

weather-data-analysis

April 30, 2023

```
[1]: import pandas as pd
import numpy as np
```

```
[2]: df = pd.read_csv(r'Weather data.csv')
```

```
[3]: df.head()
```

```
[3]:
```

	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

0.0.1 Q1. Find the unique 'wind speed' values in the data ?

```
[4]: df['Wind Speed_km/h'].unique()
```

```
[4]: 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)
```

```
[5]: df['Wind Speed_km/h'].nunique()
```

```
[5]: 34
```

There are 34 unique values in the Wind Speed Column

0.0.2 Q2. Find the number of times when weather is exactly 'clear' ?

```
[7]: df[df['Weather']=="Clear"].count()
```

```
[7]: Date/Time      1326
     Temp_C        1326
     Dew Point Temp_C  1326
     Rel Hum_%      1326
     Wind Speed_km/h  1326
     Visibility_km   1326
     Press_kPa       1326
     Weather        1326
     dtype: int64
```

```
[8]: len(df[df['Weather']=="Clear"])
```

```
[8]: 1326
```

1326 times weather is clear

0.0.3 Q3. Find the number of times when wind speed is exactly '4 km/h' ?

```
[9]: df[df['Wind Speed_km/h']==4].count()
```

```
[9]: Date/Time      474
     Temp_C        474
     Dew Point Temp_C  474
     Rel Hum_%      474
     Wind Speed_km/h  474
     Visibility_km   474
     Press_kPa       474
     Weather        474
     dtype: int64
```

```
[10]: len(df[df['Wind Speed_km/h']==4])
```

```
[10]: 474
```

474 times the wind speed is exactly 4 km/h

0.0.4 Q4. Find out the null values in each column ?

```
[11]: df.isnull().sum()
```

```
[11]: 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

```

There is no null data

0.0.5 Q5. Rename the ‘weather’ column to the ‘weather condition’ in the data

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

```
[13]: df['Weather Condition'].head()
```

```

[13]: 0          Fog
      1          Fog
      2  Freezing Drizzle,Fog
      3  Freezing Drizzle,Fog
      4          Fog
      Name: Weather Condition, dtype: object

```

0.0.6 Q6. What is the mean of ‘Visibility’ column ?

```
[16]: print('Mean visibility is ----->>>>> ', round(df['Visibility_km'].mean()), 'km')
```

Mean visibility is ----->>>>> 28 km

0.0.7 Q7. What is the standard deviation of ‘Pressure’ in this data ?

```
[19]: print('Standard deviation of Pressure is ----->>>>> ', round(df['Press_kPa'].std(),2), ' kPa')
```

Standard deviation of Pressure is ----->>>>> 0.84 kPa

0.0.8 Q8. What is the variance of ‘Relative Humidity’ in this data ?

```
[21]: print('Variace of Relative Humidity is ----->>>>> ', round(df['Rel Hum_%'].var(),2))
```

Variace of Relative Humidity is ----->>>>> 286.25

0.0.9 Q9. Find how many times the ‘snow’ is recorded ?

```
[27]: print('There was',len(df[df['Weather Condition'].str.contains('snow',case=False)]), 'times snow is recorded')
```

There was 583 times snow is recorded

0.0.10 Q10. Find all the instances when ‘wind speed is above 24’ and ‘visibility is 25’
?

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

```
[28]:
```

	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 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]

0.0.11 Q11. What is the mean value of each column against each ‘weather condition’
?

```
[29]: df.groupby('Weather Condition').mean()
```

```
[29]:
```

	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
Rel Hum_% Wind Speed_km/h \		
Weather Condition		
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

0.0.12 Q12. What is the minimum and maximum value of each of against each weather condition ?

```
[30]: df.groupby('Weather Condition').agg({'Temp_C': ['min', 'max'], 'Dew Point_C': ['min', 'max'], 'Rel Hum_%': ['min', 'max'], 'Wind Speed_kmh': ['min', 'max'], 'Visibility_kmh': ['min', 'max'], 'Press_kPa': ['min', 'max']})
```

```
[30]:
```

Weather Condition	Temp_C		Dew Point Temp_C	
	min	max	min	max
Clear	-23.3	32.8	-28.5	20.4
Cloudy	-21.4	30.5	-26.8	22.6
Drizzle	1.1	18.8	-0.2	17.7
Drizzle,Fog	0.0	19.9	-1.6	19.1
Drizzle,Ice Pellets,Fog	0.4	0.4	-0.7	-0.7
Drizzle,Snow	0.9	1.2	0.1	0.2
Drizzle,Snow,Fog	0.3	1.1	-0.1	0.6
Fog	-16.0	20.8	-17.2	19.6
Freezing Drizzle	-9.0	-2.3	-12.2	-3.3
Freezing Drizzle,Fog	-6.4	-0.3	-9.0	-2.3
Freezing Drizzle,Haze	-5.8	-5.0	-8.3	-7.7
Freezing Drizzle,Snow	-8.3	-3.3	-10.4	-4.6
Freezing Fog	-19.0	-0.1	-22.9	-0.3
Freezing Rain	-6.5	0.3	-9.0	-1.7
Freezing Rain,Fog	-6.1	0.1	-8.7	-0.9
Freezing Rain,Haze	-4.9	-4.9	-7.5	-7.4
Freezing Rain,Ice Pellets,Fog	-2.6	-2.6	-3.7	-3.7
Freezing Rain,Snow Grains	-5.0	-5.0	-7.3	-7.3
Haze	-11.5	14.1	-16.0	11.1
Mainly Clear	-22.8	33.0	-28.0	21.2
Moderate Rain,Fog	1.7	1.7	0.8	0.8
Moderate Snow	-6.3	-4.9	-7.6	-6.7
Moderate Snow,Blowing Snow	-5.5	-5.4	-6.6	-6.4
Mostly Cloudy	-23.2	32.4	-28.5	24.4
Rain	0.3	22.8	-5.7	20.4

Rain Showers	1.6	26.4	-7.2	23.0
Rain Showers,Fog	12.8	12.8	12.1	12.1
Rain Showers,Snow Showers	2.1	2.2	-1.8	-1.2
Rain,Fog	0.0	21.7	-1.2	19.5
Rain,Haze	4.0	5.5	1.0	2.9
Rain,Ice Pellets	0.6	0.6	-0.6	-0.6
Rain,Snow	0.6	1.7	-1.7	0.5
Rain,Snow Grains	1.9	1.9	-2.1	-2.1
Rain,Snow,Fog	0.8	0.8	0.3	0.3
Rain,Snow,Ice Pellets	0.9	1.3	-0.7	0.1
Snow	-16.7	3.7	-24.6	0.3
Snow Pellets	0.7	0.7	-6.4	-6.4
Snow Showers	-13.3	2.9	-19.3	-0.7
Snow Showers,Fog	-11.3	-10.0	-12.7	-11.1
Snow,Blowing Snow	-12.0	-1.4	-16.2	-2.9
Snow,Fog	-10.1	1.1	-12.0	0.8
Snow,Haze	-4.3	-3.6	-7.2	-6.4
Snow,Ice Pellets	-4.3	0.8	-5.9	-1.7
Thunderstorms	21.6	26.7	19.4	20.1
Thunderstorms,Heavy Rain Showers	10.9	10.9	9.0	9.0
Thunderstorms,Moderate Rain Showers,Fog	19.6	19.6	18.5	18.5
Thunderstorms,Rain	19.4	21.3	18.2	19.1
Thunderstorms,Rain Showers	11.0	25.5	7.0	23.1
Thunderstorms,Rain Showers,Fog	19.5	22.9	16.1	21.3
Thunderstorms,Rain,Fog	20.6	20.6	18.6	18.6

Weather Condition	Rel Hum_%		Wind Speed_km/h		\
	min	max	min	max	
Clear	20	99	0	33	
Cloudy	18	99	0	54	
Drizzle	74	96	0	30	
Drizzle,Fog	85	100	0	28	
Drizzle,Ice Pellets,Fog	92	92	20	20	
Drizzle,Snow	92	95	9	19	
Drizzle,Snow,Fog	92	98	7	32	
Fog	80	100	0	22	
Freezing Drizzle	78	93	6	26	
Freezing Drizzle,Fog	82	94	6	33	
Freezing Drizzle,Haze	81	83	9	11	
Freezing Drizzle,Snow	79	94	6	24	
Freezing Fog	71	99	0	9	
Freezing Rain	81	92	7	28	
Freezing Rain,Fog	82	93	7	26	
Freezing Rain,Haze	82	83	6	9	
Freezing Rain,Ice Pellets,Fog	92	92	28	28	
Freezing Rain,Snow Grains	84	84	32	32	

Haze	68	86	0	17
Mainly Clear	20	99	0	63
Moderate Rain,Fog	94	94	17	17
Moderate Snow	83	93	26	39
Moderate Snow,Blowing Snow	92	93	39	41
Mostly Cloudy	18	100	0	83
Rain	40	99	0	52
Rain Showers	37	97	0	41
Rain Showers,Fog	96	96	13	13
Rain Showers,Snow Showers	75	78	17	28
Rain,Fog	83	100	0	46
Rain,Haze	81	86	7	17
Rain,Ice Pellets	92	92	24	24
Rain,Snow	81	94	13	52
Rain,Snow Grains	75	75	26	26
Rain,Snow,Fog	96	96	9	9
Rain,Snow,Ice Pellets	88	94	17	28
Snow	41	96	0	57
Snow Pellets	59	59	35	35
Snow Showers	52	94	0	37
Snow Showers,Fog	89	92	7	22
Snow,Blowing Snow	70	91	24	48
Snow,Fog	77	99	4	35
Snow,Haze	80	81	0	15
Snow,Ice Pellets	76	92	19	33
Thunderstorms	67	87	0	15
Thunderstorms,Heavy Rain Showers	88	88	9	9
Thunderstorms,Moderate Rain Showers,Fog	93	93	15	15
Thunderstorms,Rain	83	93	4	30
Thunderstorms,Rain Showers	68	98	7	32
Thunderstorms,Rain Showers,Fog	80	91	7	35
Thunderstorms,Rain,Fog	88	88	19	19

Weather Condition	Visibility_km		Press_kPa	
	min	max	min	max
Clear	11.3	48.3	99.52	103.63
Cloudy	11.3	48.3	98.39	103.65
Drizzle	6.4	25.0	97.84	101.56
Drizzle,Fog	1.0	9.7	98.65	102.07
Drizzle,Ice Pellets,Fog	4.0	4.0	100.79	100.79
Drizzle,Snow	9.7	11.3	100.63	101.15
Drizzle,Snow,Fog	2.4	9.7	97.79	100.15
Fog	0.2	9.7	98.31	103.04
Freezing Drizzle	4.8	12.9	98.44	101.02
Freezing Drizzle,Fog	3.6	8.0	98.74	101.27
Freezing Drizzle,Haze	2.0	4.0	100.28	100.36

Freezing Drizzle,Snow	2.4	12.9	99.19	101.18
Freezing Fog	0.2	0.8	101.97	102.85
Freezing Rain	2.8	16.1	98.22	101.00
Freezing Rain,Fog	2.8	9.7	98.32	101.01
Freezing Rain,Haze	2.0	2.8	100.34	100.41
Freezing Rain,Ice Pellets,Fog	8.0	8.0	100.95	100.95
Freezing Rain,Snow Grains	4.8	4.8	98.56	98.56
Haze	4.8	9.7	100.35	102.97
Mainly Clear	12.9	48.3	98.67	103.59
Moderate Rain,Fog	6.4	6.4	99.98	99.98
Moderate Snow	0.6	0.8	99.88	100.67
Moderate Snow,Blowing Snow	0.6	0.6	100.50	100.64
Mostly Cloudy	11.3	48.3	98.36	103.65
Rain	4.0	48.3	97.52	102.26
Rain Showers	6.4	48.3	98.51	102.31
Rain Showers,Fog	6.4	6.4	99.83	99.83
Rain Showers,Snow Showers	19.3	24.1	101.09	101.11
Rain,Fog	2.0	9.7	98.61	101.77
Rain,Haze	4.0	9.7	100.50	100.61
Rain,Ice Pellets	9.7	9.7	100.12	100.12
Rain,Snow	2.4	25.0	98.18	101.07
Rain,Snow Grains	25.0	25.0	100.60	100.60
Rain,Snow,Fog	6.4	6.4	100.73	100.73
Rain,Snow,Ice Pellets	4.8	6.4	99.85	100.47
Snow	1.0	25.0	97.75	102.73
Snow Pellets	2.4	2.4	99.70	99.70
Snow Showers	2.4	48.3	99.49	102.50
Snow Showers,Fog	4.0	9.7	100.63	102.52
Snow,Blowing Snow	0.6	9.7	98.11	100.62
Snow,Fog	1.2	9.7	99.38	102.07
Snow,Haze	4.0	6.4	100.61	100.99
Snow,Ice Pellets	2.8	11.3	99.40	100.96
Thunderstorms	24.1	25.0	99.84	100.62
Thunderstorms,Heavy Rain Showers	2.4	2.4	100.26	100.26
Thunderstorms,Moderate Rain Showers,Fog	3.2	3.2	100.01	100.01
Thunderstorms,Rain	16.1	24.1	100.19	100.83
Thunderstorms,Rain Showers	6.4	25.0	99.65	101.06
Thunderstorms,Rain Showers,Fog	9.7	9.7	99.71	100.64
Thunderstorms,Rain,Fog	4.8	4.8	100.08	100.08

0.0.13 Q13. Show all the records when weather condition is fog

```
[38]: df[df['Weather Condition'].str.contains('fog', case=False)]
```

```
[38]:
```

	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
...
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
8770	12/31/2012 10:00	-7.4	-8.9	89	4

	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
...
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
8770	6.4	101.05	Snow,Fog

[426 rows x 8 columns]

0.0.14 Q14. Find all the instances when ‘weather is clear’ and ‘visibility is above 40’
?

```
[39]: df[(df['Weather Condition'] == 'Clear') & (df['Visibility_km'] > 40)]
```

```
[39]:
```

	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 Condition
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]

0.0.15 Q15. Find all the instances where ‘weather is clear’ and ‘relative humidity is greater than 50’ or ‘visibility is above 40’ ?

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

```
[43]:
```

	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]

```
[ ]:
```