

		Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	Visibility_km	Press_kPa
Weather_Condition								
	Clear	9/9/2012 5:00	32.8	20.4	99	33	48.3	103.63
	Cloudy	9/9/2012 23:00	30.5	22.6	99	54	48.3	103.65
	Drizzle	9/30/2012 3:00	18.8	17.7	96	30	25.0	101.56
Drizzle,Fog		9/30/2012 2:00	19.9	19.1	100	28	9.7	102.07
Drizzle,Ice Pellets,Fog		12/17/2012 9:00	0.4	-0.7	92	20	4.0	100.79
Drizzle,Snow		12/17/2012 18:00	1.2	0.2	95	19	11.3	101.15
Drizzle,Snow,Fog		12/22/2012 3:00	1.1	0.6	98	32	9.7	100.15
Fog		9/22/2012 0:00	20.8	19.6	100	22	9.7	103.04
Freezing Drizzle		2/1/2012 5:00	-2.3	-3.3	93	26	12.9	101.02
Freezing Drizzle,Fog		12/10/2012 5:00	-0.3	-2.3	94	33	8.0	101.27
Freezing Drizzle,Haze		2/1/2012 13:00	-5.0	-7.7	83	11	4.0	100.36
Freezing Drizzle,Snow		3/2/2012 12:00	-3.3	-4.6	94	24	12.9	101.18
Freezing Fog		3/17/2012 6:00	-0.1	-0.3	99	9	0.8	102.85
Freezing Rain		2/1/2012 7:00	0.3	-1.7	92	28	16.1	101.00
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 3:00	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
Mostly Cloudy		9/9/2012 2:00	32.4	24.4	100	83	48.3	103.65
Rain		5/5/2012 2:00	22.8	20.4	99	52	48.3	102.26
Rain Showers		9/8/2012 16:00	26.4	23.0	97	41	48.3	102.31
Rain Showers,Fog		10/20/2012 3:00	12.8	12.1	96	13	6.4	99.83
Rain Showers,Rain Showers		12/15/2012 10:00	2.2	-1.2	78	28	24.1	101.11
Rain,Fog		9/30/2012 13:00	21.7	19.5	100	46	9.7	101.77
Rain,Haze		3/13/2012 9:00	5.5	2.9	86	17	9.7	100.61
Rain,Ice Pellets		12/18/2012 5:00	0.6	-0.6	92	24	9.7	100.12
Rain,Snow		4/23/2012 3:00	1.7	0.5	94	52	25.0	101.07
Rain,Snow Grains		12/21/2012 0:00	1.9	-2.1	75	26	25.0	100.60
Rain,Snow,Fog		12/8/2012 2:00	0.8	0.3	96	9	6.4	100.73
Rain,Snow,Ice Pellets		4/27/2012 5:00	1.3	0.1	94	28	6.4	100.47
Snow		4/27/2012 9:00	3.7	0.3	96	57	25.0	102.73
Snow Pellets		11/24/2012 15:00	0.7	-6.4	59	35	2.4	99.70
Snow Showers		3/4/2012 21:00	2.9	-0.7	94	37	48.3	102.50
Snow Showers,Fog		12/29/2012 13:00	-10.0	-11.1	92	22	9.7	102.52
Snow,Blowing Snow		2/25/2012 9:00	-1.4	-2.9	91	48	9.7	100.62
Snow,Fog		3/14/2012 19:00	1.1	0.8	99	35	9.7	102.07
Snow,Haze		2/1/2012 21:00	-3.6	-6.4	81	15	6.4	100.99
Snow,Ice Pellets		3/3/2012 4:00	0.8	-1.7	92	33	11.3	100.96
Thunderstorms		7/4/2012 16:00	26.7	20.1	87	15	25.0	100.62
Thunderstorms,Heavy Rain Showers		5/29/2012 6:00	10.9	9.0	88	9	2.4	100.26
Thunderstorms,Moderate Rain Showers,Fog		7/17/2012 6:00	19.6	18.5	93	15	3.2	100.01
Thunderstorms,Rain		7/23/2012 18:00	21.3	19.1	93	30	24.1	100.83
Thunderstorms,Rain Showers		9/8/2012 4:00	25.5	23.1	96	32	25.0	101.06
Thunderstorms,Rain Showers,Fog		7/81/2012 20:00	22.9	21.3	91	35	9.7	100.64
Thunderstorms,Rain,Fog		7/17/2012 5:00	20.6	18.6	88	19	4.8	100.08

Q-13. Show all the Records where Weather Condition is Fog.

```
In [35]: df[df['Weather_Condition'] == 'Fog']
Out[35]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	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 x 8 columns

Q-14 Find all instance when 'Weather is Clear' or 'Visibility is above 40'.

```
In [36]: df[(df['Weather_Condition'] == 'Clear') | (df['Visibility_km'] > 40)]
Out[36]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	Visibility_km	Press_kPa	Weather_Condition
67	1/3/2012 19:00	-16.9	-24.8	50	24	25.0	101.74	Clear
108	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
109	1/5/2012 12:00	-4.7	-9.6	69	20	48.3	100.38	Mainly Clear
108	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 x 8 columns

Q-15. Find all instance when:

- A. "Weathe is Clear" and "Relative Humidity" is greater than 50.

or

- B. "Visibility is above 40"

```
In [37]: df.head(1)
Out[37]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	Visibility_km	Press_kPa	Weather_Condition
0	1/1/2012 0:00	-1.8	-3.9	86	4	8.0	101.24	Fog

```
In [38]: df[(df['Weather_Condition'] == 'Clear') & (df['Rel_Hum_%'] > 50) | (df['Visibility_km'] > 40)]
Out[38]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	Visibility_km	Press_kPa	Weather_Condition
108	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 x 8 columns

```
In [39]: import matplotlib.pyplot as plt
          matplotlib inline
In [40]: df.corr().style.background_gradient(cmap='plasma')
```

	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	Visibility_km	Press_kPa
Temp_C	1.000000	0.932714	-0.220182	-0.061878	0.273455	-0.236389
Dew Point Temp_C	0.932714	1.000000	0.138494	-0.095685	0.050813	-0.320618
Rel Hum_%	-0.220182	0.138494	1.000000	-0.082743	-0.632683	-0.231424
Wind Speed_kmh	-0.061878	-0.095685	-0.082743	1.000000	0.004883	-0.356613
Visibility_km	0.273455	0.050813	-0.632683	0.004883	1.000000	0.231847
Press_kPa	-0.236389	-0.320618	-0.231424	-0.356613	0.231847	1.000000

```
In [41]: df.head(2)
Out[41]:
```

	Date/Time	Temp_C	Dew Point Temp_C	Rel Hum_%	Wind Speed_kmh	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