

sis-python-project-some-basic-keys

January 26, 2023

```
[6]: import pandas as pd
data=pd.read_csv("1. Weather Data.csv")
```

```
[7]: data
```

```
[7]:
```

	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]

1 How to analyze Data Frame?

```
[30]: data.info()
      # provide the basic information about data
```

```
<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
```

```
[8]: # .head() it show th 1st five rows
     data.head()
```

```
[8]:
```

	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

```
[10]: # shape it shows the total no of rows and mo of columns of tha data
      data.shape
```

```
[10]: (8784, 8)
```

```
[11]: # index
      #this attribute provides the index of the data frame
      data.index
```

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

```
[12]: # shows columns
data.columns
```

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

```
[13]: # it shows the data types of each columns
data.dtypes
```

```
[13]: 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
```

```
[14]: #unique value show the only unique value It can be applied only single column
data["Weather"].unique()
```

```
[14]: 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)
```

```
[15]: #nunique() it shows the total no of unique values each columns
data.nunique()
```

```
[15]: 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
```

```
[21]: data.count()
      # it show the total number of non null values in each columns or whole data
      ↪frame
```

```
[21]: 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
```

```
[23]: data["Weather"].count()
```

```
[23]: 8784
```

```
[28]: #value_count it show the unique values with there counts It can applied on
      ↪single columns

      data["Press_kPa"].value_counts()
```

```
[28]: 101.13      69
      101.36      57
      100.69      56
      101.06      54
      100.65      54
      ..
      98.18       1
      98.06       1
      98.00       1
      97.97       1
      98.19       1
      Name: Press_kPa, Length: 518, dtype: int64
```

```
[29]: data["Weather"].value_counts()
```

[29]:	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

```

```

[31]: # find the all unique values Wind speed in the data
data["Wind Speed_km/h"].unique()

```

```

[31]: 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)

```

```

[32]: data.nunique()

```

```

[32]: 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

```

```

[36]: data["Wind Speed_km/h"].nunique()

```

```

[36]: 34

```

2 find the values weather is exactly Clear

```

[38]: # find the values weather is exactly Clear
data.Weather.value_counts()

```

```

[38]: 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

```
[40]: # filterning
      #data.head(2)
      data[data.Weather=="Clear"]
```

```
[40]:      Date/Time  Temp_C  Dew Point  Temp_C  Rel Hum_%  Wind Speed_kmh/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]

```
[52]: data[data.Temp_C== -14.0]
```

	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
380	1/16/2012 20:00	-14.0		-18.3	70		13
488	1/21/2012 8:00	-14.0		-21.8	52		9
916	2/8/2012 4:00	-14.0		-21.0	55		4
1003	2/11/2012 19:00	-14.0		-21.2	54		7

	Visibility_km	Press_kPa	Weather
55	25.0	100.95	Snow
380	25.0	101.19	Cloudy
488	25.0	102.06	Cloudy
916	25.0	102.13	Clear
1003	25.0	100.74	Clear

```
[44]: data.Temp_C.value_counts()
```

16.6	65
1.1	58
0.8	47
1.5	45
19.3	44


```

..
-20.7    1
-21.0    1
 31.8    1
 32.6    1
-21.3    1
Name: Temp_C, Length: 533, dtype: int64

```

```
[41]: #groupby
data.groupby("Weather").get_group("Clear")
```

```
[41]:
```

	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 the wind speed was exactly 4

```
[59]: #data.head(2)
data[data["Wind Speed_km/h"]==4]
```

```
[59]:
```

	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 all null values in data

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

```
[61]: 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
```

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

```
[62]: 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 columns names

```
[63]: data.rename(columns={"Weather":"Weather Condication","Temp_C":"Temprature"})
```

```
[63]:
```

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

	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condication
0	4	8.0	101.24	Fog
1	4	8.0	101.24	Fog
2	7	4.0	101.26	Freezing Drizzle,Fog
3	6	4.0	101.27	Freezing Drizzle,Fog
4	7	4.8	101.23	Fog
...
8779	30	9.7	100.13	Snow
8780	24	9.7	100.03	Snow
8781	28	4.8	99.95	Snow
8782	28	9.7	99.91	Snow
8783	30	11.3	99.89	Snow

[8784 rows x 8 columns]

```
[ ]: # to change the data columns names parmanetly
data.rename(columns={"Weather":"Weather Condication",
                    "Temp_C":"Temprature"},inplace=True)
```

6 what is the mean value Visibility?

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

```
[64]: 27.664444672131151
```

```
[65]: data.Temp_C.mean()
```

```
[65]: 8.79814435336981
```

7 what is the standard Devitaion of pressure column

NOte= yadi columns ke names ke bich me space hoga to hum dot ke sath data ko select karege warna bracket ke sath

```
data.Press_kPa.std() # dot sath
```

```
data["Rel Hum_%"].var() # braket
```

```
[74]: 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
```

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

```
[66]: 0.8440047459486474
```

8 find the varience of column

```
[73]: data["Rel Hum_%"].var()
```

```
[73]: 286.2485501984998
```

9 find instance of when Snow was recorded

```
[80]: data[data.Weather=="Snow"].tail(10)
```

```
[80]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
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
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

```
[83]: data[data["Weather"].str.contains("Snow")]
```

```
[83]:
```

	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
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]

10 find all instance when speed is above 24 and Visibility is 25

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

```
[85]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/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				
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 waht is mean max and min value of each columns against each “weather condication”

```
[89]: data.groupby("Weather").mean()
```

```
[89]:
```

	Temp_C	Dew Point	Temp_C \
Weather			
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

	Rel Hum_%	Wind Speed_km/h \
Weather		
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		
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

```
[90]: data.groupby("Weather").max()
```

```
[90]:
```

	Date/Time	Temp_C	\
Weather			
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

	Dew Point Temp_C	Rel Hum_% \
Weather		
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

	Wind Speed_km/h	Visibility_km \
Weather		
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	
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

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

```
[94]:
```

	Date/Time	Temp_C	\
Weather			
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

	Dew Point Temp_C	Rel Hum_% \
Weather		
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

	Wind Speed_km/h	Visibility_km \
Weather		
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

Press_kPa

Weather	
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

[97]:

[97]:	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				
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]

12 Find all instance when Weather is clear or Visibility is above 40

```
[99]: data[(data["Weather"]=="Clear")&(data["Visibility_km"]>40)]
```

```
[99]:
```

	Date/Time	Temp_C	Dew Point	Temp_C	Rel Hum_%	Wind Speed_km/h	\
351	1/15/2012 15:00	-15.4		-22.8	53	24	
352	1/15/2012 16:00	-15.1		-22.8	52	24	
425	1/18/2012 17:00	-11.3		-18.8	54	26	
440	1/19/2012 8:00	-13.7		-18.4	68	19	
441	1/19/2012 9:00	-12.7		-17.2	69	17	
...	
8384	12/15/2012 8:00	-10.7		-15.6	67	13	
8385	12/15/2012 9:00	-10.4		-15.9	64	19	
8389	12/15/2012 13:00	-8.4		-14.7	60	19	
8631	12/25/2012 15:00	-7.1		-13.7	59	17	
8632	12/25/2012 16:00	-7.5		-13.9	60	11	

	Visibility_km	Press_kPa	Weather
351	48.3	102.71	Clear
352	48.3	102.79	Clear
425	48.3	101.54	Clear
440	48.3	101.84	Clear
441	48.3	101.73	Clear
...
8384	48.3	102.69	Clear
8385	48.3	102.74	Clear
8389	48.3	102.64	Clear
8631	48.3	101.98	Clear
8632	48.3	102.03	Clear

[313 rows x 8 columns]

```
[100]: data[(data["Weather"]=="Clear")|(data["Visibility_km"]>40)]
```

```
[100]:
```

	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
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
...
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
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
...
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

[3027 rows x 8 columns]

13 Find all instance weather is clear and Relative humidity is greater than 50 or Visibility is above 40

```
[104]: data[(data["Weather"]=="Clear")&(data["Rel_Hum_%">50)|(data["Visibility_km"]>40)]
```

```
[104]:
```

	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
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]

[]: