08-17 05:19:08.275862016	8.273276	7.219828	93.189655	14.7937
Rain,Haze	2012-03-13 08:00:00.000000000	4.633333	2.066667	83.333333	11.6666
Rain,Ice Pellets	2012-12-18 05:00:00.000000000	0.600000	-0.600000	92.000000	24.0000
Rain,Snow	2012-07-22 00:23:20.000000000	1.055556	-0.566667	89.000000	28.3888
Rain,Snow Grains	2012-12-21 00:00:00.000000000	1.900000	-2.100000	75.000000	26.0000
Rain,Snow,Fog	2012-12-08 21:00:00.000000000	0.800000	0.300000	96.000000	9.0000
Rain,Snow,Ice Pellets	2012-12-21 03:15:00.000000000	1.100000	-0.175000	91.500000	23.2500
Snow	2012-04-18 19:10:36.923076864	-4.524103	-7.623333	79.307692	20.0384
Snow Pellets	2012-11-24 15:00:00.000000000	0.700000	-6.400000	59.000000	35.0000
Snow Showers	2012-07-21 22:40:59.999999744	-3.506667	-7.866667	72.350000	19.2333
Snow Showers,Fog	2012-12-28 17:15:00.000000000	-10.675000	-11.900000	90.750000	13.7500
Snow,Blowing Snow	2012-08-08 17:44:12.631578880	-5.410526	-7.621053	84.473684	34.8421
Snow,Fog	2012-10-21 17:42:09.729729792	-5.075676	-6.364865	90.675676	17.3243
Snow,Haze	2012-02-01 19:00:00.000000000	-4.020000	-6.860000	80.600000	5.0000
Snow,Ice Pellets	2012-09-14 21:00:00.000000000	-1.883333	-3.666667	87.666667	23.8333
Thunderstorms	2012-07-10 08:30:00.000000000	24.150000	19.750000	77.000000	7.5000
Thunderstorms,Heavy Rain Showers	2012-05-29 06:00:00.000000000	10.900000	9.000000	88.000000	9.0000
Thunderstorms,Moderate Rain Showers,Fog	2012-07-17 06:00:00.000000000	19.600000	18.500000	93.000000	15.0000

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	W Speed_kr
Weather Condition					
Thunderstorms,Rain	2012-07-04 02:20:00.000000000	20.433333	18.533333	89.000000	15.666667
Thunderstorms,Rain Showers	2012-07-18 14:48:45.000000000	20.037500	17.618750	86.375000	18.312500
Thunderstorms,Rain Showers,Fog	2012-07-16 02:40:00.000000000	21.600000	18.700000	84.000000	19.666667
Thunderstorms,Rain,Fog	2012-07-17	20.000000	18.000000	88.000000	10.000000

In [55]:

```
## Q12) PRINT THE MINIMUM AND MAXIMUM VALUES OF EACH COLUMN AGAINST 'WEATHER CONDITION'
```

In [56]:

```
data.head(1)
```

Out[56]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	2012-01-01	-1.8	-3.9	86.0	4.0	8.0	101.24	Fog

In [57]:

```
data.groupby('Weather Condition').min()
```

Out [57]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km
Weather Condition						
Clear	2012-01-03 19:00:00	-23.3	-28.5	20.0	0.0	11.3
Cloudy	2012-01-01 17:00:00	-21.4	-26.8	18.0	0.0	11.3
Drizzle	2012-01-23 21:00:00	1.1	-0.2	74.0	0.0	6.4
Drizzle,Fog	2012-01-23 20:00:00	0.0	-1.6	85.0	0.0	1.0
Drizzle,Ice Pellets,Fog	2012-12-17 09:00:00	0.4	-0.7	92.0	20.0	4.0
Drizzle,Snow	2012-12-17 15:00:00	0.9	0.1	92.0	9.0	9.7
Drizzle,Snow,Fog	2012-12-18 21:00:00	0.3	-0.1	92.0	7.0	2.4
Fog	2012-01-01 00:00:00	-16.0	-17.2	80.0	0.0	0.2
Freezing Drizzle	2012-01-07 11:00:00	-9.0	-12.2	78.0	6.0	4.8
Freezing Drizzle,Fog	2012-01-01 02:00:00	-6.4	-9.0	82.0	6.0	3.6
Freezing Drizzle,Haze	2012-02-01 11:00:00	-5.8	-8.3	81.0	9.0	2.0
Freezing Drizzle,Snow	2012-01-13 03:00:00	-8.3	-10.4	79.0	6.0	2.4
Freezing Fog	2012-01-22 06:00:00	-19.0	-22.9	71.0	0.0	0.2
Freezing Rain	2012-01-07 10:00:00	-6.5	-9.0	81.0	7.0	2.8
Freezing Rain,Fog	2012-01-07 09:00:00	-6.1	-8.7	82.0	7.0	2.8
Freezing Rain,Haze	2012-02-01 14:00:00	-4.9	-7.5	82.0	6.0	2.0
Freezing Rain,Ice Pellets,Fog	2012-12-17	-2.6	-3.7	92.0	28.0	8.0

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km
Weather Condition						
	03:00:00					
Freezing Rain,Snow Grains	2012-01-13 09:00:00	-5.0	-7.3	84.0	32.0	4.8
Haze	2012-01-22 12:00:00	-11.5	-16.0	68.0	0.0	4.8
Mainly Clear	2012-01-02 12:00:00	-22.8	-28.0	20.0	0.0	12.9
Moderate Rain,Fog	2012-12-10 08:00:00	1.7	0.8	94.0	17.0	6.4
Moderate Snow	2012-01-12 15:00:00	-6.3	-7.6	83.0	26.0	0.6
Moderate Snow,Blowing Snow	2012-12-27 10:00:00	-5.5	-6.6	92.0	39.0	0.6
Mostly Cloudy	2012-01-01 16:00:00	-23.2	-28.5	18.0	0.0	11.3
Rain	2012-01-01 18:00:00	0.3	-5.7	40.0	0.0	4.0
Rain Showers	2012-01-01 22:00:00	1.6	-7.2	37.0	0.0	6.4
Rain Showers,Fog	2012-10-20 03:00:00	12.8	12.1	96.0	13.0	6.4
Rain Showers,Snow Showers	2012-11-04 08:00:00	2.1	-1.8	75.0	17.0	19.3
Rain,Fog	2012-01-23 18:00:00	0.0	-1.2	83.0	0.0	2.0
Rain,Haze	2012-03-13 07:00:00	4.0	1.0	81.0	7.0	4.0
Rain,Ice Pellets	2012-12-18 05:00:00	0.6	-0.6	92.0	24.0	9.7
Rain,Snow	2012-01-10 05:00:00	0.6	-1.7	81.0	13.0	2.4
Rain,Snow Grains	2012-12-21 00:00:00	1.9	-2.1	75.0	26.0	25.0

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km
Weather Condition						
Rain,Snow,Fog	2012-12-08 21:00:00	0.8	0.3	96.0	9.0	6.4
Rain,Snow,Ice Pellets	2012-12-21 01:00:00	0.9	-0.7	88.0	17.0	4.8
Snow	2012-01-03 07:00:00	-16.7	-24.6	41.0	0.0	1.0
Snow Pellets	2012-11-24 15:00:00	0.7	-6.4	59.0	35.0	2.4
Snow Showers	2012-01-02 17:00:00	-13.3	-19.3	52.0	0.0	2.4
Snow Showers,Fog	2012-12-26 09:00:00	-11.3	-12.7	89.0	7.0	4.0
Snow,Blowing Snow	2012-01-13 21:00:00	-12.0	-16.2	70.0	24.0	0.6
Snow,Fog	2012-02-10 23:00:00	-10.1	-12.0	77.0	4.0	1.2
Snow,Haze	2012-02-01 17:00:00	-4.3	-7.2	80.0	0.0	4.0
Snow,Ice Pellets	2012-03-03 04:00:00	-4.3	-5.9	76.0	19.0	2.8
Thunderstorms	2012-07-04 16:00:00	21.6	19.4	67.0	0.0	24.1
Thunderstorms,Heavy Rain Showers	2012-05-29 06:00:00	10.9	9.0	88.0	9.0	2.4
Thunderstorms,Moderate Rain Showers,Fog	2012-07-17 06:00:00	19.6	18.5	93.0	15.0	3.2
Thunderstorms,Rain	2012-05-25 20:00:00	19.4	18.2	83.0	4.0	16.1
Thunderstorms,Rain Showers	2012-05-29 04:00:00	11.0	7.0	68.0	7.0	6.4
Thunderstorms,Rain Showers,Fog	2012-06-29 03:00:00	19.5	16.1	80.0	7.0	9.7
Thunderstorms,Rain,Fog	2012-07-17	20.6	18.6	88.0	19.0	4.8

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	Visibility_km
Weather Condition						

```
In [59]: data.groupby('Weather Condition').max()
```

Out [59]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km
Weather Condition						
Clear	2012-12-30 20:00:00	32.8	20.4	99.0	33.0	48.3
Cloudy	2012-12-31 06:00:00	30.5	22.6	99.0	54.0	48.3
Drizzle	2012-12-22 01:00:00	18.8	17.7	96.0	30.0	25.0
Drizzle,Fog	2012-12-19 10:00:00	19.9	19.1	100.0	28.0	9.7
Drizzle,Ice Pellets,Fog	2012-12-17 09:00:00	0.4	-0.7	92.0	20.0	4.0
Drizzle,Snow	2012-12-19 18:00:00	1.2	0.2	95.0	19.0	11.3
Drizzle,Snow,Fog	2012-12-22 03:00:00	1.1	0.6	98.0	32.0	9.7
Fog	2012-12-29 10:00:00	20.8	19.6	100.0	22.0	9.7
Freezing Drizzle	2012-12-17 00:00:00	-2.3	-3.3	93.0	26.0	12.9
Freezing Drizzle,Fog	2012-12-10 05:00:00	-0.3	-2.3	94.0	33.0	8.0
Freezing Drizzle,Haze	2012-02-01 13:00:00	-5.0	-7.7	83.0	11.0	4.0
Freezing Drizzle,Snow	2012-12-28 02:00:00	-3.3	-4.6	94.0	24.0	12.9
Freezing Fog	2012-03-17 06:00:00	-0.1	-0.3	99.0	9.0	0.8
Freezing Rain	2012-12-17 02:00:00	0.3	-1.7	92.0	28.0	16.1
Freezing Rain,Fog	2012-12-17 01:00:00	0.1	-0.9	93.0	26.0	9.7
Freezing Rain,Haze	2012-02-01 15:00:00	-4.9	-7.4	83.0	9.0	2.8
Freezing Rain,Ice Pellets,Fog	2012-12-17	-2.6	-3.7	92.0	28.0	8.0

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km
Weather Condition						
	03:00:00					
Freezing Rain,Snow Grains	2012-01-13 09:00:00	-5.0	-7.3	84.0	32.0	4.8
Haze	2012-12-13 12:00:00	14.1	11.1	86.0	17.0	9.7
Mainly Clear	2012-12-30 22:00:00	33.0	21.2	99.0	63.0	48.3
Moderate Rain,Fog	2012-12-10 08:00:00	1.7	0.8	94.0	17.0	6.4
Moderate Snow	2012-12-27 09:00:00	-4.9	-6.7	93.0	39.0	0.8
Moderate Snow,Blowing Snow	2012-12-27 12:00:00	-5.4	-6.4	93.0	41.0	0.6
Mostly Cloudy	2012-12-31 03:00:00	32.4	24.4	100.0	83.0	48.3
Rain	2012-12-21 21:00:00	22.8	20.4	99.0	52.0	48.3
Rain Showers	2012-12-14 11:00:00	26.4	23.0	97.0	41.0	48.3
Rain Showers,Fog	2012-10-20 03:00:00	12.8	12.1	96.0	13.0	6.4
Rain Showers,Snow Showers	2012-12-05 10:00:00	2.2	-1.2	78.0	28.0	24.1
Rain,Fog	2012-12-10 17:00:00	21.7	19.5	100.0	46.0	9.7
Rain,Haze	2012-03-13 09:00:00	5.5	2.9	86.0	17.0	9.7
Rain,Ice Pellets	2012-12-18 05:00:00	0.6	-0.6	92.0	24.0	9.7
Rain,Snow	2012-12-21 09:00:00	1.7	0.5	94.0	52.0	25.0
Rain,Snow Grains	2012-12-21 00:00:00	1.9	-2.1	75.0	26.0	25.0

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km
Weather Condition						
Rain,Snow,Fog	2012-12-08 21:00:00	0.8	0.3	96.0	9.0	6.4
Rain,Snow,Ice Pellets	2012-12-21 05:00:00	1.3	0.1	94.0	28.0	6.4
Snow	2012-12-31 23:00:00	3.7	0.3	96.0	57.0	25.0
Snow Pellets	2012-11-24 15:00:00	0.7	-6.4	59.0	35.0	2.4
Snow Showers	2012-12-31 08:00:00	2.9	-0.7	94.0	37.0	48.3
Snow Showers,Fog	2012-12-29 13:00:00	-10.0	-11.1	92.0	22.0	9.7
Snow,Blowing Snow	2012-12-27 19:00:00	-1.4	-2.9	91.0	48.0	9.7
Snow,Fog	2012-12-31 10:00:00	1.1	0.8	99.0	35.0	9.7
Snow,Haze	2012-02-01 21:00:00	-3.6	-6.4	81.0	15.0	6.4
Snow,Ice Pellets	2012-12-17 06:00:00	0.8	-1.7	92.0	33.0	11.3
Thunderstorms	2012-07-16 01:00:00	26.7	20.1	87.0	15.0	25.0
Thunderstorms,Heavy Rain Showers	2012-05-29 06:00:00	10.9	9.0	88.0	9.0	2.4
Thunderstorms,Moderate Rain Showers,Fog	2012-07-17 06:00:00	19.6	18.5	93.0	15.0	3.2
Thunderstorms,Rain	2012-07-23 18:00:00	21.3	19.1	93.0	30.0	24.1
Thunderstorms,Rain Showers	2012-09-14 20:00:00	25.5	23.1	98.0	32.0	25.0
Thunderstorms,Rain Showers,Fog	2012-07-31 20:00:00	22.9	21.3	91.0	35.0	9.7
Thunderstorms,Rain,Fog	2012-07-17	20.6	18.6	88.0	19.0	4.8

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Weather Condition
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Find all instances when

1. Weather is clear and relative humidity > 50

or

2. visibility is above 40

```
In [62]: data.head(1)
```

```
Out[62]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
0	2012-01-01	-1.8	-3.9	86.0	4.0	8.0	101.24	Fog

```
In [64]: data[(data['Weather Condition'] == 'Clear') & (data['Rel Hum_%'] > 50) | (da
```

Out [64]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weat Condit
106	2012-01-05 10:00:00	-6.0	-10.0	73.0	17.0	48.3	100.45	Ma Cl
107	2012-01-05 11:00:00	-5.6	-10.2	70.0	22.0	48.3	100.41	Ma Cl
108	2012-01-05 12:00:00	-4.7	-9.6	69.0	20.0	48.3	100.38	Ma Cl
109	2012-01-05 13:00:00	-4.4	-9.7	66.0	26.0	48.3	100.40	Ma Cl
110	2012-01-05 14:00:00	-5.1	-10.7	65.0	22.0	48.3	100.46	Ma Cl
...	...	...	...	...	...	...	...	
8749	2012-12-30 13:00:00	-12.4	-16.2	73.0	37.0	48.3	100.92	Mo Clo
8750	2012-12-30 14:00:00	-11.8	-16.1	70.0	37.0	48.3	100.96	Ma Cl
8751	2012-12-30 15:00:00	-11.3	-15.6	70.0	32.0	48.3	101.05	Ma Cl
8752	2012-12-30 16:00:00	-11.4	-15.5	72.0	26.0	48.3	101.15	Ma Cl
8756	2012-12-30 20:00:00	-13.8	-16.5	80.0	24.0	25.0	101.52	Cl

2921 rows × 8 columns

