

In [47]: `import pandas as pd`

In [48]: `data=pd.read_csv(r"C:\Users\91890\Downloads\1. Weather Data.csv")`

In [49]: `data`

Out[49]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	01-01-2012 00:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	01-01-2012 01:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	01-01-2012 02:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	01-01-2012 03:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	01-01-2012 04:00	-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 [10]: `#head command . it show 5 rows of data`
`data.head()`

Out[10]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	01-01-2012 00:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	01-01-2012 01:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	01-01-2012 02:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	01-01-2012 03:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	01-01-2012 04:00	-1.5	-3.3	88	7	4.8	101.23	Fog

In [12]: `#sahpe shows number of row and column in data frame`
`data.shape`

Out[12]: `(8784, 8)`

```

In [15]: #
         data.index

Out[15]: RangeIndex(start=0, stop=8784, step=1)

In [18]: data.columns

Out[18]: Index(['Date/Time', 'Temp_C', 'Dew Point Temp_C', 'Rel Hum_%',
              'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather'],
              dtype='object')

In [22]: data.dtypes

Out[22]: 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 [29]: data['Weather'].unique()

Out[29]: 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 [30]: data.nunique()

Out[30]: 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 [31]: #it shows number of not null values

         data.count()

```

```
Out[31]: 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 [33]: data ['Weather'].value_counts()
```

```
#shows the count of each uniques value present in a column
```

```
Out[33]: 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
```

```
In [34]: 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 [30]: data.nunique()
```

```
Out[30]: 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 [40]: #count of wind speed
```

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

```
Out[40]: 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 [41]: # number of times weather is exactly clear
#1: use value_counts() (done above)
#2: use filter function
data[data.Weather=='Clear']
```

Out[41]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
67	01-03-2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Clear
114	01-05-2012 18:00	-7.1	-14.4	56	11	25.0	100.71	Clear
115	01-05-2012 19:00	-9.2	-15.4	61	7	25.0	100.80	Clear
116	01-05-2012 20:00	-9.8	-15.7	62	9	25.0	100.83	Clear
117	01-05-2012 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 [42]:

```
#use of groupby  
  
#get_group is used to get a particular word from data set of that coulmn  
  
data.groupby('Weather').get_group('Clear')
```

Out[42]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
67	01-03-2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Clear
114	01-05-2012 18:00	-7.1	-14.4	56	11	25.0	100.71	Clear
115	01-05-2012 19:00	-9.2	-15.4	61	7	25.0	100.80	Clear
116	01-05-2012 20:00	-9.8	-15.7	62	9	25.0	100.83	Clear
117	01-05-2012 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 [43]:

data.groupby('Wind Speed_km/h').get_group(4)

Out[43]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	01-01-2012 00:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	01-01-2012 01:00	-1.8	-3.7	87	4	8.0	101.24	Fog
96	01-05-2012 00:00	-8.8	-11.7	79	4	9.7	100.32	Snow
101	01-05-2012 05:00	-7.0	-9.5	82	4	4.0	100.19	Snow
146	01-07-2012 02:00	-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 [44]:

```
#checking NULL value in data
# done by isnull
data.isnull().sum()
```

Out[44]:

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 [50]:

```
#we can use notnull also

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

Out[50]:

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 [51]:

```
#renaming the column
#for that particular command only #not on complete data set

data.rename(columns={'Weather':'Weather_Condition'})
```

Out[51]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather_Condition
0	01-01-2012 00:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	01-01-2012 01:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	01-01-2012 02:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	01-01-2012 03:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	01-01-2012 04:00	-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 [52]:

data

Out[52]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
0	01-01-2012 00:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	01-01-2012 01:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	01-01-2012 02:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	01-01-2012 03:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	01-01-2012 04:00	-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 [57]: data.rename(columns={'Weather':'Weather_Condition'}, inplace=True)
```

```
In [56]: data
```

Out[56]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather_Condition
0	01-01-2012 00:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	01-01-2012 01:00	-1.8	-3.7	87	4	8.0	101.24	Fog
2	01-01-2012 02:00	-1.8	-3.4	89	7	4.0	101.26	Freezing Drizzle,Fog
3	01-01-2012 03:00	-1.5	-3.2	88	6	4.0	101.27	Freezing Drizzle,Fog
4	01-01-2012 04:00	-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 [58]: #to find mean of visiblity  
data.Visibility_km.mean()
```

Out[58]: 27.6644446721311478

```
In [59]: #standard deviation of pressure  
data.Press_kPa.std()
```

Out[59]: 0.8440047459486483

```
In [63]: #variance of relative humidity  
#if there is space b/w the column name we use [], elae we use.  
data['Rel Hum_%'].var()
```

Out[63]: 286.24855019850196

```
In [67]: #number of time snow recorded  
data[data.Weather_Condition=='Snow']
```

Out[67]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather_Condition
55	01-03-2012 07:00	-14.0	-19.5	63	19	25.0	100.95	Snow
84	01-04-2012 12:00	-13.7	-21.7	51	11	24.1	101.25	Snow
86	01-04-2012 14:00	-11.3	-19.0	53	7	19.3	100.97	Snow
87	01-04-2012 15:00	-10.2	-16.3	61	11	9.7	100.89	Snow
88	01-04-2012 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 [69]:

```
#str.contains  
#to get columns that coantain a particular word  
  
data[data ['Weather_Condition'].str.contains('Snow')]
```

Out[69]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather_Condition
41	01-02-2012 17:00	-2.1	-9.5	57	22	25.0	99.66	Snow Showers
44	01-02-2012 20:00	-5.6	-13.4	54	24	25.0	100.07	Snow Showers
45	01-02-2012 21:00	-5.8	-12.8	58	26	25.0	100.15	Snow Showers
47	01-02-2012 23:00	-7.4	-14.1	59	17	19.3	100.27	Snow Showers
48	01-03-2012 00:00	-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 [72]:

```
#wind speed above 24 and visiblity is 25

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

Out[72]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather_Condition
23	01-01-2012 23:00	5.3	2.0	79	30	25.0	99.31	Cloudy
24	01-02-2012 00:00	5.2	1.5	77	35	25.0	99.26	Rain Showers
25	01-02-2012 01:00	4.6	0.0	72	39	25.0	99.26	Cloudy
26	01-02-2012 02:00	3.9	-0.9	71	32	25.0	99.26	Mostly Cloudy
27	01-02-2012 03:00	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 [74]:

```
#mean value of each coulmn in waether_condition

data.groupby('Weather_Condition').mean()
```

Out[74]:		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
	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

	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather_Condition						
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 [75]: *#min and max value againts each weather_Condtion'*

```
data.groupby('Weather_Condition').min()
```

Out[75]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather_Condition							
Clear	01-03-2012 19:00	-23.3	-28.5	20	0	11.3	99.52
Cloudy	01-01-2012 17:00	-21.4	-26.8	18	0	11.3	98.39
Drizzle	05-01-2012 15:00	1.1	-0.2	74	0	6.4	97.84
Drizzle,Fog	05-01-2012 16:00	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	01-01-2012 00:00	-16.0	-17.2	80	0	0.2	98.31
Freezing Drizzle	01-07-2012 11:00	-9.0	-12.2	78	6	4.8	98.44
Freezing Drizzle,Fog	01-01-2012 02:00	-6.4	-9.0	82	6	3.6	98.74
Freezing Drizzle,Haze	02-01-2012 11:00	-5.8	-8.3	81	9	2.0	100.28
Freezing Drizzle,Snow	03-02-2012 12:00	-8.3	-10.4	79	6	2.4	99.19
Freezing Fog	02-05-2012 10:00	-19.0	-22.9	71	0	0.2	101.97
Freezing Rain	01-07-2012 10:00	-6.5	-9.0	81	7	2.8	98.22
Freezing Rain,Fog	01-07-2012 09:00	-6.1	-8.7	82	7	2.8	98.32
Freezing Rain,Haze	02-01-2012 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	02-01-2012 10:00	-11.5	-16.0	68	0	4.8	100.35
Mainly Clear	01-02-2012 12:00	-22.8	-28.0	20	0	12.9	98.67
Moderate Rain,Fog	12-10-2012 08:00	1.7	0.8	94	17	6.4	99.98
Moderate Snow	01-12-2012 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	01-01-2012 16:00	-23.2	-28.5	18	0	11.3	98.36

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather_Condition							
Rain	01-01-2012 18:00	0.3	-5.7	40	0	4.0	97.52
Rain Showers	01-01-2012 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	11-04-2012 08:00	2.1	-1.8	75	17	19.3	101.09
Rain,Fog	03-08-2012 22:00	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	01-10-2012 05:00	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	12-08-2012 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	01-03-2012 07:00	-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	01-02-2012 17:00	-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	02-10-2012 23:00	-10.1	-12.0	77	4	1.2	99.38
Snow,Haze	02-01-2012 17:00	-4.3	-7.2	80	0	4.0	100.61
Snow,Ice Pellets	03-03-2012 04:00	-4.3	-5.9	76	19	2.8	99.40
Thunderstorms	07-04-2012 16:00	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
Thunderstorms,Rain Showers	07-04-2012 17:00	11.0	7.0	68	7	6.4	99.65

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	Visibility_km	Press_kPa
Weather_Condition							
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 [76]:

```
#max  
  
data.groupby('Weather_Condition').max()
```

Out[76]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather_Condition							
Clear	9/28/2012 4:00	32.8	20.4	99	33	48.3	103.63
Cloudy	9/30/2012 9:00	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	12/17/2012 0:00	-2.3	-3.3	93	26	12.9	101.02
Freezing Drizzle,Fog	12-10-2012 05:00	-0.3	-2.3	94	33	8.0	101.27
Freezing Drizzle,Haze	02-01-2012 13:00	-5.0	-7.7	83	11	4.0	100.36
Freezing Drizzle,Snow	12/28/2012 2:00	-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	12/17/2012 2:00	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	02-01-2012 15:00	-4.9	-7.4	83	9	2.8	100.41
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	9/28/2012 8:00	33.0	21.2	99	63	48.3	103.59
Moderate Rain,Fog	12-10-2012 08:00	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	9/29/2012 9:00	32.4	24.4	100	83	48.3	103.65

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather_Condition							
Rain	9/30/2012 22:00	22.8	20.4	99	52	48.3	102.26
Rain Showers	9/26/2012 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	12-05-2012 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	12-08-2012 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	2/23/2012 13:00	2.9	-0.7	94	37	48.3	102.50
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	02-01-2012 21:00	-3.6	-6.4	81	15	6.4	100.99
Snow,Ice Pellets	3/28/2012 8:00	0.8	-1.7	92	33	11.3	100.96
Thunderstorms	7/16/2012 1:00	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	9/14/2012 20:00	25.5	23.1	98	32	25.0	101.06

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather_Condition							
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 [83]: *#all coulmn where weather conditon is fog*

```
data[data['Weather_Condition']=='Fog']
```

Out[83]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather_Condition
0	01-01-2012 00:00	-1.8	-3.9	86	4	8.0	101.24	Fog
1	01-01-2012 01:00	-1.8	-3.7	87	4	8.0	101.24	Fog
4	01-01-2012 04:00	-1.5	-3.3	88	7	4.8	101.23	Fog
5	01-01-2012 05:00	-1.4	-3.3	87	9	6.4	101.27	Fog
6	01-01-2012 06:00	-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
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 [89]: *#clar weather or visiblity above 40*

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

Out[89]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather_Condition
67	01-03-2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Clear
106	01-05-2012 10:00	-6.0	-10.0	73	17	48.3	100.45	Mainly Clear
107	01-05-2012 11:00	-5.6	-10.2	70	22	48.3	100.41	Mainly Clear
108	01-05-2012 12:00	-4.7	-9.6	69	20	48.3	100.38	Mainly Clear
109	01-05-2012 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 [96]:

```
data [(data['Weather_Condition']=='Clear') & (data['Rel Hum_%']>50) | (data['Visibility
```

Out[96]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather_Condition
106	01-05-2012 10:00	-6.0	-10.0	73	17	48.3	100.45	Mainly Clear
107	01-05-2012 11:00	-5.6	-10.2	70	22	48.3	100.41	Mainly Clear
108	01-05-2012 12:00	-4.7	-9.6	69	20	48.3	100.38	Mainly Clear
109	01-05-2012 13:00	-4.4	-9.7	66	26	48.3	100.40	Mainly Clear
110	01-05-2012 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
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

In []: