

In [36]:

```
import pandas as pd
data=pd.read_csv(r"C:\Users\Bhushan\Desktop\Sem4Project\WeatherData.csv")
```

In [37]:

```
data
```

Out[37]:

	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
...
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Snow
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Snow
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Snow
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Snow
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Snow

8784 rows × 8 columns

In [38]:

```
data.head()
```

Out[38]:

	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 [39]:

```
data.shape
```

Out[39]:

(8784, 8)

```
In [40]: data.index
```

```
Out[40]: RangeIndex(start=0, stop=8784, step=1)
```

```
In [41]: data.columns
```

```
Out[41]: Index(['Date/Time', 'Temp_C', 'Dew Point Temp_C', 'Rel Hum_%',  
              'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather'],  
              dtype='object')
```

```
In [42]: data.dtypes
```

```
Out[42]: 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 [43]: data['Weather'].unique()
```

```
Out[43]: array(['Fog', 'Freezing Drizzle,Fog', 'Mostly Cloudy', 'Cloudy', 'Rain',  
              'Rain Showers', 'Mainly Clear', 'Snow Showers', 'Snow', 'Clear',  
              'Freezing Rain,Fog', 'Freezing Rain', 'Freezing Drizzle',  
              'Rain,Snow', 'Moderate Snow', 'Freezing Drizzle,Snow',  
              'Freezing Rain,Snow Grains', 'Snow,Blowing Snow', 'Freezing Fog',  
              'Haze', 'Rain,Fog', 'Drizzle,Fog', 'Drizzle',  
              'Freezing Drizzle,Haze', 'Freezing Rain,Haze', 'Snow,Haze',  
              'Snow,Fog', 'Snow,Ice Pellets', 'Rain,Haze', 'Thunderstorms,Rain',  
              'Thunderstorms,Rain Showers', 'Thunderstorms,Heavy Rain Showers',  
              'Thunderstorms,Rain Showers,Fog', 'Thunderstorms',  
              'Thunderstorms,Rain,Fog',  
              'Thunderstorms,Moderate Rain Showers,Fog', 'Rain Showers,Fog',  
              'Rain Showers,Snow Showers', 'Snow Pellets', 'Rain,Snow,Fog',  
              'Moderate Rain,Fog', 'Freezing Rain,Ice Pellets,Fog',  
              'Drizzle,Ice Pellets,Fog', 'Drizzle,Snow', 'Rain,Ice Pellets',  
              'Drizzle,Snow,Fog', 'Rain,Snow Grains', 'Rain,Snow,Ice Pellets',  
              'Snow Showers,Fog', 'Moderate Snow,Blowing Snow'], dtype=object)
```

```
In [44]: data.nunique()
```

```
Out[44]: 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
```

```
In [45]: data.count()
```

```
Out[45]: 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

```
In [46]: data['Weather'].value_counts()
```

```
Out[46]: 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
Haze                          16
Thunderstorms,Rain Showers   16
Drizzle,Snow,Fog             15
Freezing Rain                 14
Freezing Drizzle,Snow        11
Freezing Drizzle              7
Freezing Drizzle,Fog         6
Snow,Ice Pellets              6
Snow,Haze                     5
Snow Showers,Fog              4
Freezing Fog                  4
Rain,Snow,Ice Pellets         4
Freezing Rain,Fog             4
Moderate Snow                 4
Rain,Haze                     3
Thunderstorms,Rain Showers,Fog 3
Freezing Drizzle,Haze         3
Thunderstorms,Rain           3
Thunderstorms                 2
Freezing Rain,Haze           2
Moderate Snow,Blowing Snow    2
Rain Showers,Snow Showers    2
Drizzle,Snow                  2
Rain,Ice Pellets              1
Rain,Snow,Fog                 1
Thunderstorms,Moderate Rain Showers,Fog 1
Moderate Rain,Fog             1
Drizzle,Ice Pellets,Fog       1
Freezing Rain,Ice Pellets,Fog 1
Freezing Rain,Snow Grains     1
Snow Pellets                  1
Thunderstorms,Heavy Rain Showers 1
Rain Showers,Fog              1
Thunderstorms,Rain,Fog        1
Rain,Snow Grains              1
Name: Weather, dtype: int64
```

```
In [47]: 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
```

```
In [48]: #find all the unique 'Wind Speed' values in the data.
```

```
In [49]: data.head(2)
```

```
Out[49]:
```

	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

```
In [50]: data.nunique()
```

```
Out[50]: 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
```

```
In [51]: data['Wind Speed_km/h'].nunique()
```

```
Out[51]: 34
```

```
In [52]: data['Wind Speed_km/h'].unique()
```

```
Out[52]: 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],
        dtype=int64)
```

```
In [53]: #Find the number of times when the "Weather is exactly clear"
```

```
In [54]: data.head(2)
```

```
Out[54]:
```

	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

```
In [55]: data.Weather.value_counts()
```

```
Out[55]: 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
Haze	16
Thunderstorms,Rain Showers	16
Drizzle,Snow,Fog	15
Freezing Rain	14
Freezing Drizzle,Snow	11
Freezing Drizzle	7
Freezing Drizzle,Fog	6
Snow,Ice Pellets	6
Snow,Haze	5
Snow Showers,Fog	4
Freezing Fog	4
Rain,Snow,Ice Pellets	4
Freezing Rain,Fog	4
Moderate Snow	4
Rain,Haze	3
Thunderstorms,Rain Showers,Fog	3
Freezing Drizzle,Haze	3
Thunderstorms,Rain	3
Thunderstorms	2
Freezing Rain,Haze	2
Moderate Snow,Blowing Snow	2
Rain Showers,Snow Showers	2
Drizzle,Snow	2
Rain,Ice Pellets	1
Rain,Snow,Fog	1
Thunderstorms,Moderate Rain Showers,Fog	1
Moderate Rain,Fog	1
Drizzle,Ice Pellets,Fog	1
Freezing Rain,Ice Pellets,Fog	1
Freezing Rain,Snow Grains	1
Snow Pellets	1
Thunderstorms,Heavy Rain Showers	1
Rain Showers,Fog	1
Thunderstorms,Rain,Fog	1
Rain,Snow Grains	1

Name: Weather, dtype: int64

In [56]:

```
#filtering
#data.head(2)
data[data.Weather == 'Clear']
```

Out[56]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
67	1/3/2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Clear
114	1/5/2012 18:00	-7.1	-14.4	56	11	25.0	100.71	Clear
115	1/5/2012 19:00	-9.2	-15.4	61	7	25.0	100.80	Clear
116	1/5/2012 20:00	-9.8	-15.7	62	9	25.0	100.83	Clear
117	1/5/2012 21:00	-9.0	-14.8	63	13	25.0	100.83	Clear
...
8646	12/26/2012	-13.4	-14.8	89	4	25.0	102.47	Clear

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
	6:00							
8698	12/28/2012 10:00	-6.1	-8.6	82	19	24.1	101.27	Clear
8713	12/29/2012 1:00	-11.9	-13.6	87	11	25.0	101.31	Clear
8714	12/29/2012 2:00	-11.8	-13.1	90	13	25.0	101.33	Clear
8756	12/30/2012 20:00	-13.8	-16.5	80	24	25.0	101.52	Clear

1326 rows × 8 columns

In [57]:

```
#GROUPBY
#data.head(2)
data.groupby('Weather').get_group('Clear')
```

Out[57]:

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

1326 rows × 8 columns

In []:

```
#find the number of times when the 'Wind speed was exactly 4 km/h'
```

In [58]:

```
data.head(2)
```

Out[58]:

	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

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

In [60]:

```
data[data['Wind Speed_km/h'] == 4]
```

Out[60]:

	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
96	1/5/2012 0:00	-8.8	-11.7	79	4	9.7	100.32	Snow
101	1/5/2012 5:00	-7.0	-9.5	82	4	4.0	100.19	Snow
146	1/7/2012 2:00	-8.1	-11.1	79	4	19.3	100.15	Cloudy
...
8768	12/31/2012 8:00	-8.6	-10.3	87	4	3.2	101.14	Snow Showers
8769	12/31/2012 9:00	-8.1	-9.6	89	4	2.4	101.09	Snow
8770	12/31/2012 10:00	-7.4	-8.9	89	4	6.4	101.05	Snow,Fog
8772	12/31/2012 12:00	-5.8	-7.5	88	4	12.9	100.78	Snow
8773	12/31/2012 13:00	-4.6	-6.6	86	4	12.9	100.63	Snow

474 rows × 8 columns

In [61]:

```
#find out all null values in the data.
```

In [63]:

```
data.isnull().sum()
```

Out[63]:

```
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 [64]:

```
data.notnull().sum()
```

Out[64]:

```
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
dtype: int64 8784

```
In [ ]: #Rename the coulum name 'weather' of the dataframe to 'Weather Condition'
```

```
In [65]: data.head()
```

Out[65]:

	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 [69]: data.rename(columns={'Weather':'Weather Condition'}, inplace =True)
```

```
In [70]: data.head()
```

Out[70]:

	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 [ ]: #what is mean 'Visibility'
```

```
In [71]: data.head(2)
```

Out[71]:

	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 [72]: data.Visibility_km.mean()
```

```
Out[72]: 27.66444672131151
```

```
In [73]: #Standard deviation of 'Pressure' in this data
```

```
In [74]: data.Press_kPa.std()
```

```
Out[74]: 0.8440047459486474
```

```
In [75]: #Variance of relative humidity
```

```
In [76]: data['Rel Hum_%'].var()
```

```
Out[76]: 286.2485501984998
```

```
In [77]: #all instances when 'Snow' was recorded
```

```
In [80]: #value count  
#data.head(2)  
data['Weather Condition'].value_counts()
```

```
Out[80]: 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  
Haze                           16  
Thunderstorms,Rain Showers     16  
Drizzle,Snow,Fog               15  
Freezing Rain                  14  
Freezing Drizzle,Snow          11  
Freezing Drizzle                7  
Freezing Drizzle,Fog           6  
Snow,Ice Pellets               6  
Snow,Haze                      5  
Snow Showers,Fog               4  
Freezing Fog                   4  
Rain,Snow,Ice Pellets          4  
Freezing Rain,Fog              4  
Moderate Snow                  4  
Rain,Haze                      3  
Thunderstorms,Rain Showers,Fog 3  
Freezing Drizzle,Haze          3  
Thunderstorms,Rain             3  
Thunderstorms                  2  
Freezing Rain,Haze             2  
Moderate Snow,Blowing Snow     2  
Rain Showers,Snow Showers      2
```

```

Drizzle,Snow                2
Rain,Ice Pellets            1
Rain,Snow,Fog               1
Thunderstorms,Moderate Rain Showers,Fog  1
Moderate Rain,Fog           1
Drizzle,Ice Pellets,Fog     1
Freezing Rain,Ice Pellets,Fog  1
Freezing Rain,Snow Grains   1
Snow Pellets                1
Thunderstorms,Heavy Rain Showers  1
Rain Showers,Fog            1
Thunderstorms,Rain,Fog      1
Rain,Snow Grains            1
Name: Weather Condition, dtype: int64

```

In [81]:

```

#filtering
data[data['Weather Condition']=='Snow']

```

Out[81]:

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

390 rows × 8 columns

In [83]:

```

#str.contains
data[data['Weather Condition'].str.contains('Snow')]

```

Out[83]:

	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 Showers
44	1/2/2012 20:00	-5.6	-13.4	54	24	25.0	100.07	Snow Showers
45	1/2/2012	-5.8	-12.8	58	26	25.0	100.15	Snow Showers

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
	21:00							
47	1/2/2012 23:00	-7.4	-14.1	59	17	19.3	100.27	Snow Showers
48	1/3/2012 0:00	-9.0	-16.0	57	28	25.0	100.35	Snow Showers
...
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Snow
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Snow
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Snow
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Snow
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Snow

583 rows × 8 columns

In [84]:

```
data[data['Weather Condition'].str.contains('Snow')].head(50)
```

Out[84]:

	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 Showers
44	1/2/2012 20:00	-5.6	-13.4	54	24	25.0	100.07	Snow Showers
45	1/2/2012 21:00	-5.8	-12.8	58	26	25.0	100.15	Snow Showers
47	1/2/2012 23:00	-7.4	-14.1	59	17	19.3	100.27	Snow Showers
48	1/3/2012 0:00	-9.0	-16.0	57	28	25.0	100.35	Snow Showers
50	1/3/2012 2:00	-10.5	-15.8	65	22	12.9	100.53	Snow Showers
51	1/3/2012 3:00	-11.3	-18.7	54	33	25.0	100.61	Snow Showers
53	1/3/2012 5:00	-12.9	-19.1	60	22	25.0	100.76	Snow Showers
54	1/3/2012 6:00	-13.3	-19.3	61	19	25.0	100.85	Snow Showers
55	1/3/2012 7:00	-14.0	-19.5	63	19	25.0	100.95	Snow
84	1/4/2012 12:00	-13.7	-21.7	51	11	24.1	101.25	Snow
86	1/4/2012 14:00	-11.3	-19.0	53	7	19.3	100.97	Snow

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
87	1/4/2012 15:00	-10.2	-16.3	61	11	9.7	100.89	Snow
88	1/4/2012 16:00	-9.4	-15.5	61	13	19.3	100.79	Snow
89	1/4/2012 17:00	-8.9	-13.2	71	9	4.8	100.76	Snow
90	1/4/2012 18:00	-8.9	-12.6	75	11	9.7	100.69	Snow
91	1/4/2012 19:00	-8.4	-12.7	71	9	16.1	100.65	Snow
92	1/4/2012 20:00	-7.8	-12.1	71	9	16.1	100.61	Snow
93	1/4/2012 21:00	-7.6	-11.6	73	7	11.3	100.54	Snow
94	1/4/2012 22:00	-9.5	-12.7	77	6	9.7	100.50	Snow
95	1/4/2012 23:00	-9.6	-12.6	79	6	9.7	100.42	Snow
96	1/5/2012 0:00	-8.8	-11.7	79	4	9.7	100.32	Snow
97	1/5/2012 1:00	-7.5	-10.2	81	0	9.7	100.29	Snow
98	1/5/2012 2:00	-5.4	-8.3	80	9	8.0	100.28	Snow
99	1/5/2012 3:00	-5.0	-7.7	81	11	9.7	100.24	Snow
100	1/5/2012 4:00	-4.1	-6.5	83	9	4.8	100.21	Snow
101	1/5/2012 5:00	-7.0	-9.5	82	4	4.0	100.19	Snow
102	1/5/2012 6:00	-8.2	-10.7	82	6	6.4	100.26	Snow
103	1/5/2012 7:00	-7.1	-9.7	82	9	9.7	100.31	Snow
104	1/5/2012 8:00	-6.1	-9.1	79	11	9.7	100.39	Snow
123	1/6/2012 3:00	-10.6	-16.0	64	0	9.7	100.76	Snow
124	1/6/2012 4:00	-11.3	-16.1	68	15	3.2	100.70	Snow
125	1/6/2012 5:00	-11.8	-16.0	71	19	2.8	100.61	Snow
126	1/6/2012 6:00	-12.0	-16.2	71	22	4.8	100.58	Snow
127	1/6/2012 7:00	-14.4	-16.3	85	22	2.4	100.52	Snow

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
128	1/6/2012 8:00	-12.3	-16.2	73	24	11.3	100.51	Snow
129	1/6/2012 9:00	-12.5	-16.7	71	26	19.3	100.53	Snow
130	1/6/2012 10:00	-12.3	-16.3	72	28	16.1	100.47	Snow
131	1/6/2012 11:00	-12.0	-16.0	72	17	24.1	100.36	Snow
132	1/6/2012 12:00	-11.7	-15.4	74	28	19.3	100.23	Snow
133	1/6/2012 13:00	-11.9	-15.6	74	20	24.1	100.13	Snow
134	1/6/2012 14:00	-11.2	-14.8	75	19	19.3	100.07	Snow
135	1/6/2012 15:00	-11.5	-14.4	79	19	12.9	100.06	Snow
136	1/6/2012 16:00	-11.6	-14.7	78	19	19.3	100.10	Snow
137	1/6/2012 17:00	-11.2	-14.3	78	17	25.0	100.15	Snow
158	1/7/2012 14:00	-4.4	-6.9	83	6	8.0	100.09	Snow
159	1/7/2012 15:00	-3.7	-6.1	83	11	8.0	100.09	Snow
160	1/7/2012 16:00	-3.6	-5.9	84	0	8.0	100.15	Snow
161	1/7/2012 17:00	-3.1	-5.4	84	13	8.0	100.27	Snow
162	1/7/2012 18:00	-3.2	-5.3	85	6	9.7	100.33	Snow

In [85]:

```
data[data['Weather Condition'].str.contains('Snow')].tail(50)
```

Out[85]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
8680	12/27/2012 16:00	-4.5	-6.2	88	37	2.0	100.44	Snow,Blowing Snow
8681	12/27/2012 17:00	-4.2	-5.9	88	32	3.2	100.47	Snow,Blowing Snow
8682	12/27/2012 18:00	-4.0	-5.7	88	28	8.0	100.49	Snow,Blowing Snow
8683	12/27/2012 19:00	-3.9	-5.6	88	26	9.7	100.52	Snow,Blowing Snow
8684	12/27/2012 20:00	-3.7	-5.3	89	37	16.1	100.58	Snow
8685	12/27/2012 21:00	-3.7	-4.8	92	24	4.8	100.62	Freezing Drizzle,Snow

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
8686	12/27/2012 22:00	-3.8	-4.6	94	20	4.8	100.65	Freezing Drizzle,Snow
8687	12/27/2012 23:00	-4.0	-5.6	89	24	9.7	100.70	Snow
8688	12/28/2012 0:00	-4.2	-5.7	89	19	8.0	100.78	Freezing Drizzle,Snow
8689	12/28/2012 1:00	-4.4	-6.6	85	15	6.4	100.83	Freezing Drizzle,Snow
8690	12/28/2012 2:00	-4.3	-6.3	86	11	12.9	100.93	Freezing Drizzle,Snow
8691	12/28/2012 3:00	-4.6	-5.9	91	13	4.0	101.01	Snow
8692	12/28/2012 4:00	-4.9	-5.9	93	9	9.7	101.00	Snow
8723	12/29/2012 11:00	-10.9	-12.2	90	7	6.4	101.09	Snow Showers,Fog
8724	12/29/2012 12:00	-10.5	-11.6	92	11	8.0	100.93	Snow Showers,Fog
8725	12/29/2012 13:00	-10.0	-11.1	92	22	9.7	100.63	Snow Showers,Fog
8726	12/29/2012 14:00	-9.3	-10.5	91	22	4.8	100.60	Snow,Fog
8727	12/29/2012 15:00	-8.8	-10.0	91	20	1.2	100.55	Snow,Fog
8728	12/29/2012 16:00	-8.5	-9.9	90	24	1.2	100.49	Snow,Fog
8729	12/29/2012 17:00	-9.0	-10.4	90	19	2.4	100.46	Snow,Fog
8730	12/29/2012 18:00	-9.3	-10.9	88	26	6.4	100.38	Snow,Fog
8731	12/29/2012 19:00	-9.5	-11.2	87	26	3.2	100.33	Snow,Fog
8732	12/29/2012 20:00	-9.7	-11.6	86	24	9.7	100.25	Snow,Fog
8733	12/29/2012 21:00	-9.8	-11.8	85	24	8.0	100.24	Snow,Fog
8734	12/29/2012 22:00	-10.1	-11.6	89	15	2.4	100.20	Snow,Fog
8735	12/29/2012 23:00	-10.0	-12.0	85	20	6.4	100.19	Snow,Fog
8736	12/30/2012 0:00	-9.6	-11.3	87	13	3.2	100.23	Snow,Fog
8737	12/30/2012 1:00	-9.4	-10.5	92	9	2.4	100.22	Snow,Fog
8738	12/30/2012 2:00	-9.3	-10.4	92	9	4.0	100.28	Snow,Fog

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
8739	12/30/2012 3:00	-9.1	-10.4	90	11	3.6	100.30	Snow,Fog
8740	12/30/2012 4:00	-9.3	-10.6	90	13	9.7	100.28	Snow,Fog
8741	12/30/2012 5:00	-9.1	-10.4	90	11	4.0	100.32	Snow,Fog
8742	12/30/2012 6:00	-9.3	-10.8	89	17	8.0	100.39	Snow,Fog
8767	12/31/2012 7:00	-9.3	-11.3	85	0	19.3	101.19	Snow Showers
8768	12/31/2012 8:00	-8.6	-10.3	87	4	3.2	101.14	Snow Showers
8769	12/31/2012 9:00	-8.1	-9.6	89	4	2.4	101.09	Snow
8770	12/31/2012 10:00	-7.4	-8.9	89	4	6.4	101.05	Snow,Fog
8771	12/31/2012 11:00	-6.7	-7.9	91	9	9.7	100.93	Snow
8772	12/31/2012 12:00	-5.8	-7.5	88	4	12.9	100.78	Snow
8773	12/31/2012 13:00	-4.6	-6.6	86	4	12.9	100.63	Snow
8774	12/31/2012 14:00	-3.4	-5.7	84	6	11.3	100.57	Snow
8775	12/31/2012 15:00	-2.3	-4.6	84	9	9.7	100.47	Snow
8776	12/31/2012 16:00	-1.4	-4.0	82	13	12.9	100.40	Snow
8777	12/31/2012 17:00	-1.1	-3.3	85	19	9.7	100.30	Snow
8778	12/31/2012 18:00	-1.3	-3.1	88	17	9.7	100.19	Snow
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Snow
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Snow
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Snow
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Snow
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Snow

In []:

```
#find all instances when 'Wind speed is above 24' and 'Visibility' is
```

In [86]:

data.head(2)

Out[86]:

	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 [87]:

data[(data['Wind Speed_km/h']>24) & (data['Visibility_km']==25)]

Out[87]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
23	1/1/2012 23:00	5.3	2.0	79	30	25.0	99.31	Cloudy
24	1/2/2012 0:00	5.2	1.5	77	35	25.0	99.26	Rain Showers
25	1/2/2012 1:00	4.6	0.0	72	39	25.0	99.26	Cloudy
26	1/2/2012 2:00	3.9	-0.9	71	32	25.0	99.26	Mostly Cloudy
27	1/2/2012 3:00	3.7	-1.5	69	33	25.0	99.30	Mostly Cloudy
...
8705	12/28/2012 17:00	-8.6	-12.0	76	26	25.0	101.34	Mainly Clear
8753	12/30/2012 17:00	-12.1	-15.8	74	28	25.0	101.26	Mainly Clear
8755	12/30/2012 19:00	-13.4	-16.5	77	26	25.0	101.47	Mainly Clear
8759	12/30/2012 23:00	-12.1	-15.1	78	28	25.0	101.52	Mostly Cloudy
8760	12/31/2012 0:00	-11.1	-14.4	77	26	25.0	101.51	Cloudy

308 rows × 8 columns

In [88]:

#Mean value of each column against each 'Weather Condition' ?

In [89]:

data.head(2)

Out[89]:

	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 [91]:

data.groupby('Weather Condition').mean()

Out[91]:

	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather Condition						
Clear	6.825716	0.089367	64.497738	10.557315	30.153243	101.587443
Cloudy	7.970544	2.375810	69.592593	16.127315	26.625752	100.911441
Drizzle	7.353659	5.504878	88.243902	16.097561	17.931707	100.435366
Drizzle,Fog	8.067500	7.033750	93.275000	11.862500	5.257500	100.786625
Drizzle,Ice Pellets,Fog	0.400000	-0.700000	92.000000	20.000000	4.000000	100.790000
Drizzle,Snow	1.050000	0.150000	93.500000	14.000000	10.500000	100.890000
Drizzle,Snow,Fog	0.693333	0.120000	95.866667	15.533333	5.513333	99.281333
Fog	4.303333	3.159333	92.286667	7.946667	6.248000	101.184067
Freezing Drizzle	-5.657143	-8.000000	83.571429	16.571429	9.200000	100.202857
Freezing Drizzle,Fog	-2.533333	-4.183333	88.500000	17.000000	5.266667	100.441667
Freezing Drizzle,Haze	-5.433333	-8.000000	82.000000	10.333333	2.666667	100.316667
Freezing Drizzle,Snow	-5.109091	-7.072727	86.090909	16.272727	5.872727	100.520909
Freezing Fog	-7.575000	-9.250000	87.750000	4.750000	0.650000	102.320000
Freezing Rain	-3.885714	-6.078571	84.642857	19.214286	8.242857	99.647143
Freezing Rain,Fog	-2.225000	-3.750000	89.500000	15.500000	7.550000	99.945000
Freezing Rain,Haze	-4.900000	-7.450000	82.500000	7.500000	2.400000	100.375000
Freezing Rain,Ice Pellets,Fog	-2.600000	-3.700000	92.000000	28.000000	8.000000	100.950000
Freezing Rain,Snow Grains	-5.000000	-7.300000	84.000000	32.000000	4.800000	98.560000
Haze	-0.200000	-2.975000	81.625000	10.437500	7.831250	101.482500
Mainly Clear	12.558927	4.581671	60.667142	14.144824	34.264862	101.248832
Moderate Rain,Fog	1.700000	0.800000	94.000000	17.000000	6.400000	99.980000
Moderate Snow	-5.525000	-7.250000	87.750000	33.750000	0.750000	100.275000
Moderate Snow,Blowing Snow	-5.450000	-6.500000	92.500000	40.000000	0.600000	100.570000
Mostly Cloudy	10.574287	3.131174	62.102465	15.813920	31.253842	101.025288
Rain	9.786275	7.042810	83.624183	19.254902	18.856536	100.233333
Rain Showers	13.722340	9.187766	75.159574	17.132979	22.816489	100.404043
Rain Showers,Fog	12.800000	12.100000	96.000000	13.000000	6.400000	99.830000
Rain Showers,Snow Showers	2.150000	-1.500000	76.500000	22.500000	21.700000	101.100000
Rain,Fog	8.273276	7.219828	93.189655	14.793103	6.873276	100.500862
Rain,Haze	4.633333	2.066667	83.333333	11.666667	6.700000	100.540000
Rain,Ice Pellets	0.600000	-0.600000	92.000000	24.000000	9.700000	100.120000
Rain,Snow	1.055556	-0.566667	89.000000	28.388889	11.672222	99.951111
Rain,Snow Grains	1.900000	-2.100000	75.000000	26.000000	25.000000	100.600000
Rain,Snow,Fog	0.800000	0.300000	96.000000	9.000000	6.400000	100.730000
Rain,Snow,Ice Pellets	1.100000	-0.175000	91.500000	23.250000	6.000000	100.105000
Snow	-4.524103	-7.623333	79.307692	20.038462	11.171795	100.536103

	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	
Weather Condition							
Snow Pellets	0.700000	-6.400000	59.000000	35.000000	2.400000	99.700000	
Snow Showers	-3.506667	-7.866667	72.350000	19.233333	20.158333	100.963500	
Snow Showers,Fog	-10.675000	-11.900000	90.750000	13.750000	7.025000	101.292500	
Snow,Blowing Snow	-5.410526	-7.621053	84.473684	34.842105	4.105263	99.704737	
Snow,Fog	-5.075676	-6.364865	90.675676	17.324324	4.537838	100.688649	
Snow,Haze	-4.020000	-6.860000	80.600000	5.000000	4.640000	100.782000	
Snow,Ice Pellets	-1.883333	-3.666667	87.666667	23.833333	7.416667	100.548333	
Thunderstorms	24.150000	19.750000	77.000000	7.500000	24.550000	100.230000	
Thunderstorms,Heavy Rain Showers	10.900000	9.000000	88.000000	9.000000	2.400000	100.260000	
Thunderstorms,Moderate Rain Showers,Fog	19.600000	18.500000	93.000000	15.000000	3.200000	100.010000	
Thunderstorms,Rain	20.433333	18.533333	89.000000	15.666667	19.833333	100.420000	
Thunderstorms,Rain Showers	20.037500	17.618750	86.375000	18.312500	15.893750	100.233750	
Thunderstorms,Rain Showers,Fog	21.600000	18.700000	84.000000	19.666667	9.700000	100.063333	
Thunderstorms,Rain,Fog	20.600000	18.600000	88.000000	19.000000	4.800000	100.080000	

In [92]: `#What is the Minimum & Maximum value of each column against each 'Weather Condition' ?`

In [93]: `data.head(2)`

	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 [94]: `data.groupby('Weather Condition').min()`

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	
Weather Condition								
Clear	1/11/2012 1:00	-23.3	-28.5	20	0	11.3	99.52	
Cloudy	1/1/2012 17:00	-21.4	-26.8	18	0	11.3	98.39	
Drizzle	1/23/2012 21:00	1.1	-0.2	74	0	6.4	97.84	

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather Condition							
Drizzle,Fog	1/23/2012 20:00	0.0	-1.6	85	0	1.0	98.65
Drizzle,Ice Pellets,Fog	12/17/2012 9:00	0.4	-0.7	92	20	4.0	100.79
Drizzle,Snow	12/17/2012 15:00	0.9	0.1	92	9	9.7	100.63
Drizzle,Snow,Fog	12/18/2012 21:00	0.3	-0.1	92	7	2.4	97.79
Fog	1/1/2012 0:00	-16.0	-17.2	80	0	0.2	98.31
Freezing Drizzle	1/13/2012 10:00	-9.0	-12.2	78	6	4.8	98.44
Freezing Drizzle,Fog	1/1/2012 2:00	-6.4	-9.0	82	6	3.6	98.74
Freezing Drizzle,Haze	2/1/2012 11:00	-5.8	-8.3	81	9	2.0	100.28
Freezing Drizzle,Snow	1/13/2012 3:00	-8.3	-10.4	79	6	2.4	99.19
Freezing Fog	1/22/2012 6:00	-19.0	-22.9	71	0	0.2	101.97
Freezing Rain	1/13/2012 11:00	-6.5	-9.0	81	7	2.8	98.22
Freezing Rain,Fog	1/17/2012 23:00	-6.1	-8.7	82	7	2.8	98.32
Freezing Rain,Haze	2/1/2012 14:00	-4.9	-7.5	82	6	2.0	100.34
Freezing Rain,Ice Pellets,Fog	12/17/2012 3:00	-2.6	-3.7	92	28	8.0	100.95
Freezing Rain,Snow Grains	1/13/2012 9:00	-5.0	-7.3	84	32	4.8	98.56
Haze	1/22/2012 12:00	-11.5	-16.0	68	0	4.8	100.35
Mainly Clear	1/10/2012 11:00	-22.8	-28.0	20	0	12.9	98.67
Moderate Rain,Fog	12/10/2012 8:00	1.7	0.8	94	17	6.4	99.98
Moderate Snow	1/12/2012 15:00	-6.3	-7.6	83	26	0.6	99.88
Moderate Snow,Blowing Snow	12/27/2012 10:00	-5.5	-6.6	92	39	0.6	100.50
Mostly Cloudy	1/1/2012 16:00	-23.2	-28.5	18	0	11.3	98.36
Rain	1/1/2012 18:00	0.3	-5.7	40	0	4.0	97.52

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather Condition							
Rain Showers	1/1/2012 22:00	1.6	-7.2	37	0	6.4	98.51
Rain Showers,Fog	10/20/2012 3:00	12.8	12.1	96	13	6.4	99.83
Rain Showers,Snow Showers	11/4/2012 8:00	2.1	-1.8	75	17	19.3	101.09
Rain,Fog	1/23/2012 18:00	0.0	-1.2	83	0	2.0	98.61
Rain,Haze	3/13/2012 7:00	4.0	1.0	81	7	4.0	100.50
Rain,Ice Pellets	12/18/2012 5:00	0.6	-0.6	92	24	9.7	100.12
Rain,Snow	1/10/2012 5:00	0.6	-1.7	81	13	2.4	98.18
Rain,Snow Grains	12/21/2012 0:00	1.9	-2.1	75	26	25.0	100.60
Rain,Snow,Fog	12/8/2012 21:00	0.8	0.3	96	9	6.4	100.73
Rain,Snow,Ice Pellets	12/21/2012 1:00	0.9	-0.7	88	17	4.8	99.85
Snow	1/10/2012 1:00	-16.7	-24.6	41	0	1.0	97.75
Snow Pellets	11/24/2012 15:00	0.7	-6.4	59	35	2.4	99.70
Snow Showers	1/12/2012 7:00	-13.3	-19.3	52	0	2.4	99.49
Snow Showers,Fog	12/26/2012 9:00	-11.3	-12.7	89	7	4.0	100.63
Snow,Blowing Snow	1/13/2012 21:00	-12.0	-16.2	70	24	0.6	98.11
Snow,Fog	12/16/2012 15:00	-10.1	-12.0	77	4	1.2	99.38
Snow,Haze	2/1/2012 17:00	-4.3	-7.2	80	0	4.0	100.61
Snow,Ice Pellets	12/10/2012 3:00	-4.3	-5.9	76	19	2.8	99.40
Thunderstorms	7/16/2012 1:00	21.6	19.4	67	0	24.1	99.84
Thunderstorms,Heavy Rain Showers	5/29/2012 6:00	10.9	9.0	88	9	2.4	100.26
Thunderstorms,Moderate Rain Showers,Fog	7/17/2012 6:00	19.6	18.5	93	15	3.2	100.01
Thunderstorms,Rain	5/25/2012 20:00	19.4	18.2	83	4	16.1	100.19

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather Condition							
Thunderstorms,Rain Showers	5/29/2012 16:00	11.0	7.0	68	7	6.4	99.65
Thunderstorms,Rain Showers,Fog	6/29/2012 3:00	19.5	16.1	80	7	9.7	99.71
Thunderstorms,Rain,Fog	7/17/2012 5:00	20.6	18.6	88	19	4.8	100.08

```
In [95]: data.groupby('Weather Condition').max()
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather Condition							
Clear	9/9/2012 5:00	32.8	20.4	99	33	48.3	103.63
Cloudy	9/9/2012 23:00	30.5	22.6	99	54	48.3	103.65
Drizzle	9/30/2012 3:00	18.8	17.7	96	30	25.0	101.56
Drizzle,Fog	9/30/2012 2:00	19.9	19.1	100	28	9.7	102.07
Drizzle,Ice Pellets,Fog	12/17/2012 9:00	0.4	-0.7	92	20	4.0	100.79
Drizzle,Snow	12/19/2012 18:00	1.2	0.2	95	19	11.3	101.15
Drizzle,Snow,Fog	12/22/2012 3:00	1.1	0.6	98	32	9.7	100.15
Fog	9/22/2012 0:00	20.8	19.6	100	22	9.7	103.04
Freezing Drizzle	2/1/2012 5:00	-2.3	-3.3	93	26	12.9	101.02
Freezing Drizzle,Fog	12/10/2012 5:00	-0.3	-2.3	94	33	8.0	101.27
Freezing Drizzle,Haze	2/1/2012 13:00	-5.0	-7.7	83	11	4.0	100.36
Freezing Drizzle,Snow	3/2/2012 12:00	-3.3	-4.6	94	24	12.9	101.18
Freezing Fog	3/17/2012 6:00	-0.1	-0.3	99	9	0.8	102.85
Freezing Rain	2/1/2012 7:00	0.3	-1.7	92	28	16.1	101.00
Freezing Rain,Fog	12/17/2012 1:00	0.1	-0.9	93	26	9.7	101.01
Freezing Rain,Haze	2/1/2012 15:00	-4.9	-7.4	83	9	2.8	100.41

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather Condition							
Freezing Rain,Ice Pellets,Fog	12/17/2012 3:00	-2.6	-3.7	92	28	8.0	100.95
Freezing Rain,Snow Grains	1/13/2012 9:00	-5.0	-7.3	84	32	4.8	98.56
Haze	3/13/2012 23:00	14.1	11.1	86	17	9.7	102.97
Mainly Clear	9/9/2012 9:00	33.0	21.2	99	63	48.3	103.59
Moderate Rain,Fog	12/10/2012 8:00	1.7	0.8	94	17	6.4	99.98
Moderate Snow	12/27/2012 9:00	-4.9	-6.7	93	39	0.8	100.67
Moderate Snow,Blowing Snow	12/27/2012 12:00	-5.4	-6.4	93	41	0.6	100.64
Mostly Cloudy	9/9/2012 2:00	32.4	24.4	100	83	48.3	103.65
Rain	9/5/2012 2:00	22.8	20.4	99	52	48.3	102.26
Rain Showers	9/8/2012 16:00	26.4	23.0	97	41	48.3	102.31
Rain Showers,Fog	10/20/2012 3:00	12.8	12.1	96	13	6.4	99.83
Rain Showers,Snow Showers	12/5/2012 10:00	2.2	-1.2	78	28	24.1	101.11
Rain,Fog	9/30/2012 23:00	21.7	19.5	100	46	9.7	101.77
Rain,Haze	3/13/2012 9:00	5.5	2.9	86	17	9.7	100.61
Rain,Ice Pellets	12/18/2012 5:00	0.6	-0.6	92	24	9.7	100.12
Rain,Snow	4/23/2012 3:00	1.7	0.5	94	52	25.0	101.07
Rain,Snow Grains	12/21/2012 0:00	1.9	-2.1	75	26	25.0	100.60
Rain,Snow,Fog	12/8/2012 21:00	0.8	0.3	96	9	6.4	100.73
Rain,Snow,Ice Pellets	12/21/2012 5:00	1.3	0.1	94	28	6.4	100.47
Snow	4/27/2012 9:00	3.7	0.3	96	57	25.0	102.73
Snow Pellets	11/24/2012 15:00	0.7	-6.4	59	35	2.4	99.70
Snow Showers	3/4/2012 21:00	2.9	-0.7	94	37	48.3	102.50

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	
Weather Condition								
Snow Showers,Fog	12/29/2012 13:00	-10.0	-11.1	92	22	9.7	102.52	
Snow,Blowing Snow	2/25/2012 9:00	-1.4	-2.9	91	48	9.7	100.62	
Snow,Fog	3/14/2012 19:00	1.1	0.8	99	35	9.7	102.07	
Snow,Haze	2/1/2012 21:00	-3.6	-6.4	81	15	6.4	100.99	
Snow,Ice Pellets	3/3/2012 4:00	0.8	-1.7	92	33	11.3	100.96	
Thunderstorms	7/4/2012 16:00	26.7	20.1	87	15	25.0	100.62	
Thunderstorms,Heavy Rain Showers	5/29/2012 6:00	10.9	9.0	88	9	2.4	100.26	
Thunderstorms,Moderate Rain Showers,Fog	7/17/2012 6:00	19.6	18.5	93	15	3.2	100.01	
Thunderstorms,Rain	7/23/2012 18:00	21.3	19.1	93	30	24.1	100.83	
Thunderstorms,Rain Showers	9/8/2012 4:00	25.5	23.1	98	32	25.0	101.06	
Thunderstorms,Rain Showers,Fog	7/31/2012 20:00	22.9	21.3	91	35	9.7	100.64	
Thunderstorms,Rain,Fog	7/17/2012 5:00	20.6	18.6	88	19	4.8	100.08	

In [96]:

#Show all the Records where Weather Condition is Fog.

In [98]:

data[data['Weather Condition']=='Fog']

Out[98]:

	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
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
...
8716	12/29/2012 4:00	-16.0	-17.2	90	6	9.7	101.25	Fog
8717	12/29/2012 5:00	-14.8	-15.9	91	4	6.4	101.25	Fog
8718	12/29/2012 6:00	-13.8	-15.3	88	4	9.7	101.25	Fog

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
8719	12/29/2012 7:00	-14.8	-16.4	88	7	8.0	101.22	Fog
8722	12/29/2012 10:00	-12.0	-13.3	90	7	6.4	101.15	Fog

150 rows × 8 columns

In [99]:

```
#Find all instances when 'Weather is Clear' or 'Visibility is above 40'.
```

In [104...]

```
data[(data['Weather Condition']== 'Clear') | (data ['Visibility_km']>40)]
```

Out[104...]

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
67	1/3/2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Clear
106	1/5/2012 10:00	-6.0	-10.0	73	17	48.3	100.45	Mainly Clear
107	1/5/2012 11:00	-5.6	-10.2	70	22	48.3	100.41	Mainly Clear
108	1/5/2012 12:00	-4.7	-9.6	69	20	48.3	100.38	Mainly Clear
109	1/5/2012 13:00	-4.4	-9.7	66	26	48.3	100.40	Mainly Clear
...
8749	12/30/2012 13:00	-12.4	-16.2	73	37	48.3	100.92	Mostly Cloudy
8750	12/30/2012 14:00	-11.8	-16.1	70	37	48.3	100.96	Mainly Clear
8751	12/30/2012 15:00	-11.3	-15.6	70	32	48.3	101.05	Mainly Clear
8752	12/30/2012 16:00	-11.4	-15.5	72	26	48.3	101.15	Mainly Clear
8756	12/30/2012 20:00	-13.8	-16.5	80	24	25.0	101.52	Clear

3027 rows × 8 columns

In [105...]

```
data[(data['Weather Condition']== 'Clear') | (data ['Visibility_km']>40)].head(50)
```

Out[105...]

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
67	1/3/2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Clear
106	1/5/2012 10:00	-6.0	-10.0	73	17	48.3	100.45	Mainly Clear
107	1/5/2012	-5.6	-10.2	70	22	48.3	100.41	Mainly Clear

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
	11:00							
108	1/5/2012 12:00	-4.7	-9.6	69	20	48.3	100.38	Mainly Clear
109	1/5/2012 13:00	-4.4	-9.7	66	26	48.3	100.40	Mainly Clear
110	1/5/2012 14:00	-5.1	-10.7	65	22	48.3	100.46	Mainly Clear
111	1/5/2012 15:00	-4.3	-12.0	55	26	48.3	100.52	Mainly Clear
114	1/5/2012 18:00	-7.1	-14.4	56	11	25.0	100.71	Clear
115	1/5/2012 19:00	-9.2	-15.4	61	7	25.0	100.80	Clear
116	1/5/2012 20:00	-9.8	-15.7	62	9	25.0	100.83	Clear
117	1/5/2012 21:00	-9.0	-14.8	63	13	25.0	100.83	Clear
183	1/8/2012 15:00	-6.6	-12.9	61	20	48.3	102.04	Mostly Cloudy
241	1/11/2012 1:00	-10.7	-17.8	56	17	25.0	101.49	Clear
242	1/11/2012 2:00	-12.0	-18.9	56	19	25.0	101.57	Clear
243	1/11/2012 3:00	-12.7	-19.4	57	19	25.0	101.64	Clear
244	1/11/2012 4:00	-13.4	-20.1	57	17	25.0	101.66	Clear
324	1/14/2012 12:00	-17.5	-23.8	58	20	48.3	101.16	Mostly Cloudy
325	1/14/2012 13:00	-17.1	-24.1	55	17	48.3	101.18	Mainly Clear
326	1/14/2012 14:00	-16.7	-23.4	56	17	48.3	101.20	Mostly Cloudy
327	1/14/2012 15:00	-16.7	-23.4	56	22	48.3	101.24	Mostly Cloudy
344	1/15/2012 8:00	-23.3	-28.5	62	7	24.1	102.45	Clear
345	1/15/2012 9:00	-22.2	-27.8	60	9	48.3	102.57	Mainly Clear
346	1/15/2012 10:00	-20.6	-26.8	58	9	48.3	102.66	Mainly Clear
347	1/15/2012 11:00	-19.3	-26.1	55	9	48.3	102.68	Mainly Clear
348	1/15/2012 12:00	-18.0	-25.5	52	13	48.3	102.67	Mainly Clear
349	1/15/2012 13:00	-16.8	-24.2	53	20	48.3	102.65	Mainly Clear

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
350	1/15/2012 14:00	-16.0	-23.4	53	26	48.3	102.66	Mainly Clear
351	1/15/2012 15:00	-15.4	-22.8	53	24	48.3	102.71	Clear
352	1/15/2012 16:00	-15.1	-22.8	52	24	48.3	102.79	Clear
353	1/15/2012 17:00	-16.2	-23.2	55	15	25.0	102.85	Clear
354	1/15/2012 18:00	-16.3	-22.9	57	17	25.0	102.89	Clear
355	1/15/2012 19:00	-16.3	-22.7	58	20	25.0	102.94	Clear
356	1/15/2012 20:00	-16.7	-22.4	61	17	25.0	102.98	Clear
357	1/15/2012 21:00	-16.9	-22.2	63	15	25.0	103.02	Clear
358	1/15/2012 22:00	-16.9	-21.7	66	17	25.0	103.07	Clear
359	1/15/2012 23:00	-16.9	-21.4	68	15	25.0	103.09	Clear
360	1/16/2012 0:00	-17.1	-21.9	66	15	25.0	103.09	Clear
361	1/16/2012 1:00	-17.8	-22.7	65	6	25.0	103.05	Clear
362	1/16/2012 2:00	-18.5	-23.0	68	6	25.0	103.08	Clear
363	1/16/2012 3:00	-19.2	-23.8	67	6	25.0	103.07	Clear
364	1/16/2012 4:00	-18.7	-23.5	66	0	25.0	103.05	Clear
365	1/16/2012 5:00	-19.1	-23.3	69	0	25.0	103.02	Clear
366	1/16/2012 6:00	-18.7	-23.2	68	0	25.0	103.01	Clear
367	1/16/2012 7:00	-17.9	-21.5	73	4	48.3	102.96	Mainly Clear
368	1/16/2012 8:00	-17.9	-22.6	67	9	48.3	102.90	Mostly Cloudy
369	1/16/2012 9:00	-14.4	-20.7	59	22	48.3	102.75	Cloudy
370	1/16/2012 10:00	-13.6	-18.7	65	19	48.3	102.62	Mostly Cloudy
371	1/16/2012 11:00	-12.7	-17.7	66	20	48.3	102.44	Mostly Cloudy
372	1/16/2012 12:00	-10.7	-16.9	60	19	48.3	102.17	Mostly Cloudy

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
373	1/16/2012 13:00	-10.1	-16.1	61	13	48.3	101.92	Cloudy

In [106...

```
data[(data['Weather Condition']== 'Clear') | (data ['Visibility_km']>40)].tail(50)
```

Out[106...

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
8387	12/15/2012 11:00	-9.3	-14.9	64	19	48.3	102.74	Mainly Clear
8388	12/15/2012 12:00	-9.1	-15.1	62	19	48.3	102.71	Mainly Clear
8389	12/15/2012 13:00	-8.4	-14.7	60	19	48.3	102.64	Clear
8390	12/15/2012 14:00	-8.0	-14.2	61	13	48.3	102.59	Mainly Clear
8391	12/15/2012 15:00	-7.8	-13.7	63	15	48.3	102.55	Mainly Clear
8392	12/15/2012 16:00	-8.5	-14.8	60	20	48.3	102.54	Mainly Clear
8394	12/15/2012 18:00	-9.1	-15.1	62	17	25.0	102.54	Clear
8396	12/15/2012 20:00	-8.7	-15.1	60	20	25.0	102.50	Clear
8408	12/16/2012 8:00	-9.5	-14.8	65	32	48.3	101.85	Cloudy
8599	12/24/2012 7:00	-11.1	-13.9	80	15	25.0	101.23	Clear
8600	12/24/2012 8:00	-11.0	-13.9	79	13	25.0	101.32	Clear
8601	12/24/2012 9:00	-10.5	-13.7	77	13	24.1	101.41	Clear
8602	12/24/2012 10:00	-9.9	-13.4	76	11	48.3	101.45	Mainly Clear
8603	12/24/2012 11:00	-9.0	-13.7	69	11	48.3	101.44	Mainly Clear
8604	12/24/2012 12:00	-7.9	-13.3	65	9	48.3	101.43	Mainly Clear
8605	12/24/2012 13:00	-7.6	-13.1	65	15	48.3	101.45	Mainly Clear
8606	12/24/2012 14:00	-7.8	-13.7	63	15	48.3	101.46	Mainly Clear
8607	12/24/2012 15:00	-7.5	-13.3	63	13	48.3	101.49	Mainly Clear
8610	12/24/2012 18:00	-10.4	-13.8	76	9	25.0	101.45	Clear
8630	12/25/2012 14:00	-7.7	-14.1	60	6	48.3	101.95	Mainly Clear

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
8631	12/25/2012 15:00	-7.1	-13.7	59	17	48.3	101.98	Clear
8632	12/25/2012 16:00	-7.5	-13.9	60	11	48.3	102.03	Clear
8633	12/25/2012 17:00	-8.3	-13.4	67	13	25.0	102.10	Clear
8637	12/25/2012 21:00	-9.7	-12.5	80	4	25.0	102.28	Clear
8638	12/25/2012 22:00	-10.9	-13.2	83	4	25.0	102.34	Clear
8639	12/25/2012 23:00	-10.4	-12.7	83	11	25.0	102.45	Clear
8640	12/26/2012 0:00	-11.8	-13.5	87	4	25.0	102.41	Clear
8641	12/26/2012 1:00	-11.2	-12.9	87	6	25.0	102.42	Clear
8642	12/26/2012 2:00	-12.7	-14.4	87	4	25.0	102.45	Clear
8643	12/26/2012 3:00	-14.2	-15.8	88	6	25.0	102.52	Clear
8644	12/26/2012 4:00	-13.1	-14.7	88	6	25.0	102.55	Clear
8645	12/26/2012 5:00	-12.7	-14.1	89	4	25.0	102.48	Clear
8646	12/26/2012 6:00	-13.4	-14.8	89	4	25.0	102.47	Clear
8651	12/26/2012 11:00	-11.3	-14.5	77	20	48.3	102.50	Mainly Clear
8652	12/26/2012 12:00	-10.6	-14.3	74	20	48.3	102.36	Mainly Clear
8698	12/28/2012 10:00	-6.1	-8.6	82	19	24.1	101.27	Clear
8699	12/28/2012 11:00	-6.2	-8.8	82	24	48.3	101.24	Mainly Clear
8700	12/28/2012 12:00	-7.2	-9.9	81	24	48.3	101.22	Mainly Clear
8701	12/28/2012 13:00	-6.8	-9.8	79	20	48.3	101.17	Mainly Clear
8702	12/28/2012 14:00	-6.5	-9.9	77	22	48.3	101.17	Mainly Clear
8703	12/28/2012 15:00	-6.8	-10.3	76	24	48.3	101.22	Mainly Clear
8704	12/28/2012 16:00	-7.7	-11.0	77	30	48.3	101.25	Mainly Clear
8713	12/29/2012 1:00	-11.9	-13.6	87	11	25.0	101.31	Clear

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
8714	12/29/2012 2:00	-11.8	-13.1	90	13	25.0	101.33	Clear
8748	12/30/2012 12:00	-12.2	-15.7	75	26	48.3	100.91	Mostly Cloudy
8749	12/30/2012 13:00	-12.4	-16.2	73	37	48.3	100.92	Mostly Cloudy
8750	12/30/2012 14:00	-11.8	-16.1	70	37	48.3	100.96	Mainly Clear
8751	12/30/2012 15:00	-11.3	-15.6	70	32	48.3	101.05	Mainly Clear
8752	12/30/2012 16:00	-11.4	-15.5	72	26	48.3	101.15	Mainly Clear
8756	12/30/2012 20:00	-13.8	-16.5	80	24	25.0	101.52	Clear

In [107...

```
#Find all instances when :  
#A. 'Weather is Clear' and 'Relative Humidity is greater than 50'  
#or  
#B. 'Visibility is above 40'
```

In [108...

```
data.head(2)
```

Out[108...

	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 [111...

```
data[(data['Weather Condition']=='Clear') & (data['Rel Hum_%'] >50) | (data['Visibility_km']>40)]
```

Out[111...

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
106	1/5/2012 10:00	-6.0	-10.0	73	17	48.3	100.45	Mainly Clear
107	1/5/2012 11:00	-5.6	-10.2	70	22	48.3	100.41	Mainly Clear
108	1/5/2012 12:00	-4.7	-9.6	69	20	48.3	100.38	Mainly Clear
109	1/5/2012 13:00	-4.4	-9.7	66	26	48.3	100.40	Mainly Clear
110	1/5/2012 14:00	-5.1	-10.7	65	22	48.3	100.46	Mainly Clear
...
8749	12/30/2012 13:00	-12.4	-16.2	73	37	48.3	100.92	Mostly Cloudy

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
8750	12/30/2012 14:00	-11.8	-16.1	70	37	48.3	100.96	Mainly Clear
8751	12/30/2012 15:00	-11.3	-15.6	70	32	48.3	101.05	Mainly Clear
8752	12/30/2012 16:00	-11.4	-15.5	72	26	48.3	101.15	Mainly Clear
8756	12/30/2012 20:00	-13.8	-16.5	80	24	25.0	101.52	Clear

2921 rows × 8 columns