

```
In [55]: import numpy as np
import pandas as pd
```

```
In [3]: data=pd.read_csv("C:/Users/Vivek/OneDrive/Desktop/weather.csv")
data
```

Out[3]:

	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
...	...	...	...	...	...	...	...	...
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Snow
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Snow
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Snow
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Snow
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Snow

8784 rows × 8 columns

```
In [4]: data.head(6)
```

```
Out[4]:
```

	Date/ Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	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
5	1/1/2012 5:00	-1.4	-3.3	87	9	6.4	101.27	Fog

```
In [10]: Q1:- Find all the unique "Wind Speed" values in the Data?

Q2:- Find the no. of times when the "Weather is exactly clear"?

Q3:- Find the number of times when the "Wind Speed" was exactly 4Km/hr?

Q4:- Find out all the null values in the data?

Q5:- Rename the column "Weather" to "Weather Condition".

Q6:- What is the mean "Visibility"?

Q7:- What is the Standard Deviation of "Pressure" in this data?

Q8:- What is the variance of "Relative Humidity" in this data?

Q9:- Find all the instances when "Snow" was recorded?

Q10:- Find all the instances when "Wind Speed" is above 24 and "Visibilty is 2

Q11:- What is the mean value of each column against each "Weather Condition"?

Q12:- What is the minimum and maximum value of each column of "Weather Condi

Q13:- Show all the records where Weather Condition is "Fog"?

Q14:- Find all the instances when "Weather is Clear" or "Visibilty is above 4

Q15:- Find all the instances when:

(A) 'Weather is clear' and 'Relative Humidity' is greater than 50
OR
(B) 'Visibility is above 40'
```

Cell In[10], line 5

```
Q3:- Find the number of times when the "Wind Speed" was exactly 4Km/hr?
                                     ^
```

**SyntaxError:** invalid decimal literal

In [5]: *#Q1:- Find all the unique "Wind Speed" values in the Data?*

```
data.head()
```

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 [6]: `data["Wind Speed_km/h"].unique()`

Out[6]: 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 [34]: *#Q2:- Find the no. of times when the "Weather is exactly clear"?*

```
data.head(5)
```

Out[34]:

	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 [7]: data[data["Weather"]=="Clear"]
```

Out[7]:

	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 [50]: #Q3:- Find the number of times when the "Wind Speed" was exactly 4Km/hr?
data.head()
```

Out[50]:

	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]: x=data[data["Wind Speed_km/h"]==4]
x
x["Wind Speed_km/h"].count()
```

Out[9]: 474

```
In [61]: #Q4:- Find out all the null values in the data?

data.head()
```

Out[61]:

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

Out[10]:

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 [12]: #Q5:- Rename the column "Weather" to "Weather Condition".
```

```
In [15]: data.rename(columns={"Weather": "Weather Condition"}, inplace=True)
data
```

Out[15]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press_kPa	Weather Condition
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
...	...	...	...	...	...	...	...	...
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Snow
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Snow
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Snow
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Snow
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Snow

8784 rows × 8 columns

```
In [16]: #Q6:- What is the mean "Visibility"?
```

```
In [18]: data["Visibility_km"].mean()
```

Out[18]: 27.664446721311478

```
In [19]: #Q7:- What is the Standard Deviation of "Pressure" in this data?
```

```
In [22]: data["Press_kPa"].std()
```

Out[22]: 0.8440047459486474

```
In [24]: #Q8:- What is the variance of "Relative Humidity" in this data?
```

```
In [28]: data["Rel Hum_%"].var()
```

Out[28]: 286.2485501984998

In [29]: *#Q9:- Find all the instances when "Snow" was recorded?*

In [38]: `data[data["Weather Condition"].str.contains("Snow")]`

Out[38]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press_kPa	Weather Condition
41	1/2/2012 17:00	-2.1	-9.5	57	22	25.0	99.66	Snow Showers
44	1/2/2012 20:00	-5.6	-13.4	54	24	25.0	100.07	Snow Showers
45	1/2/2012 21:00	-5.8	-12.8	58	26	25.0	100.15	Snow Showers
47	1/2/2012 23:00	-7.4	-14.1	59	17	19.3	100.27	Snow Showers
48	1/3/2012 0:00	-9.0	-16.0	57	28	25.0	100.35	Snow Showers
...	...	...	...	...	...	...	...	...
8779	12/31/2012 19:00	0.1	-2.7	81	30	9.7	100.13	Snow
8780	12/31/2012 20:00	0.2	-2.4	83	24	9.7	100.03	Snow
8781	12/31/2012 21:00	-0.5	-1.5	93	28	4.8	99.95	Snow
8782	12/31/2012 22:00	-0.2	-1.8	89	28	9.7	99.91	Snow
8783	12/31/2012 23:00	0.0	-2.1	86	30	11.3	99.89	Snow

583 rows × 8 columns

In [34]: *#Q10:- Find all the instances when "Wind Speed" is above 24 and "Visibilty is*



```
In [41]: data[(data["Wind Speed_km/h"]>24) & (data["Visibility_km"]==25)]
```

Out[41]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press_kPa	Weather Condition
<b>23</b>	1/1/2012 23:00	5.3	2.0	79	30	25.0	99.31	Cloudy
<b>24</b>	1/2/2012 0:00	5.2	1.5	77	35	25.0	99.26	Rain Showers
<b>25</b>	1/2/2012 1:00	4.6	0.0	72	39	25.0	99.26	Cloudy
<b>26</b>	1/2/2012 2:00	3.9	-0.9	71	32	25.0	99.26	Mostly Cloudy
<b>27</b>	1/2/2012 3:00	3.7	-1.5	69	33	25.0	99.30	Mostly Cloudy
...	...	...	...	...	...	...	...	...
<b>8705</b>	12/28/2012 17:00	-8.6	-12.0	76	26	25.0	101.34	Mainly Clear
<b>8753</b>	12/30/2012 17:00	-12.1	-15.8	74	28	25.0	101.26	Mainly Clear
<b>8755</b>	12/30/2012 19:00	-13.4	-16.5	77	26	25.0	101.47	Mainly Clear
<b>8759</b>	12/30/2012 23:00	-12.1	-15.1	78	28	25.0	101.52	Mostly Cloudy
<b>8760</b>	12/31/2012 0:00	-11.1	-14.4	77	26	25.0	101.51	Cloudy

308 rows × 8 columns

```
In [42]: #Q11:- What is the mean value of each column against each "Weather Condition"?
```

```
In [110]: data.groupby(["Weather Condition"])["Visibility_km"].mean()
```

```
Out[110]: Weather Condition
Clear                30.153243
Cloudy              26.625752
Drizzle            17.931707
Drizzle,Fog         5.257500
Drizzle,Ice Pellets,Fog  4.000000
Drizzle,Snow       10.500000
Drizzle,Snow,Fog    5.513333
Fog                 6.248000
Freezing Drizzle    9.200000
Freezing Drizzle,Fog  5.266667
Freezing Drizzle,Haze  2.666667
Freezing Drizzle,Snow  5.872727
Freezing Fog        0.650000
Freezing Rain       8.242857
Freezing Rain,Fog   7.550000
Freezing Rain,Haze  2.400000
Freezing Rain,Ice Pellets,Fog  8.000000
Freezing Rain,Snow Grains  4.800000
Haze                7.831250
Mainly Clear        34.264862
Moderate Rain,Fog   6.400000
Moderate Snow       0.750000
Moderate Snow,Blowing Snow  0.600000
Mostly Cloudy       31.253842
Rain                18.856536
Rain Showers        22.816489
Rain Showers,Fog    6.400000
Rain Showers,Snow Showers  21.700000
Rain,Fog            6.873276
Rain,Haze           6.700000
Rain,Ice Pellets    9.700000
Rain,Snow           11.672222
Rain,Snow Grains    25.000000
Rain,Snow,Fog       6.400000
Rain,Snow,Ice Pellets  6.000000
Snow                11.171795
Snow Pellets        2.400000
Snow Showers        20.158333
Snow Showers,Fog    7.025000
Snow,Blowing Snow   4.105263
Snow,Fog            4.537838
Snow,Haze           4.640000
Snow,Ice Pellets    7.416667
Thunderstorms       24.550000
Thunderstorms,Heavy Rain Showers  2.400000
Thunderstorms,Moderate Rain Showers,Fog  3.200000
Thunderstorms,Rain  19.833333
Thunderstorms,Rain Showers  15.893750
Thunderstorms,Rain Showers,Fog  9.700000
Thunderstorms,Rain,Fog  4.800000
Name: Visibility_km, dtype: float64
```

In [78]: *#Q12:- What is the minimum and maximum value of each column of "Weather Condit*

```
In [82]: data.groupby(["Weather Condition"]).max()
```

```
Out[82]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press
Weather Condition							
Clear	9/9/2012 5:00	32.8	20.4	99	33	48.3	1013.2
Cloudy	9/9/2012 23:00	30.5	22.6	99	54	48.3	1013.2
Drizzle	9/30/2012 3:00	18.8	17.7	96	30	25.0	1013.2
Drizzle,Fog	9/30/2012 2:00	19.9	19.1	100	28	9.7	1013.2
Drizzle,Ice Pellets,Fog	12/17/2012 9:00	0.4	-0.7	92	20	4.0	1013.2
Drizzle,Snow	12/19/2012 18:00	1.2	0.2	95	19	11.3	1013.2
Drizzle,Snow,Fog	12/22/2012 3:00	1.1	0.6	98	32	9.7	1013.2
Fog	9/22/2012 0:00	20.8	19.6	100	22	9.7	1013.2
Freezing Drizzle	2/1/2012 5:00	-2.3	-3.3	93	26	12.9	1013.2
Freezing Drizzle,Fog	12/10/2012 5:00	-0.3	-2.3	94	33	8.0	1013.2
Freezing Drizzle,Haze	2/1/2012 13:00	-5.0	-7.7	83	11	4.0	1013.2
Freezing Drizzle,Snow	3/2/2012 12:00	-3.3	-4.6	94	24	12.9	1013.2
Freezing Fog	3/17/2012 6:00	-0.1	-0.3	99	9	0.8	1013.2
Freezing Rain	2/1/2012 7:00	0.3	-1.7	92	28	16.1	1013.2
Freezing Rain,Fog	12/17/2012 1:00	0.1	-0.9	93	26	9.7	1013.2
Freezing Rain,Haze	2/1/2012 15:00	-4.9	-7.4	83	9	2.8	1013.2
Freezing Rain,Ice Pellets,Fog	12/17/2012 3:00	-2.6	-3.7	92	28	8.0	1013.2
Freezing Rain,Snow Grains	1/13/2012 9:00	-5.0	-7.3	84	32	4.8	1013.2
Haze	3/13/2012 23:00	14.1	11.1	86	17	9.7	1013.2
Mainly Clear	9/9/2012 9:00	33.0	21.2	99	63	48.3	1013.2

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press
Weather Condition							
Moderate Rain,Fog	12/10/2012 8:00	1.7	0.8	94	17	6.4	1013.2
Moderate Snow	12/27/2012 9:00	-4.9	-6.7	93	39	0.8	1013.2
Moderate Snow,Blowing Snow	12/27/2012 12:00	-5.4	-6.4	93	41	0.6	1013.2
Mostly Cloudy	9/9/2012 2:00	32.4	24.4	100	83	48.3	1013.2
Rain	9/5/2012 2:00	22.8	20.4	99	52	48.3	1013.2
Rain Showers	9/8/2012 16:00	26.4	23.0	97	41	48.3	1013.2
Rain Showers,Fog	10/20/2012 3:00	12.8	12.1	96	13	6.4	1013.2
Rain Showers,Snow Showers	12/5/2012 10:00	2.2	-1.2	78	28	24.1	1013.2
Rain,Fog	9/30/2012 23:00	21.7	19.5	100	46	9.7	1013.2
Rain,Haze	3/13/2012 9:00	5.5	2.9	86	17	9.7	1013.2
Rain,Ice Pellets	12/18/2012 5:00	0.6	-0.6	92	24	9.7	1013.2
Rain,Snow	4/23/2012 3:00	1.7	0.5	94	52	25.0	1013.2
Rain,Snow Grains	12/21/2012 0:00	1.9	-2.1	75	26	25.0	1013.2
Rain,Snow,Fog	12/8/2012 21:00	0.8	0.3	96	9	6.4	1013.2
Rain,Snow,Ice Pellets	12/21/2012 5:00	1.3	0.1	94	28	6.4	1013.2
Snow	4/27/2012 9:00	3.7	0.3	96	57	25.0	1013.2
Snow Pellets	11/24/2012 15:00	0.7	-6.4	59	35	2.4	1013.2
Snow Showers	3/4/2012 21:00	2.9	-0.7	94	37	48.3	1013.2
Snow Showers,Fog	12/29/2012 13:00	-10.0	-11.1	92	22	9.7	1013.2
Snow,Blowing Snow	2/25/2012 9:00	-1.4	-2.9	91	48	9.7	1013.2
Snow,Fog	3/14/2012 19:00	1.1	0.8	99	35	9.7	1013.2
Snow,Haze	2/1/2012 21:00	-3.6	-6.4	81	15	6.4	1013.2

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press
<b>Weather Condition</b>							
<b>Snow,Ice Pellets</b>	3/3/2012 4:00	0.8	-1.7	92	33	11.3	10
<b>Thunderstorms</b>	7/4/2012 16:00	26.7	20.1	87	15	25.0	10
<b>Thunderstorms,Heavy Rain Showers</b>	5/29/2012 6:00	10.9	9.0	88	9	2.4	10
<b>Thunderstorms,Moderate Rain Showers,Fog</b>	7/17/2012 6:00	19.6	18.5	93	15	3.2	10
<b>Thunderstorms,Rain</b>	7/23/2012 18:00	21.3	19.1	93	30	24.1	10
<b>Thunderstorms,Rain Showers</b>	9/8/2012 4:00	25.5	23.1	98	32	25.0	10
<b>Thunderstorms,Rain Showers,Fog</b>	7/31/2012 20:00	22.9	21.3	91	35	9.7	10
<b>Thunderstorms,Rain,Fog</b>	7/17/2012 5:00	20.6	18.6	88	19	4.8	10

```
In [84]: data.groupby(["Weather Condition"]).min()
```

```
Out[84]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press
Weather Condition							
	Clear	1/11/2012 1:00	-23.3	-28.5	20	0	11.3
	Cloudy	1/1/2012 17:00	-21.4	-26.8	18	0	11.3
	Drizzle	1/23/2012 21:00	1.1	-0.2	74	0	6.4
	Drizzle,Fog	1/23/2012 20:00	0.0	-1.6	85	0	1.0
	Drizzle,Ice Pellets,Fog	12/17/2012 9:00	0.4	-0.7	92	20	4.0
	Drizzle,Snow	12/17/2012 15:00	0.9	0.1	92	9	9.7
	Drizzle,Snow,Fog	12/18/2012 21:00	0.3	-0.1	92	7	2.4
	Fog	1/1/2012 0:00	-16.0	-17.2	80	0	0.2
	Freezing Drizzle	1/13/2012 10:00	-9.0	-12.2	78	6	4.8
	Freezing Drizzle,Fog	1/1/2012 2:00	-6.4	-9.0	82	6	3.6
	Freezing Drizzle,Haze	2/1/2012 11:00	-5.8	-8.3	81	9	2.0
	Freezing Drizzle,Snow	1/13/2012 3:00	-8.3	-10.4	79	6	2.4
	Freezing Fog	1/22/2012 6:00	-19.0	-22.9	71	0	0.2
	Freezing Rain	1/13/2012 11:00	-6.5	-9.0	81	7	2.8
	Freezing Rain,Fog	1/17/2012 23:00	-6.1	-8.7	82	7	2.8
	Freezing Rain,Haze	2/1/2012 14:00	-4.9	-7.5	82	6	2.0
	Freezing Rain,Ice Pellets,Fog	12/17/2012 3:00	-2.6	-3.7	92	28	8.0
	Freezing Rain,Snow Grains	1/13/2012 9:00	-5.0	-7.3	84	32	4.8
	Haze	1/22/2012 12:00	-11.5	-16.0	68	0	4.8
	Mainly Clear	1/10/2012 11:00	-22.8	-28.0	20	0	12.9

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press
<b>Weather Condition</b>							
Moderate Rain,Fog	12/10/2012 8:00	1.7	0.8	94	17	6.4	!
Moderate Snow	1/12/2012 15:00	-6.3	-7.6	83	26	0.6	!
Moderate Snow,Blowing Snow	12/27/2012 10:00	-5.5	-6.6	92	39	0.6	10
Mostly Cloudy	1/1/2012 16:00	-23.2	-28.5	18	0	11.3	!
Rain	1/1/2012 18:00	0.3	-5.7	40	0	4.0	!
Rain Showers	1/1/2012 22:00	1.6	-7.2	37	0	6.4	!
Rain Showers,Fog	10/20/2012 3:00	12.8	12.1	96	13	6.4	!
Rain Showers,Snow Showers	11/4/2012 8:00	2.1	-1.8	75	17	19.3	10
Rain,Fog	1/23/2012 18:00	0.0	-1.2	83	0	2.0	!
Rain,Haze	3/13/2012 7:00	4.0	1.0	81	7	4.0	10
Rain,Ice Pellets	12/18/2012 5:00	0.6	-0.6	92	24	9.7	10
Rain,Snow	1/10/2012 5:00	0.6	-1.7	81	13	2.4	!
Rain,Snow Grains	12/21/2012 0:00	1.9	-2.1	75	26	25.0	10
Rain,Snow,Fog	12/8/2012 21:00	0.8	0.3	96	9	6.4	10
Rain,Snow,Ice Pellets	12/21/2012 1:00	0.9	-0.7	88	17	4.8	!
Snow	1/10/2012 1:00	-16.7	-24.6	41	0	1.0	!
Snow Pellets	11/24/2012 15:00	0.7	-6.4	59	35	2.4	!
Snow Showers	1/12/2012 7:00	-13.3	-19.3	52	0	2.4	!
Snow Showers,Fog	12/26/2012 9:00	-11.3	-12.7	89	7	4.0	10
Snow,Blowing Snow	1/13/2012 21:00	-12.0	-16.2	70	24	0.6	!
Snow,Fog	12/16/2012 15:00	-10.1	-12.0	77	4	1.2	!
Snow,Haze	2/1/2012 17:00	-4.3	-7.2	80	0	4.0	10



	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press
Weather Condition							
Snow,Ice Pellets	12/10/2012 3:00	-4.3	-5.9	76	19	2.8	!
Thunderstorms	7/16/2012 1:00	21.6	19.4	67	0	24.1	!
Thunderstorms,Heavy Rain Showers	5/29/2012 6:00	10.9	9.0	88	9	2.4	10
Thunderstorms,Moderate Rain Showers,Fog	7/17/2012 6:00	19.6	18.5	93	15	3.2	10
Thunderstorms,Rain	5/25/2012 20:00	19.4	18.2	83	4	16.1	10
Thunderstorms,Rain Showers	5/29/2012 16:00	11.0	7.0	68	7	6.4	!
Thunderstorms,Rain Showers,Fog	6/29/2012 3:00	19.5	16.1	80	7	9.7	!
Thunderstorms,Rain,Fog	7/17/2012 5:00	20.6	18.6	88	19	4.8	10

In [85]: *#Q13:- Show all the records where Weather Condition is "Fog"?*

```
In [87]: data[data["Weather Condition"]=="Fog"]
```

Out[87]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/h	Visibility_km	Press_kPa	Weather Condition
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 [88]: #Q14:- Find all the instances when "Weather is Clear" or "Visibilty is above
```

```
In [96]: data[(data["Weather Condition"]=="Clear")|(data["Visibility_km"]>40)]
```

Out[96]:

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press_kPa	Weather Condition
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 [99]: #Q15:- Find all the instances when:
```

```
#(A) 'Weather is clear' and 'Relative Humidity' is greater than 50  
#OR  
#(B) 'Visibility is above 40'
```

```
In [103]: data[(data["Weather Condition"]=="Clear") & (data["Rel Hum_%"]>50)|(data["Visi
```

```
Out[103]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_km/ h	Visibility_km	Press_kPa	Weather Condition
<b>106</b>	1/5/2012 10:00	-6.0	-10.0	73	17	48.3	100.45	Mainly Clear
<b>107</b>	1/5/2012 11:00	-5.6	-10.2	70	22	48.3	100.41	Mainly Clear
<b>108</b>	1/5/2012 12:00	-4.7	-9.6	69	20	48.3	100.38	Mainly Clear
<b>109</b>	1/5/2012 13:00	-4.4	-9.7	66	26	48.3	100.40	Mainly Clear
<b>110</b>	1/5/2012 14:00	-5.1	-10.7	65	22	48.3	100.46	Mainly Clear
...	...	...	...	...	...	...	...	...
<b>8749</b>	12/30/2012 13:00	-12.4	-16.2	73	37	48.3	100.92	Mostly Cloudy
<b>8750</b>	12/30/2012 14:00	-11.8	-16.1	70	37	48.3	100.96	Mainly Clear
<b>8751</b>	12/30/2012 15:00	-11.3	-15.6	70	32	48.3	101.05	Mainly Clear
<b>8752</b>	12/30/2012 16:00	-11.4	-15.5	72	26	48.3	101.15	Mainly Clear
<b>8756</b>	12/30/2012 20:00	-13.8	-16.5	80	24	25.0	101.52	Clear

2921 rows × 8 columns