

# weather data

March 31, 2023

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

```
[3]: data = pd.read_csv(r"C:\Users\Kolipaka Srikanth\OneDrive\Documents\1. Weather_␣  
↪Data.csv")
```

```
[4]: data
```

```
[4]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
0	1/1/2012 0:00	-1.8		-3.9	86		4
1	1/1/2012 1:00	-1.8		-3.7	87		4
2	1/1/2012 2:00	-1.8		-3.4	89		7
3	1/1/2012 3:00	-1.5		-3.2	88		6
4	1/1/2012 4:00	-1.5		-3.3	88		7
...	...	...		...		...	
8779	12/31/2012 19:00	0.1		-2.7	81		30
8780	12/31/2012 20:00	0.2		-2.4	83		24
8781	12/31/2012 21:00	-0.5		-1.5	93		28
8782	12/31/2012 22:00	-0.2		-1.8	89		28
8783	12/31/2012 23:00	0.0		-2.1	86		30

	Visibility_km	Press_kPa	Weather
0	8.0	101.24	Fog
1	8.0	101.24	Fog
2	4.0	101.26	Freezing Drizzle,Fog
3	4.0	101.27	Freezing Drizzle,Fog
4	4.8	101.23	Fog
...	...	...	...
8779	9.7	100.13	Snow
8780	9.7	100.03	Snow
8781	4.8	99.95	Snow
8782	9.7	99.91	Snow
8783	11.3	99.89	Snow

[8784 rows x 8 columns]

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

```
[5]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
0	1/1/2012 0:00	-1.8		-3.9	86		4
1	1/1/2012 1:00	-1.8		-3.7	87		4
2	1/1/2012 2:00	-1.8		-3.4	89		7
3	1/1/2012 3:00	-1.5		-3.2	88		6
4	1/1/2012 4:00	-1.5		-3.3	88		7

  

	Visibility_km	Press_kPa	Weather
0	8.0	101.24	Fog
1	8.0	101.24	Fog
2	4.0	101.26	Freezing Drizzle,Fog
3	4.0	101.27	Freezing Drizzle,Fog
4	4.8	101.23	Fog

```
[6]: data.shape
```

```
[6]: (8784, 8)
```

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

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

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

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

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

```
[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
```

```
[13]: data['Weather'].unique()
```

```
[13]: 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)
```

```
[14]: data.nunique()
```

```
[14]: 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
```

```
[15]: data.count()
```

```
[15]: 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
```

```
[16]: data['Weather'].value_counts()
```

```
[16]: 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: Weather, dtype: int64	

```
[17]: 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

```
[ ]: # 1.Find all the unique wind speed value in the data.
```

```
[18]: data.head(2)
```

```
[18]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	\
0	1/1/2012 0:00	-1.8	-3.9	86	4	
1	1/1/2012 1:00	-1.8	-3.7	87	4	

  

	Visibility_km	Press_kPa	Weather
0	8.0	101.24	Fog
1	8.0	101.24	Fog

```
[19]: data.nunique()
```

```
[19]:
```

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

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

```
[20]: 34
```

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

```
[21]: 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)
```

```
[ ]: #2.Find the number of time when the Weather is exactly clear
```

```
[23]: data.head(2)
```

```
[23]:      Date/Time  Temp_C  Dew Point  Temp_C  Rel Hum_%  Wind Speed_kmh/h  \
0  1/1/2012 0:00    -1.8          -3.9      86          4
1  1/1/2012 1:00    -1.8          -3.7      87          4

      Visibility_km  Press_kPa  Weather
0              8.0     101.24     Fog
1              8.0     101.24     Fog
```

```
[25]: data.Weather.value_counts()
```

```
[25]: 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: Weather, dtype: int64

```

```

[29]: data.head(2)
      data[data.Weather == 'Clear']

```

```

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

```

```

      Visibility_km  Press_kPa  Weather
67                25.0    101.74   Clear
114                25.0    100.71   Clear
115                25.0    100.80   Clear
116                25.0    100.83   Clear
117                25.0    100.83   Clear
...              ...      ...      ...
8646                25.0    102.47   Clear
8698                24.1    101.27   Clear
8713                25.0    101.31   Clear
8714                25.0    101.33   Clear
8756                25.0    101.52   Clear

```

```

[1326 rows x 8 columns]

```

```
[31]: data.groupby('Weather').get_group('Clear')
```

```
[31]:
```

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

	Visibility_km	Press_kPa	Weather
67	25.0	101.74	Clear
114	25.0	100.71	Clear
115	25.0	100.80	Clear
116	25.0	100.83	Clear
117	25.0	100.83	Clear
...	...	...	...
8646	25.0	102.47	Clear
8698	24.1	101.27	Clear
8713	25.0	101.31	Clear
8714	25.0	101.33	Clear
8756	25.0	101.52	Clear

[1326 rows x 8 columns]

```
[ ]: #3.Find the number of times when the 'wind speed was exactly 4 km/h'.
```

```
[32]: data.head(2)
```

```
[32]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
0	1/1/2012 0:00	-1.8		-3.9	86	4	
1	1/1/2012 1:00	-1.8		-3.7	87	4	

  

	Visibility_km	Press_kPa	Weather
0	8.0	101.24	Fog
1	8.0	101.24	Fog

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

```
[35]: 0      True
      1      True
      2     False
```



```

3      False
4      False
...
8779   False
8780   False
8781   False
8782   False
8783   False
Name: Wind Speed_km/h, Length: 8784, dtype: bool

```

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

```
[36]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
0	1/1/2012 0:00	-1.8		-3.9	86	4	
1	1/1/2012 1:00	-1.8		-3.7	87	4	
96	1/5/2012 0:00	-8.8		-11.7	79	4	
101	1/5/2012 5:00	-7.0		-9.5	82	4	
146	1/7/2012 2:00	-8.1		-11.1	79	4	
...	...	...		...	...	...	
8768	12/31/2012 8:00	-8.6		-10.3	87	4	
8769	12/31/2012 9:00	-8.1		-9.6	89	4	
8770	12/31/2012 10:00	-7.4		-8.9	89	4	
8772	12/31/2012 12:00	-5.8		-7.5	88	4	
8773	12/31/2012 13:00	-4.6		-6.6	86	4	

  

	Visibility_km	Press_kPa	Weather
0	8.0	101.24	Fog
1	8.0	101.24	Fog
96	9.7	100.32	Snow
101	4.0	100.19	Snow
146	19.3	100.15	Cloudy
...	...	...	...
8768	3.2	101.14	Snow Showers
8769	2.4	101.09	Snow
8770	6.4	101.05	Snow,Fog
8772	12.9	100.78	Snow
8773	12.9	100.63	Snow

```
[474 rows x 8 columns]
```

```
[ ]: #4.Find out the Null values in the data
```

```
[38]: data.isnull().sum()
```

```
[38]: 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

```

```
[39]: data.notnull().sum()
```

```

[39]: 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

```

```
[ ]: #5.Rename the coloum name 'Weather of the dataframe to'Weather Condition
```

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

```

[40]:      Date/Time  Temp_C  Dew Point Temp_C  Rel Hum_%  Wind Speed_km/h  \
0  1/1/2012 0:00    -1.8          -3.9        86           4
1  1/1/2012 1:00    -1.8          -3.7        87           4

      Visibility_km  Press_kPa  Weather
0              8.0    101.24    Fog
1              8.0    101.24    Fog

```

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

```
[47]: data.head()
```

```

[47]:      Date/Time  Temp_C  Dew Point Temp_C  Rel Hum_%  Wind Speed_km/h  \
0  1/1/2012 0:00    -1.8          -3.9        86           4
1  1/1/2012 1:00    -1.8          -3.7        87           4
2  1/1/2012 2:00    -1.8          -3.4        89           7
3  1/1/2012 3:00    -1.5          -3.2        88           6
4  1/1/2012 4:00    -1.5          -3.3        88           7

      Visibility_km  Press_kPa  Weather Condition
0              8.0    101.24           Fog
1              8.0    101.24           Fog
2              4.0    101.26  Freezing Drizzle,Fog
3              4.0    101.27  Freezing Drizzle,Fog
4              4.8    101.23           Fog

```

```
[ ]: #6.What is the mean 'Visibility'
```

```
[48]: data.head(2)
```

```
[48]:      Date/Time  Temp_C  Dew Point Temp_C  Rel Hum_%  Wind Speed_km/h  \
0  1/1/2012 0:00    -1.8         -3.9      86             4
1  1/1/2012 1:00    -1.8         -3.7      87             4

      Visibility_km  Press_kPa  Weather Condition
0              8.0     101.24              Fog
1              8.0     101.24              Fog
```

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

```
[49]: 27.6644446721311478
```

```
[ ]: #7.What is the Standard Deviation of 'Pressure'in this data
```

```
[50]: data.Press_kPa.std()
```

```
[50]: 0.8440047459486483
```

```
[ ]: #8.What is the Variance of "Relative Humidity" in this data
```

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

```
[51]: 286.24855019850196
```

```
[ ]: #9.Find all instance when 'Snow'was recorded
```

```
[53]: #data.head(2)
data['Weather Condition'].value_counts()
```

```
[53]: 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: Weather Condition, dtype: int64

```
[55]: data[data['Weather Condition'] == 'Snow']
```

```
[55]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
55	1/3/2012 7:00	-14.0		-19.5	63		19
84	1/4/2012 12:00	-13.7		-21.7	51		11
86	1/4/2012 14:00	-11.3		-19.0	53		7
87	1/4/2012 15:00	-10.2		-16.3	61		11
88	1/4/2012 16:00	-9.4		-15.5	61		13
...	...	...	...	...	...	...	...
8779	12/31/2012 19:00	0.1		-2.7	81		30

8780	12/31/2012 20:00	0.2	-2.4	83	24
8781	12/31/2012 21:00	-0.5	-1.5	93	28
8782	12/31/2012 22:00	-0.2	-1.8	89	28
8783	12/31/2012 23:00	0.0	-2.1	86	30

	Visibility_km	Press_kPa	Weather Condition
55	25.0	100.95	Snow
84	24.1	101.25	Snow
86	19.3	100.97	Snow
87	9.7	100.89	Snow
88	19.3	100.79	Snow
...	...	...	...
8779	9.7	100.13	Snow
8780	9.7	100.03	Snow
8781	4.8	99.95	Snow
8782	9.7	99.91	Snow
8783	11.3	99.89	Snow

[390 rows x 8 columns]

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

```
[57]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	\
41	1/2/2012 17:00	-2.1	-9.5	57	22	
44	1/2/2012 20:00	-5.6	-13.4	54	24	
45	1/2/2012 21:00	-5.8	-12.8	58	26	
47	1/2/2012 23:00	-7.4	-14.1	59	17	
48	1/3/2012 0:00	-9.0	-16.0	57	28	
...	...	...	...	...	...	
8779	12/31/2012 19:00	0.1	-2.7	81	30	
8780	12/31/2012 20:00	0.2	-2.4	83	24	
8781	12/31/2012 21:00	-0.5	-1.5	93	28	
8782	12/31/2012 22:00	-0.2	-1.8	89	28	
8783	12/31/2012 23:00	0.0	-2.1	86	30	

	Visibility_km	Press_kPa	Weather Condition
41	25.0	99.66	Snow Showers
44	25.0	100.07	Snow Showers
45	25.0	100.15	Snow Showers
47	19.3	100.27	Snow Showers
48	25.0	100.35	Snow Showers
...	...	...	...
8779	9.7	100.13	Snow
8780	9.7	100.03	Snow
8781	4.8	99.95	Snow
8782	9.7	99.91	Snow
8783	11.3	99.89	Snow

[583 rows x 8 columns]

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

```
[59]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
8680	12/27/2012 16:00	-4.5		-6.2	88	37	
8681	12/27/2012 17:00	-4.2		-5.9	88	32	
8682	12/27/2012 18:00	-4.0		-5.7	88	28	
8683	12/27/2012 19:00	-3.9		-5.6	88	26	
8684	12/27/2012 20:00	-3.7		-5.3	89	37	
8685	12/27/2012 21:00	-3.7		-4.8	92	24	
8686	12/27/2012 22:00	-3.8		-4.6	94	20	
8687	12/27/2012 23:00	-4.0		-5.6	89	24	
8688	12/28/2012 0:00	-4.2		-5.7	89	19	
8689	12/28/2012 1:00	-4.4		-6.6	85	15	
8690	12/28/2012 2:00	-4.3		-6.3	86	11	
8691	12/28/2012 3:00	-4.6		-5.9	91	13	
8692	12/28/2012 4:00	-4.9		-5.9	93	9	
8723	12/29/2012 11:00	-10.9		-12.2	90	7	
8724	12/29/2012 12:00	-10.5		-11.6	92	11	
8725	12/29/2012 13:00	-10.0		-11.1	92	22	
8726	12/29/2012 14:00	-9.3		-10.5	91	22	
8727	12/29/2012 15:00	-8.8		-10.0	91	20	
8728	12/29/2012 16:00	-8.5		-9.9	90	24	
8729	12/29/2012 17:00	-9.0		-10.4	90	19	
8730	12/29/2012 18:00	-9.3		-10.9	88	26	
8731	12/29/2012 19:00	-9.5		-11.2	87	26	
8732	12/29/2012 20:00	-9.7		-11.6	86	24	
8733	12/29/2012 21:00	-9.8		-11.8	85	24	
8734	12/29/2012 22:00	-10.1		-11.6	89	15	
8735	12/29/2012 23:00	-10.0		-12.0	85	20	
8736	12/30/2012 0:00	-9.6		-11.3	87	13	
8737	12/30/2012 1:00	-9.4		-10.5	92	9	
8738	12/30/2012 2:00	-9.3		-10.4	92	9	
8739	12/30/2012 3:00	-9.1		-10.4	90	11	
8740	12/30/2012 4:00	-9.3		-10.6	90	13	
8741	12/30/2012 5:00	-9.1		-10.4	90	11	
8742	12/30/2012 6:00	-9.3		-10.8	89	17	
8767	12/31/2012 7:00	-9.3		-11.3	85	0	
8768	12/31/2012 8:00	-8.6		-10.3	87	4	
8769	12/31/2012 9:00	-8.1		-9.6	89	4	
8770	12/31/2012 10:00	-7.4		-8.9	89	4	
8771	12/31/2012 11:00	-6.7		-7.9	91	9	
8772	12/31/2012 12:00	-5.8		-7.5	88	4	
8773	12/31/2012 13:00	-4.6		-6.6	86	4	
8774	12/31/2012 14:00	-3.4		-5.7	84	6	

8775	12/31/2012 15:00	-2.3	-4.6	84	9
8776	12/31/2012 16:00	-1.4	-4.0	82	13
8777	12/31/2012 17:00	-1.1	-3.3	85	19
8778	12/31/2012 18:00	-1.3	-3.1	88	17
8779	12/31/2012 19:00	0.1	-2.7	81	30
8780	12/31/2012 20:00	0.2	-2.4	83	24
8781	12/31/2012 21:00	-0.5	-1.5	93	28
8782	12/31/2012 22:00	-0.2	-1.8	89	28
8783	12/31/2012 23:00	0.0	-2.1	86	30

	Visibility_km	Press_kPa	Weather Condition
8680	2.0	100.44	Snow,Blowing Snow
8681	3.2	100.47	Snow,Blowing Snow
8682	8.0	100.49	Snow,Blowing Snow
8683	9.7	100.52	Snow,Blowing Snow
8684	16.1	100.58	Snow
8685	4.8	100.62	Freezing Drizzle,Snow
8686	4.8	100.65	Freezing Drizzle,Snow
8687	9.7	100.70	Snow
8688	8.0	100.78	Freezing Drizzle,Snow
8689	6.4	100.83	Freezing Drizzle,Snow
8690	12.9	100.93	Freezing Drizzle,Snow
8691	4.0	101.01	Snow
8692	9.7	101.00	Snow
8723	6.4	101.09	Snow Showers,Fog
8724	8.0	100.93	Snow Showers,Fog
8725	9.7	100.63	Snow Showers,Fog
8726	4.8	100.60	Snow,Fog
8727	1.2	100.55	Snow,Fog
8728	1.2	100.49	Snow,Fog
8729	2.4	100.46	Snow,Fog
8730	6.4	100.38	Snow,Fog
8731	3.2	100.33	Snow,Fog
8732	9.7	100.25	Snow,Fog
8733	8.0	100.24	Snow,Fog
8734	2.4	100.20	Snow,Fog
8735	6.4	100.19	Snow,Fog
8736	3.2	100.23	Snow,Fog
8737	2.4	100.22	Snow,Fog
8738	4.0	100.28	Snow,Fog
8739	3.6	100.30	Snow,Fog
8740	9.7	100.28	Snow,Fog
8741	4.0	100.32	Snow,Fog
8742	8.0	100.39	Snow,Fog
8767	19.3	101.19	Snow Showers
8768	3.2	101.14	Snow Showers
8769	2.4	101.09	Snow

8770	6.4	101.05	Snow,Fog
8771	9.7	100.93	Snow
8772	12.9	100.78	Snow
8773	12.9	100.63	Snow
8774	11.3	100.57	Snow
8775	9.7	100.47	Snow
8776	12.9	100.40	Snow
8777	9.7	100.30	Snow
8778	9.7	100.19	Snow
8779	9.7	100.13	Snow
8780	9.7	100.03	Snow
8781	4.8	99.95	Snow
8782	9.7	99.91	Snow
8783	11.3	99.89	Snow

```
[ ]: #10.Find all instances when 'Wind Speed is above 24'and "visibility"is 25
```

```
[60]: data.head(2)
```

```
[60]:      Date/Time  Temp_C  Dew Point  Temp_C  Rel Hum_%  Wind Speed_kmh/h  \
0  1/1/2012 0:00    -1.8         -3.9      86           4
1  1/1/2012 1:00    -1.8         -3.7      87           4

      Visibility_km  Press_kPa  Weather Condition
0              8.0     101.24             Fog
1              8.0     101.24             Fog
```

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

```
[61]:      Date/Time  Temp_C  Dew Point  Temp_C  Rel Hum_%  Wind Speed_kmh/h  \
23  1/1/2012 23:00     5.3         2.0      79           30
24  1/2/2012 0:00     5.2         1.5      77           35
25  1/2/2012 1:00     4.6         0.0      72           39
26  1/2/2012 2:00     3.9        -0.9      71           32
27  1/2/2012 3:00     3.7        -1.5      69           33
...
8705 12/28/2012 17:00    -8.6        -12.0      76           26
8753 12/30/2012 17:00   -12.1       -15.8      74           28
8755 12/30/2012 19:00   -13.4       -16.5      77           26
8759 12/30/2012 23:00   -12.1       -15.1      78           28
8760 12/31/2012 0:00   -11.1       -14.4      77           26

      Visibility_km  Press_kPa  Weather Condition
23              25.0     99.31             Cloudy
24              25.0     99.26          Rain Showers
25              25.0     99.26             Cloudy
26              25.0     99.26        Mostly Cloudy
```



27	25.0	99.30	Mostly Cloudy
...	...	...	...
8705	25.0	101.34	Mainly Clear
8753	25.0	101.26	Mainly Clear
8755	25.0	101.47	Mainly Clear
8759	25.0	101.52	Mostly Cloudy
8760	25.0	101.51	Cloudy

[308 rows x 8 columns]

```
[ ]: #11. what is the Mean Value of each column against each 'Weather Condition'
```

```
[62]: data.head(2)
```

```
[62]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
0	1/1/2012 0:00	-1.8		-3.9	86		4
1	1/1/2012 1:00	-1.8		-3.7	87		4

  

	Visibility_km	Press_kPa	Weather Condition
0	8.0	101.24	Fog
1	8.0	101.24	Fog

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

C:\Users\Kolipaka Srikanth\AppData\Local\Temp\ipykernel\_19332\17017135.py:1:  
FutureWarning: The default value of numeric\_only in DataFrameGroupBy.mean is deprecated. In a future version, numeric\_only will default to False. Either specify numeric\_only or select only columns which should be valid for the function.

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

```
[63]:
```

	Temp_C	Dew Point	Temp_C	\
Weather Condition				
Clear	6.825716		0.089367	
Cloudy	7.970544		2.375810	
Drizzle	7.353659		5.504878	
Drizzle,Fog	8.067500		7.033750	
Drizzle,Ice Pellets,Fog	0.400000		-0.700000	
Drizzle,Snow	1.050000		0.150000	
Drizzle,Snow,Fog	0.693333		0.120000	
Fog	4.303333		3.159333	
Freezing Drizzle	-5.657143		-8.000000	
Freezing Drizzle,Fog	-2.533333		-4.183333	
Freezing Drizzle,Haze	-5.433333		-8.000000	
Freezing Drizzle,Snow	-5.109091		-7.072727	
Freezing Fog	-7.575000		-9.250000	
Freezing Rain	-3.885714		-6.078571	
Freezing Rain,Fog	-2.225000		-3.750000	

Freezing Rain,Haze	-4.900000	-7.450000
Freezing Rain,Ice Pellets,Fog	-2.600000	-3.700000
Freezing Rain,Snow Grains	-5.000000	-7.300000
Haze	-0.200000	-2.975000
Mainly Clear	12.558927	4.581671
Moderate Rain,Fog	1.700000	0.800000
Moderate Snow	-5.525000	-7.250000
Moderate Snow,Blowing Snow	-5.450000	-6.500000
Mostly Cloudy	10.574287	3.131174
Rain	9.786275	7.042810
Rain Showers	13.722340	9.187766
Rain Showers,Fog	12.800000	12.100000
Rain Showers,Snow Showers	2.150000	-1.500000
Rain,Fog	8.273276	7.219828
Rain,Haze	4.633333	2.066667
Rain,Ice Pellets	0.600000	-0.600000
Rain,Snow	1.055556	-0.566667
Rain,Snow Grains	1.900000	-2.100000
Rain,Snow,Fog	0.800000	0.300000
Rain,Snow,Ice Pellets	1.100000	-0.175000
Snow	-4.524103	-7.623333
Snow Pellets	0.700000	-6.400000
Snow Showers	-3.506667	-7.866667
Snow Showers,Fog	-10.675000	-11.900000
Snow,Blowing Snow	-5.410526	-7.621053
Snow,Fog	-5.075676	-6.364865
Snow,Haze	-4.020000	-6.860000
Snow,Ice Pellets	-1.883333	-3.666667
Thunderstorms	24.150000	19.750000
Thunderstorms,Heavy Rain Showers	10.900000	9.000000
Thunderstorms,Moderate Rain Showers,Fog	19.600000	18.500000
Thunderstorms,Rain	20.433333	18.533333
Thunderstorms,Rain Showers	20.037500	17.618750
Thunderstorms,Rain Showers,Fog	21.600000	18.700000
Thunderstorms,Rain,Fog	20.600000	18.600000

Weather Condition	Rel Hum_%	Wind Speed_km/h \
Clear	64.497738	10.557315
Cloudy	69.592593	16.127315
Drizzle	88.243902	16.097561
Drizzle,Fog	93.275000	11.862500
Drizzle,Ice Pellets,Fog	92.000000	20.000000
Drizzle,Snow	93.500000	14.000000
Drizzle,Snow,Fog	95.866667	15.533333
Fog	92.286667	7.946667
Freezing Drizzle	83.571429	16.571429

Freezing Drizzle,Fog	88.500000	17.000000
Freezing Drizzle,Haze	82.000000	10.333333
Freezing Drizzle,Snow	86.090909	16.272727
Freezing Fog	87.750000	4.750000
Freezing Rain	84.642857	19.214286
Freezing Rain,Fog	89.500000	15.500000
Freezing Rain,Haze	82.500000	7.500000
Freezing Rain,Ice Pellets,Fog	92.000000	28.000000
Freezing Rain,Snow Grains	84.000000	32.000000
Haze	81.625000	10.437500
Mainly Clear	60.667142	14.144824
Moderate Rain,Fog	94.000000	17.000000
Moderate Snow	87.750000	33.750000
Moderate Snow,Blowing Snow	92.500000	40.000000
Mostly Cloudy	62.102465	15.813920
Rain	83.624183	19.254902
Rain Showers	75.159574	17.132979
Rain Showers,Fog	96.000000	13.000000
Rain Showers,Snow Showers	76.500000	22.500000
Rain,Fog	93.189655	14.793103
Rain,Haze	83.333333	11.666667
Rain,Ice Pellets	92.000000	24.000000
Rain,Snow	89.000000	28.388889
Rain,Snow Grains	75.000000	26.000000
Rain,Snow,Fog	96.000000	9.000000
Rain,Snow,Ice Pellets	91.500000	23.250000
Snow	79.307692	20.038462
Snow Pellets	59.000000	35.000000
Snow Showers	72.350000	19.233333
Snow Showers,Fog	90.750000	13.750000
Snow,Blowing Snow	84.473684	34.842105
Snow,Fog	90.675676	17.324324
Snow,Haze	80.600000	5.000000
Snow,Ice Pellets	87.666667	23.833333
Thunderstorms	77.000000	7.500000
Thunderstorms,Heavy Rain Showers	88.000000	9.000000
Thunderstorms,Moderate Rain Showers,Fog	93.000000	15.000000
Thunderstorms,Rain	89.000000	15.666667
Thunderstorms,Rain Showers	86.375000	18.312500
Thunderstorms,Rain Showers,Fog	84.000000	19.666667
Thunderstorms,Rain,Fog	88.000000	19.000000

	Visibility_km	Press_kPa
Weather Condition		
Clear	30.153243	101.587443
Cloudy	26.625752	100.911441
Drizzle	17.931707	100.435366

Drizzle,Fog	5.257500	100.786625
Drizzle,Ice Pellets,Fog	4.000000	100.790000
Drizzle,Snow	10.500000	100.890000
Drizzle,Snow,Fog	5.513333	99.281333
Fog	6.248000	101.184067
Freezing Drizzle	9.200000	100.202857
Freezing Drizzle,Fog	5.266667	100.441667
Freezing Drizzle,Haze	2.666667	100.316667
Freezing Drizzle,Snow	5.872727	100.520909
Freezing Fog	0.650000	102.320000
Freezing Rain	8.242857	99.647143
Freezing Rain,Fog	7.550000	99.945000
Freezing Rain,Haze	2.400000	100.375000
Freezing Rain,Ice Pellets,Fog	8.000000	100.950000
Freezing Rain,Snow Grains	4.800000	98.560000
Haze	7.831250	101.482500
Mainly Clear	34.264862	101.248832
Moderate Rain,Fog	6.400000	99.980000
Moderate Snow	0.750000	100.275000
Moderate Snow,Blowing Snow	0.600000	100.570000
Mostly Cloudy	31.253842	101.025288
Rain	18.856536	100.233333
Rain Showers	22.816489	100.404043
Rain Showers,Fog	6.400000	99.830000
Rain Showers,Snow Showers	21.700000	101.100000
Rain,Fog	6.873276	100.500862
Rain,Haze	6.700000	100.540000
Rain,Ice Pellets	9.700000	100.120000
Rain,Snow	11.672222	99.951111
Rain,Snow Grains	25.000000	100.600000
Rain,Snow,Fog	6.400000	100.730000
Rain,Snow,Ice Pellets	6.000000	100.105000
Snow	11.171795	100.536103
Snow Pellets	2.400000	99.700000
Snow Showers	20.158333	100.963500
Snow Showers,Fog	7.025000	101.292500
Snow,Blowing Snow	4.105263	99.704737
Snow,Fog	4.537838	100.688649
Snow,Haze	4.640000	100.782000
Snow,Ice Pellets	7.416667	100.548333
Thunderstorms	24.550000	100.230000
Thunderstorms,Heavy Rain Showers	2.400000	100.260000
Thunderstorms,Moderate Rain Showers,Fog	3.200000	100.010000
Thunderstorms,Rain	19.833333	100.420000
Thunderstorms,Rain Showers	15.893750	100.233750
Thunderstorms,Rain Showers,Fog	9.700000	100.063333
Thunderstorms,Rain,Fog	4.800000	100.080000

```
[ ]: #12.What is the minimum &maximum value of each column aganist each 'Weather_
↳Condition'
```

```
[64]: data.head(2)
```

```
[64]:      Date/Time  Temp_C  Dew Point Temp_C  Rel Hum_%  Wind Speed_km/h  \
0  1/1/2012 0:00    -1.8         -3.9      86             4
1  1/1/2012 1:00    -1.8         -3.7      87             4

      Visibility_km  Press_kPa  Weather Condition
0              8.0     101.24             Fog
1              8.0     101.24             Fog
```

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

```
[66]:      Date/Time  Temp_C  \
Weather Condition
Clear          9/9/2012 5:00    32.8
Cloudy         9/9/2012 23:00    30.5
Drizzle        9/30/2012 3:00    18.8
Drizzle,Fog    9/30/2012 2:00    19.9
Drizzle,Ice Pellets,Fog 12/17/2012 9:00     0.4
Drizzle,Snow   12/19/2012 18:00     1.2
Drizzle,Snow,Fog 12/22/2012 3:00     1.1
Fog            9/22/2012 0:00    20.8
Freezing Drizzle 2/1/2012 5:00    -2.3
Freezing Drizzle,Fog 12/10/2012 5:00    -0.3
Freezing Drizzle,Haze 2/1/2012 13:00    -5.0
Freezing Drizzle,Snow 3/2/2012 12:00    -3.3
Freezing Fog    3/17/2012 6:00    -0.1
Freezing Rain   2/1/2012 7:00     0.3
Freezing Rain,Fog 12/17/2012 1:00     0.1
Freezing Rain,Haze 2/1/2012 15:00    -4.9
Freezing Rain,Ice Pellets,Fog 12/17/2012 3:00    -2.6
Freezing Rain,Snow Grains 1/13/2012 9:00    -5.0
Haze           3/13/2012 23:00    14.1
Mainly Clear    9/9/2012 9:00    33.0
Moderate Rain,Fog 12/10/2012 8:00     1.7
Moderate Snow   12/27/2012 9:00    -4.9
Moderate Snow,Blowing Snow 12/27/2012 12:00    -5.4
Mostly Cloudy   9/9/2012 2:00    32.4
Rain            9/5/2012 2:00    22.8
Rain Showers    9/8/2012 16:00    26.4
Rain Showers,Fog 10/20/2012 3:00    12.8
Rain Showers,Snow Showers 12/5/2012 10:00     2.2
Rain,Fog        9/30/2012 23:00    21.7
Rain,Haze       3/13/2012 9:00     5.5
```

Rain,Ice Pellets	12/18/2012 5:00	0.6
Rain,Snow	4/23/2012 3:00	1.7
Rain,Snow Grains	12/21/2012 0:00	1.9
Rain,Snow,Fog	12/8/2012 21:00	0.8
Rain,Snow,Ice Pellets	12/21/2012 5:00	1.3
Snow	4/27/2012 9:00	3.7
Snow Pellets	11/24/2012 15:00	0.7
Snow Showers	3/4/2012 21:00	2.9
Snow Showers,Fog	12/29/2012 13:00	-10.0
Snow,Blowing Snow	2/25/2012 9:00	-1.4
Snow,Fog	3/14/2012 19:00	1.1
Snow,Haze	2/1/2012 21:00	-3.6
Snow,Ice Pellets	3/3/2012 4:00	0.8
Thunderstorms	7/4/2012 16:00	26.7
Thunderstorms,Heavy Rain Showers	5/29/2012 6:00	10.9
Thunderstorms,Moderate Rain Showers,Fog	7/17/2012 6:00	19.6
Thunderstorms,Rain	7/23/2012 18:00	21.3
Thunderstorms,Rain Showers	9/8/2012 4:00	25.5
Thunderstorms,Rain Showers,Fog	7/31/2012 20:00	22.9
Thunderstorms,Rain,Fog	7/17/2012 5:00	20.6

Weather Condition	Dew Point Temp_C	Rel Hum_% \
Clear	20.4	99
Cloudy	22.6	99
Drizzle	17.7	96
Drizzle,Fog	19.1	100
Drizzle,Ice Pellets,Fog	-0.7	92
Drizzle,Snow	0.2	95
Drizzle,Snow,Fog	0.6	98
Fog	19.6	100
Freezing Drizzle	-3.3	93
Freezing Drizzle,Fog	-2.3	94
Freezing Drizzle,Haze	-7.7	83
Freezing Drizzle,Snow	-4.6	94
Freezing Fog	-0.3	99
Freezing Rain	-1.7	92
Freezing Rain,Fog	-0.9	93
Freezing Rain,Haze	-7.4	83
Freezing Rain,Ice Pellets,Fog	-3.7	92
Freezing Rain,Snow Grains	-7.3	84
Haze	11.1	86
Mainly Clear	21.2	99
Moderate Rain,Fog	0.8	94
Moderate Snow	-6.7	93
Moderate Snow,Blowing Snow	-6.4	93
Mostly Cloudy	24.4	100

Rain	20.4	99
Rain Showers	23.0	97
Rain Showers,Fog	12.1	96
Rain Showers,Snow Showers	-1.2	78
Rain,Fog	19.5	100
Rain,Haze	2.9	86
Rain,Ice Pellets	-0.6	92
Rain,Snow	0.5	94
Rain,Snow Grains	-2.1	75
Rain,Snow,Fog	0.3	96
Rain,Snow,Ice Pellets	0.1	94
Snow	0.3	96
Snow Pellets	-6.4	59
Snow Showers	-0.7	94
Snow Showers,Fog	-11.1	92
Snow,Blowing Snow	-2.9	91
Snow,Fog	0.8	99
Snow,Haze	-6.4	81
Snow,Ice Pellets	-1.7	92
Thunderstorms	20.1	87
Thunderstorms,Heavy Rain Showers	9.0	88
Thunderstorms,Moderate Rain Showers,Fog	18.5	93
Thunderstorms,Rain	19.1	93
Thunderstorms,Rain Showers	23.1	98
Thunderstorms,Rain Showers,Fog	21.3	91
Thunderstorms,Rain,Fog	18.6	88

Weather Condition	Wind Speed_km/h	Visibility_km \
Clear	33	48.3
Cloudy	54	48.3
Drizzle	30	25.0
Drizzle,Fog	28	9.7
Drizzle,Ice Pellets,Fog	20	4.0
Drizzle,Snow	19	11.3
Drizzle,Snow,Fog	32	9.7
Fog	22	9.7
Freezing Drizzle	26	12.9
Freezing Drizzle,Fog	33	8.0
Freezing Drizzle,Haze	11	4.0
Freezing Drizzle,Snow	24	12.9
Freezing Fog	9	0.8
Freezing Rain	28	16.1
Freezing Rain,Fog	26	9.7
Freezing Rain,Haze	9	2.8
Freezing Rain,Ice Pellets,Fog	28	8.0
Freezing Rain,Snow Grains	32	4.8

Haze	17	9.7
Mainly Clear	63	48.3
Moderate Rain,Fog	17	6.4
Moderate Snow	39	0.8
Moderate Snow,Blowing Snow	41	0.6
Mostly Cloudy	83	48.3
Rain	52	48.3
Rain Showers	41	48.3
Rain Showers,Fog	13	6.4
Rain Showers,Snow Showers	28	24.1
Rain,Fog	46	9.7
Rain,Haze	17	9.7
Rain,Ice Pellets	24	9.7
Rain,Snow	52	25.0
Rain,Snow Grains	26	25.0
Rain,Snow,Fog	9	6.4
Rain,Snow,Ice Pellets	28	6.4
Snow	57	25.0
Snow Pellets	35	2.4
Snow Showers	37	48.3
Snow Showers,Fog	22	9.7
Snow,Blowing Snow	48	9.7
Snow,Fog	35	9.7
Snow,Haze	15	6.4
Snow,Ice Pellets	33	11.3
Thunderstorms	15	25.0
Thunderstorms,Heavy Rain Showers	9	2.4
Thunderstorms,Moderate Rain Showers,Fog	15	3.2
Thunderstorms,Rain	30	24.1
Thunderstorms,Rain Showers	32	25.0
Thunderstorms,Rain Showers,Fog	35	9.7
Thunderstorms,Rain,Fog	19	4.8

Press_kPa	
Weather Condition	
Clear	103.63
Cloudy	103.65
Drizzle	101.56
Drizzle,Fog	102.07
Drizzle,Ice Pellets,Fog	100.79
Drizzle,Snow	101.15
Drizzle,Snow,Fog	100.15
Fog	103.04
Freezing Drizzle	101.02
Freezing Drizzle,Fog	101.27
Freezing Drizzle,Haze	100.36
Freezing Drizzle,Snow	101.18



Freezing Fog	102.85
Freezing Rain	101.00
Freezing Rain,Fog	101.01
Freezing Rain,Haze	100.41
Freezing Rain,Ice Pellets,Fog	100.95
Freezing Rain,Snow Grains	98.56
Haze	102.97
Mainly Clear	103.59
Moderate Rain,Fog	99.98
Moderate Snow	100.67
Moderate Snow,Blowing Snow	100.64
Mostly Cloudy	103.65
Rain	102.26
Rain Showers	102.31
Rain Showers,Fog	99.83
Rain Showers,Snow Showers	101.11
Rain,Fog	101.77
Rain,Haze	100.61
Rain,Ice Pellets	100.12
Rain,Snow	101.07
Rain,Snow Grains	100.60
Rain,Snow,Fog	100.73
Rain,Snow,Ice Pellets	100.47
Snow	102.73
Snow Pellets	99.70
Snow Showers	102.50
Snow Showers,Fog	102.52
Snow,Blowing Snow	100.62
Snow,Fog	102.07
Snow,Haze	100.99
Snow,Ice Pellets	100.96
Thunderstorms	100.62
Thunderstorms,Heavy Rain Showers	100.26
Thunderstorms,Moderate Rain Showers,Fog	100.01
Thunderstorms,Rain	100.83
Thunderstorms,Rain Showers	101.06
Thunderstorms,Rain Showers,Fog	100.64
Thunderstorms,Rain,Fog	100.08

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

```
[67]:
```

Weather Condition	Date/Time	Temp_C	\
Clear	1/11/2012 1:00	-23.3	
Cloudy	1/1/2012 17:00	-21.4	
Drizzle	1/23/2012 21:00	1.1	
Drizzle,Fog	1/23/2012 20:00	0.0	

Drizzle,Ice Pellets,Fog	12/17/2012 9:00	0.4
Drizzle,Snow	12/17/2012 15:00	0.9
Drizzle,Snow,Fog	12/18/2012 21:00	0.3
Fog	1/1/2012 0:00	-16.0
Freezing Drizzle	1/13/2012 10:00	-9.0
Freezing Drizzle,Fog	1/1/2012 2:00	-6.4
Freezing Drizzle,Haze	2/1/2012 11:00	-5.8
Freezing Drizzle,Snow	1/13/2012 3:00	-8.3
Freezing Fog	1/22/2012 6:00	-19.0
Freezing Rain	1/13/2012 11:00	-6.5
Freezing Rain,Fog	1/17/2012 23:00	-6.1
Freezing Rain,Haze	2/1/2012 14:00	-4.9
Freezing Rain,Ice Pellets,Fog	12/17/2012 3:00	-2.6
Freezing Rain,Snow Grains	1/13/2012 9:00	-5.0
Haze	1/22/2012 12:00	-11.5
Mainly Clear	1/10/2012 11:00	-22.8
Moderate Rain,Fog	12/10/2012 8:00	1.7
Moderate Snow	1/12/2012 15:00	-6.3
Moderate Snow,Blowing Snow	12/27/2012 10:00	-5.5
Mostly Cloudy	1/1/2012 16:00	-23.2
Rain	1/1/2012 18:00	0.3
Rain Showers	1/1/2012 22:00	1.6
Rain Showers,Fog	10/20/2012 3:00	12.8
Rain Showers,Snow Showers	11/4/2012 8:00	2.1
Rain,Fog	1/23/2012 18:00	0.0
Rain,Haze	3/13/2012 7:00	4.0
Rain,Ice Pellets	12/18/2012 5:00	0.6
Rain,Snow	1/10/2012 5:00	0.6
Rain,Snow Grains	12/21/2012 0:00	1.9
Rain,Snow,Fog	12/8/2012 21:00	0.8
Rain,Snow,Ice Pellets	12/21/2012 1:00	0.9
Snow	1/10/2012 1:00	-16.7
Snow Pellets	11/24/2012 15:00	0.7
Snow Showers	1/12/2012 7:00	-13.3
Snow Showers,Fog	12/26/2012 9:00	-11.3
Snow,Blowing Snow	1/13/2012 21:00	-12.0
Snow,Fog	12/16/2012 15:00	-10.1
Snow,Haze	2/1/2012 17:00	-4.3
Snow,Ice Pellets	12/10/2012 3:00	-4.3
Thunderstorms	7/16/2012 1:00	21.6
Thunderstorms,Heavy Rain Showers	5/29/2012 6:00	10.9
Thunderstorms,Moderate Rain Showers,Fog	7/17/2012 6:00	19.6
Thunderstorms,Rain	5/25/2012 20:00	19.4
Thunderstorms,Rain Showers	5/29/2012 16:00	11.0
Thunderstorms,Rain Showers,Fog	6/29/2012 3:00	19.5
Thunderstorms,Rain,Fog	7/17/2012 5:00	20.6

Weather Condition	Dew Point Temp_C	Rel Hum_% \
Clear	-28.5	20
Cloudy	-26.8	18
Drizzle	-0.2	74
Drizzle,Fog	-1.6	85
Drizzle,Ice Pellets,Fog	-0.7	92
Drizzle,Snow	0.1	92
Drizzle,Snow,Fog	-0.1	92
Fog	-17.2	80
Freezing Drizzle	-12.2	78
Freezing Drizzle,Fog	-9.0	82
Freezing Drizzle,Haze	-8.3	81
Freezing Drizzle,Snow	-10.4	79
Freezing Fog	-22.9	71
Freezing Rain	-9.0	81
Freezing Rain,Fog	-8.7	82
Freezing Rain,Haze	-7.5	82
Freezing Rain,Ice Pellets,Fog	-3.7	92
Freezing Rain,Snow Grains	-7.3	84
Haze	-16.0	68
Mainly Clear	-28.0	20
Moderate Rain,Fog	0.8	94
Moderate Snow	-7.6	83
Moderate Snow,Blowing Snow	-6.6	92
Mostly Cloudy	-28.5	18
Rain	-5.7	40
Rain Showers	-7.2	37
Rain Showers,Fog	12.1	96
Rain Showers,Snow Showers	-1.8	75
Rain,Fog	-1.2	83
Rain,Haze	1.0	81
Rain,Ice Pellets	-0.6	92
Rain,Snow	-1.7	81
Rain,Snow Grains	-2.1	75
Rain,Snow,Fog	0.3	96
Rain,Snow,Ice Pellets	-0.7	88
Snow	-24.6	41
Snow Pellets	-6.4	59
Snow Showers	-19.3	52
Snow Showers,Fog	-12.7	89
Snow,Blowing Snow	-16.2	70
Snow,Fog	-12.0	77
Snow,Haze	-7.2	80
Snow,Ice Pellets	-5.9	76
Thunderstorms	19.4	67
Thunderstorms,Heavy Rain Showers	9.0	88

Thunderstorms,Moderate Rain Showers,Fog	18.5	93
Thunderstorms,Rain	18.2	83
Thunderstorms,Rain Showers	7.0	68
Thunderstorms,Rain Showers,Fog	16.1	80
Thunderstorms,Rain,Fog	18.6	88

Weather Condition	Wind Speed_km/h	Visibility_km \
Clear	0	11.3
Cloudy	0	11.3
Drizzle	0	6.4
Drizzle,Fog	0	1.0
Drizzle,Ice Pellets,Fog	20	4.0
Drizzle,Snow	9	9.7
Drizzle,Snow,Fog	7	2.4
Fog	0	0.2
Freezing Drizzle	6	4.8
Freezing Drizzle,Fog	6	3.6
Freezing Drizzle,Haze	9	2.0
Freezing Drizzle,Snow	6	2.4
Freezing Fog	0	0.2
Freezing Rain	7	2.8
Freezing Rain,Fog	7	2.8
Freezing Rain,Haze	6	2.0
Freezing Rain,Ice Pellets,Fog	28	8.0
Freezing Rain,Snow Grains	32	4.8
Haze	0	4.8
Mainly Clear	0	12.9
Moderate Rain,Fog	17	6.4
Moderate Snow	26	0.6
Moderate Snow,Blowing Snow	39	0.6
Mostly Cloudy	0	11.3
Rain	0	4.0
Rain Showers	0	6.4
Rain Showers,Fog	13	6.4
Rain Showers,Snow Showers	17	19.3
Rain,Fog	0	2.0
Rain,Haze	7	4.0
Rain,Ice Pellets	24	9.7
Rain,Snow	13	2.4
Rain,Snow Grains	26	25.0
Rain,Snow,Fog	9	6.4
Rain,Snow,Ice Pellets	17	4.8
Snow	0	1.0
Snow Pellets	35	2.4
Snow Showers	0	2.4
Snow Showers,Fog	7	4.0

Snow,Blowing Snow	24	0.6
Snow,Fog	4	1.2
Snow,Haze	0	4.0
Snow,Ice Pellets	19	2.8
Thunderstorms	0	24.1
Thunderstorms,Heavy Rain Showers	9	2.4
Thunderstorms,Moderate Rain Showers,Fog	15	3.2
Thunderstorms,Rain	4	16.1
Thunderstorms,Rain Showers	7	6.4
Thunderstorms,Rain Showers,Fog	7	9.7
Thunderstorms,Rain,Fog	19	4.8

Weather Condition	Press_kPa
Clear	99.52
Cloudy	98.39
Drizzle	97.84
Drizzle,Fog	98.65
Drizzle,Ice Pellets,Fog	100.79
Drizzle,Snow	100.63
Drizzle,Snow,Fog	97.79
Fog	98.31
Freezing Drizzle	98.44
Freezing Drizzle,Fog	98.74
Freezing Drizzle,Haze	100.28
Freezing Drizzle,Snow	99.19
Freezing Fog	101.97
Freezing Rain	98.22
Freezing Rain,Fog	98.32
Freezing Rain,Haze	100.34
Freezing Rain,Ice Pellets,Fog	100.95
Freezing Rain,Snow Grains	98.56
Haze	100.35
Mainly Clear	98.67
Moderate Rain,Fog	99.98
Moderate Snow	99.88
Moderate Snow,Blowing Snow	100.50
Mostly Cloudy	98.36
Rain	97.52
Rain Showers	98.51
Rain Showers,Fog	99.83
Rain Showers,Snow Showers	101.09
Rain,Fog	98.61
Rain,Haze	100.50
Rain,Ice Pellets	100.12
Rain,Snow	98.18
Rain,Snow Grains	100.60

Rain,Snow,Fog	100.73
Rain,Snow,Ice Pellets	99.85
Snow	97.75
Snow Pellets	99.70
Snow Showers	99.49
Snow Showers,Fog	100.63
Snow,Blowing Snow	98.11
Snow,Fog	99.38
Snow,Haze	100.61
Snow,Ice Pellets	99.40
Thunderstorms	99.84
Thunderstorms,Heavy Rain Showers	100.26
Thunderstorms,Moderate Rain Showers,Fog	100.01
Thunderstorms,Rain	100.19
Thunderstorms,Rain Showers	99.65
Thunderstorms,Rain Showers,Fog	99.71
Thunderstorms,Rain,Fog	100.08

```
[ ]: #13.Show all the records wherewheather Condition is Fog
```

```
[69]: data[data['Weather Condition'] == 'Fog']
```

```
[69]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
0	1/1/2012 0:00	-1.8		-3.9	86		4
1	1/1/2012 1:00	-1.8		-3.7	87		4
4	1/1/2012 4:00	-1.5		-3.3	88		7
5	1/1/2012 5:00	-1.4		-3.3	87		9
6	1/1/2012 6:00	-1.5		-3.1	89		7
...	...	...	...	...	...	...	...
8716	12/29/2012 4:00	-16.0		-17.2	90		6
8717	12/29/2012 5:00	-14.8		-15.9	91		4
8718	12/29/2012 6:00	-13.8		-15.3	88		4
8719	12/29/2012 7:00	-14.8		-16.4	88		7
8722	12/29/2012 10:00	-12.0		-13.3	90		7

	Visibility_km	Press_kPa	Weather Condition
0	8.0	101.24	Fog
1	8.0	101.24	Fog
4	4.8	101.23	Fog
5	6.4	101.27	Fog
6	6.4	101.29	Fog
...	...	...	...
8716	9.7	101.25	Fog
8717	6.4	101.25	Fog
8718	9.7	101.25	Fog
8719	8.0	101.22	Fog
8722	6.4	101.15	Fog

[150 rows x 8 columns]

```
[ ]: #14. Find all instance when 'Weather' is clear or 'Visibility' is above 40'
```

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

```
[72]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_kmh	\
67	1/3/2012 19:00	-16.9		-24.8	50	24	
106	1/5/2012 10:00	-6.0		-10.0	73	17	
107	1/5/2012 11:00	-5.6		-10.2	70	22	
108	1/5/2012 12:00	-4.7		-9.6	69	20	
109	1/5/2012 13:00	-4.4		-9.7	66	26	
110	1/5/2012 14:00	-5.1		-10.7	65	22	
111	1/5/2012 15:00	-4.3		-12.0	55	26	
114	1/5/2012 18:00	-7.1		-14.4	56	11	
115	1/5/2012 19:00	-9.2		-15.4	61	7	
116	1/5/2012 20:00	-9.8		-15.7	62	9	
117	1/5/2012 21:00	-9.0		-14.8	63	13	
183	1/8/2012 15:00	-6.6		-12.9	61	20	
241	1/11/2012 1:00	-10.7		-17.8	56	17	
242	1/11/2012 2:00	-12.0		-18.9	56	19	
243	1/11/2012 3:00	-12.7		-19.4	57	19	
244	1/11/2012 4:00	-13.4		-20.1	57	17	
324	1/14/2012 12:00	-17.5		-23.8	58	20	
325	1/14/2012 13:00	-17.1		-24.1	55	17	
326	1/14/2012 14:00	-16.7		-23.4	56	17	
327	1/14/2012 15:00	-16.7		-23.4	56	22	
344	1/15/2012 8:00	-23.3		-28.5	62	7	
345	1/15/2012 9:00	-22.2		-27.8	60	9	
346	1/15/2012 10:00	-20.6		-26.8	58	9	
347	1/15/2012 11:00	-19.3		-26.1	55	9	
348	1/15/2012 12:00	-18.0		-25.5	52	13	
349	1/15/2012 13:00	-16.8		-24.2	53	20	
350	1/15/2012 14:00	-16.0		-23.4	53	26	
351	1/15/2012 15:00	-15.4		-22.8	53	24	
352	1/15/2012 16:00	-15.1		-22.8	52	24	
353	1/15/2012 17:00	-16.2		-23.2	55	15	
354	1/15/2012 18:00	-16.3		-22.9	57	17	
355	1/15/2012 19:00	-16.3		-22.7	58	20	
356	1/15/2012 20:00	-16.7		-22.4	61	17	
357	1/15/2012 21:00	-16.9		-22.2	63	15	
358	1/15/2012 22:00	-16.9		-21.7	66	17	
359	1/15/2012 23:00	-16.9		-21.4	68	15	
360	1/16/2012 0:00	-17.1		-21.9	66	15	
361	1/16/2012 1:00	-17.8		-22.7	65	6	

362	1/16/2012 2:00	-18.5	-23.0	68	6
363	1/16/2012 3:00	-19.2	-23.8	67	6
364	1/16/2012 4:00	-18.7	-23.5	66	0
365	1/16/2012 5:00	-19.1	-23.3	69	0
366	1/16/2012 6:00	-18.7	-23.2	68	0
367	1/16/2012 7:00	-17.9	-21.5	73	4
368	1/16/2012 8:00	-17.9	-22.6	67	9
369	1/16/2012 9:00	-14.4	-20.7	59	22
370	1/16/2012 10:00	-13.6	-18.7	65	19
371	1/16/2012 11:00	-12.7	-17.7	66	20
372	1/16/2012 12:00	-10.7	-16.9	60	19
373	1/16/2012 13:00	-10.1	-16.1	61	13

	Visibility_km	Press_kPa	Weather Condition
67	25.0	101.74	Clear
106	48.3	100.45	Mainly Clear
107	48.3	100.41	Mainly Clear
108	48.3	100.38	Mainly Clear
109	48.3	100.40	Mainly Clear
110	48.3	100.46	Mainly Clear
111	48.3	100.52	Mainly Clear
114	25.0	100.71	Clear
115	25.0	100.80	Clear
116	25.0	100.83	Clear
117	25.0	100.83	Clear
183	48.3	102.04	Mostly Cloudy
241	25.0	101.49	Clear
242	25.0	101.57	Clear
243	25.0	101.64	Clear
244	25.0	101.66	Clear
324	48.3	101.16	Mostly Cloudy
325	48.3	101.18	Mainly Clear
326	48.3	101.20	Mostly Cloudy
327	48.3	101.24	Mostly Cloudy
344	24.1	102.45	Clear
345	48.3	102.57	Mainly Clear
346	48.3	102.66	Mainly Clear
347	48.3	102.68	Mainly Clear
348	48.3	102.67	Mainly Clear
349	48.3	102.65	Mainly Clear
350	48.3	102.66	Mainly Clear
351	48.3	102.71	Clear
352	48.3	102.79	Clear
353	25.0	102.85	Clear
354	25.0	102.89	Clear
355	25.0	102.94	Clear
356	25.0	102.98	Clear



357	25.0	103.02	Clear
358	25.0	103.07	Clear
359	25.0	103.09	Clear
360	25.0	103.09	Clear
361	25.0	103.05	Clear
362	25.0	103.08	Clear
363	25.0	103.07	Clear
364	25.0	103.05	Clear
365	25.0	103.02	Clear
366	25.0	103.01	Clear
367	48.3	102.96	Mainly Clear
368	48.3	102.90	Mostly Cloudy
369	48.3	102.75	Cloudy
370	48.3	102.62	Mostly Cloudy
371	48.3	102.44	Mostly Cloudy
372	48.3	102.17	Mostly Cloudy
373	48.3	101.92	Cloudy

```
[ ]: #15.Find all instance when
```

```
[73]: data.head(2)
```

```
[73]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
0	1/1/2012 0:00	-1.8		-3.9	86		4
1	1/1/2012 1:00	-1.8		-3.7	87		4

  

	Visibility_km	Press_kPa	Weather Condition
0	8.0	101.24	Fog
1	8.0	101.24	Fog

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

```
[74]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
106	1/5/2012 10:00	-6.0		-10.0	73		17
107	1/5/2012 11:00	-5.6		-10.2	70		22
108	1/5/2012 12:00	-4.7		-9.6	69		20
109	1/5/2012 13:00	-4.4		-9.7	66		26
110	1/5/2012 14:00	-5.1		-10.7	65		22
...	...	...	...	...	...	...	...
8749	12/30/2012 13:00	-12.4		-16.2	73		37
8750	12/30/2012 14:00	-11.8		-16.1	70		37
8751	12/30/2012 15:00	-11.3		-15.6	70		32
8752	12/30/2012 16:00	-11.4		-15.5	72		26
8756	12/30/2012 20:00	-13.8		-16.5	80		24

	Visibility_km	Press_kPa	Weather Condition
--	---------------	-----------	-------------------

106	48.3	100.45	Mainly Clear
107	48.3	100.41	Mainly Clear
108	48.3	100.38	Mainly Clear
109	48.3	100.40	Mainly Clear
110	48.3	100.46	Mainly Clear
...	...	...	...
8749	48.3	100.92	Mostly Cloudy
8750	48.3	100.96	Mainly Clear
8751	48.3	101.05	Mainly Clear
8752	48.3	101.15	Mainly Clear
8756	25.0	101.52	Clear

[2921 rows x 8 columns]

```
[ ]: 
```

```
[ ]: 
```

```
[ ]: 
```

```
[ ]: 
```

```
[ ]: 
```

```
[ ]: 
```