Weather Dataset

In [1]:

```
import pandas as pd
```

executed in 576ms, finished 15:37:18 2024-05-27

In [2]:

```
df = pd.read_csv(r"E:\data science with python & ai\hackersptint files\python pandas projects\Weather D
```

executed in 106ms, finished 15:37:19 2024-05-27

In [5]:

```
df.head()
```

executed in 30ms, finished 12:23:19 2024-05-27

Out[5]:

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

In [9]:

```
df.shape
```

executed in 4ms, finished 12:26:05 2024-05-27

Out[9]:

```
(8784, 8)
```

In [12]:

```
df.index
```

executed in 6ms, finished 12:27:43 2024-05-27

Out[12]:

```
RangeIndex(start=0, stop=8784, step=1)
```

In [13]:

```
df.columns
```

executed in 6ms, finished 12:28:13 2024-05-27

Out[13]:

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

In [15]:

```
df.dtypes
```

executed in 6ms, finished 12:28:52 2024-05-27

Out[15]:

```
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 [18]: df["Weather"].unique()
```

executed in 9ms, finished 12:31:54 2024-05-27

```
Out[18]: 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 [19]: df.nunique()
```

executed in 15ms, finished 12:33:33 2024-05-27

```
Out[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
```

```
In [23]: df.info()
```

executed in 19ms, finished 12:35:18 2024-05-27

```
<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 [25]:

```
df["Weather"].value_counts()
```

executed in 7ms, finished 12:36:41 2024-05-27

Out[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
```

In [ ]:

```
# Question - 1 FIND ALL THE UNIQUE "WIND SPEED" VALUES IN THE DATA.
```

In [27]:

```
df.columns
```

executed in 5ms, finished 12:38:21 2024-05-27

Out[27]:

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

In [3]:

```
df["Wind Speed_km/h"].unique()
```

executed in 11ms, finished 13:29:18 2024-05-27

Out[3]:

```
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 [29]:

```
df["Wind Speed_km/h"].nunique()
```

executed in 5ms, finished 12:40:17 2024-05-27

Out[29]:

```
34
```

```
# Question- 2 find the number of times when the "weather is exactly clear"
```

In [5]:

```
df.columns
```

executed in 5ms, finished 13:30:24 2024-05-27

Out[5]:

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

In [7]:
```
df["Weather"].value_counts()    # first method
```
executed in 7ms, finished 13:40:43 2024-05-27

Out[7]:
```
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
```

In [3]:
```
df.groupby("Weather").get_group("Clear")   # second method
```
executed in 34ms, finished 14:18:47 2024-05-27

Out[3]:

	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 [ ]:
```
# Question- 3 find the number of times when the "wind speed was exactly 4 km/h"
```

In [4]:
```
df.columns
```
executed in 5ms, finished 14:20:04 2024-05-27

Out[4]:
```
Index(['Date/Time', 'Temp_C', 'Dew Point Temp_C', 'Rel Hum_%',
       'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather'],
      dtype='object')
```

In [5]:
```
df["Wind Speed_km/h"].value_counts()
```

executed in 9ms, finished 14:22:18 2024-05-27

Out[5]:
```
9     830
11    791
13    735
15    719
7     677
17    666
19    616
6     609
20    496
4     474
22    439
24    374
0     309
26    242
28    205
30    161
32    139
33     85
35     53
37     45
39     24
41     22
44     14
43     13
48     13
46     11
52      7
57      5
50      4
2       2
83      1
70      1
63      1
54      1
Name: Wind Speed_km/h, dtype: int64
```

In [ ]:
```
# Question- 4 find out all the null values in the data
```

In [10]:
```
df.info(sum)  # no null values
```

executed in 11ms, finished 14:27:04 2024-05-27

```
<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 [12]:

```
df.isnull().sum()   # no null values
```

executed in 9ms, finished 14:27:53 2024-05-27

Out[12]:

```
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 [13]:

```
# Question- 5 Rename the column name "weather of the dataframe to weather condition"
```

executed in 3ms, finished 14:29:33 2024-05-27

In [15]:

```
df.rename(columns={"Weather":"Weather condition"},inplace=True)
```

executed in 4ms, finished 14:32:21 2024-05-27

In [16]:

```
df.columns
```

executed in 5ms, finished 14:32:32 2024-05-27

Out[16]:

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

In [ ]:

```
# Question- 6 What is the mean visibility
```

In [17]:

```
df.columns
```

executed in 5ms, finished 14:46:40 2024-05-27

Out[17]:

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

In [18]:

```
df["Visibility_km"].mean()
```

executed in 5ms, finished 14:47:01 2024-05-27

Out[18]:

```
27.664446721311478
```

In [ ]:

```
# Question- 7 What is the standard deviation "presure in this data"
```

In [19]:

```
df.columns
```

executed in 5ms, finished 14:53:16 2024-05-27

Out[19]:

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

In [20]:

```
df["Press_kPa"].std()
```

executed in 5ms, finished 14:54:24 2024-05-27

Out[20]:

```
0.8440047459486474
```

In [ ]:

```
# Question- 8 what is the variance of relative humidity in this data
```

In [23]:

```
df["Rel Hum_%"].var()
```

executed in 4ms, finished 14:57:06 2024-05-27

Out[23]:

```
286.2485501984998
```

In [ ]:
```
# Question- 9 find all instances when snow was recorded
```

In [3]:
```
df.columns
```
executed in 8ms, finished 15:37:41 2024-05-27

Out[3]:
```
Index(['Date/Time', 'Temp_C', 'Dew Point Temp_C', 'Rel Hum_%',
       'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather'],
      dtype='object')
```

In [4]:
```
df["Weather"].value_counts()
```
executed in 11ms, finished 15:39:25 2024-05-27

Out[4]:
```
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
```

In [5]:
```
df.groupby("Weather").get_group("Snow")
```
executed in 30ms, finished 15:40:48 2024-05-27

Out[5]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
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 [6]:
```
# question 10 find all instances when wind speed is above 24 and visibility is 25'
```
executed in 3ms, finished 15:45:20 2024-05-27

In [7]:
```
df.columns
```
executed in 5ms, finished 15:46:14 2024-05-27

Out[7]:
```
Index(['Date/Time', 'Temp_C', 'Dew Point Temp_C', 'Rel Hum_%',
       'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather'],
      dtype='object')
```

In [20]:
```
df[(df["Wind Speed_km/h"]>25)&(df["Visibility_km"]==25)]
```
executed in 14ms, finished 15:52:36 2024-05-27

Out[20]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
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 [21]:
```
# question 11 what is the mean value of each column against each weather condition
```
executed in 3ms, finished 15:54:06 2024-05-27

In [25]:

```
df.groupby("Weather").mean().head()
```

executed in 13ms, finished 15:55:57 2024-05-27

```
C:\Users\ADMIN\AppData\Local\Temp\ipykernel_12276\1480413102.py:1: FutureWarning: The default value o
f 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.
  df.groupby("Weather").mean().head()
```

Out[25]:

	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa
Weather						
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

In [26]:

```
# question 12 what is the minimum & maximum value of each column against each weather
```

executed in 3ms, finished 15:59:19 2024-05-27

In [28]:

```
df.groupby("Weather").min()
```

executed in 28ms, finished 16:03:14 2024-05-27

Rain,Fog	18:00						
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

In [29]:
```
df.groupby("Weather").max()
```
executed in 32ms, finished 16:03:31 2024-05-27

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
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

In [31]:
```
# question 13 show all the records where weather is fog
```
executed in 4ms, finished 16:08:33 2024-05-27

In [32]:
```
df.columns
```
executed in 4ms, finished 16:09:09 2024-05-27

Out[32]:
```
Index(['Date/Time', 'Temp_C', 'Dew Point Temp_C', 'Rel Hum_%',
       'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather'],
      dtype='object')
```

In [36]:
```
df[(df["Weather"]=="Fog")]
```
executed in 15ms, finished 16:13:21 2024-05-27

Out[36]:

	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
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
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 [ ]:
```
# question 14 find all instances when weather is clear or visibility is above 40
```

In [41]:
```
df[(df["Weather"]=="Clear")|(df["Visibility_km"]>40)]
```
executed in 15ms, finished 16:22:05 2024-05-27

Out[41]:

	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
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 [42]:
```
question 15 find all instances when weather is clear & RH is greter then 50 or visibility is above 40
```
executed in 4ms, finished 16:23:42 2024-05-27

In [43]:
```
df.columns
```
executed in 4ms, finished 16:27:01 2024-05-27

Out[43]:
```
Index(['Date/Time', 'Temp_C', 'Dew Point Temp_C', 'Rel Hum_%',
       'Wind Speed_km/h', 'Visibility_km', 'Press_kPa', 'Weather'],
      dtype='object')
```

In [47]:
```
df[(df["Weather"]=="Clear") & (df["Rel Hum_%"]>50) | (df["Visibility_km"]>40)]
```
executed in 16ms, finished 16:32:16 2024-05-27

Out[47]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather
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
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 [ ]:

In [ ]:

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