

```
In [1]: 1 import numpy as np
        2 import matplotlib.pyplot as plt
        3 import pandas as pd
        4 import seaborn as se
        5
```

```
In [2]: 1 weather=pd.read_csv("/home/student/Downloads/C0TC57/weatherAUS.csv")
```

```
In [3]: 1 weather.head(6)
```

Out[3]:

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustDir
0	2008-12-01	Albury	13.4	22.9	0.6	NaN	NaN	V
1	2008-12-02	Albury	7.4	25.1	0.0	NaN	NaN	WNV
2	2008-12-03	Albury	12.9	25.7	0.0	NaN	NaN	WSV
3	2008-12-04	Albury	9.2	28.0	0.0	NaN	NaN	NI
4	2008-12-05	Albury	17.5	32.3	1.0	NaN	NaN	V
5	2008-12-06	Albury	14.6	29.7	0.2	NaN	NaN	WNV

6 rows × 9 columns

```
In [4]: 1 weather.tail(6)
```

Out[4]:

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustDir
142187	2017-06-19	Uluru	7.4	20.6	0.0	NaN	NaN	
142188	2017-06-20	Uluru	3.5	21.8	0.0	NaN	NaN	
142189	2017-06-21	Uluru	2.8	23.4	0.0	NaN	NaN	
142190	2017-06-22	Uluru	3.6	25.3	0.0	NaN	NaN	
142191	2017-06-23	Uluru	5.4	26.9	0.0	NaN	NaN	
142192	2017-06-24	Uluru	7.8	27.0	0.0	NaN	NaN	

6 rows × 9 columns

```
In [5]: 1 weather.index
```

Out[5]: RangeIndex(start=0, stop=142193, step=1)

```
In [6]: 1 weather.columns
```

Out[6]:

```

      Today/['Date', 'Location', 'MinTemp', 'MaxTemp', 'Rainfall', 'Evap
In [7]: 1 weather.shane

```

```

Out[7]: (142193, 24)

```

```

In [9]: 1 weather.dtypes

```

```

Out[9]: Date          object
Location          object
MinTemp          float64
MaxTemp          float64
Rainfall         float64
Evaporation       float64
Sunshine         float64
WindGustDir       object
WindGustSpeed     float64
WindDir9am       object
WindDir3pm       object
WindSpeed9am     float64
WindSpeed3pm     float64
Humidity9am      float64
Humidity3pm      float64
Pressure9am      float64
Pressure3pm      float64
Cloud9am         float64
Cloud3pm         float64
Temp9am          float64
Temp3pm          float64
RainToday        object
RISK_MM          float64
RainTomorrow     object
dtype: object

```

```

In [10]: 1 weather.columns.values

```

```

Out[10]: array(['Date', 'Location', 'MinTemp', 'MaxTemp', 'Rainfall',
                'Evaporation', 'Sunshine', 'WindGustDir', 'WindGustSpeed',
                'WindDir9am', 'WindDir3pm', 'WindSpeed9am', 'WindSpeed3pm',
                'Humidity9am', 'Humidity3pm', 'Pressure9am', 'Pressure3pm',
                'Cloud9am', 'Cloud3pm', 'Temp9am', 'Temp3pm', 'RainToday',
                'RISK_MM', 'RainTomorrow'], dtype=object)

```

```

In [11]: 1 weather.describe(include='all')

```

```

Out[11]:

```

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation
count	142193	142193	141556.000000	141871.000000	140787.000000	81350.000000
unique	3436	49	NaN	NaN	NaN	NaN
top	2013-12-01	Canberra	NaN	NaN	NaN	NaN
freq	49	3418	NaN	NaN	NaN	NaN
mean	NaN	NaN	12.186400	23.226784	2.349974	5.469824
std	NaN	NaN	6.403283	7.117618	8.465173	4.188537

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation
min	NaN	NaN	-8.500000	-4.800000	0.000000	0.000000
25%	NaN	NaN	7.600000	17.900000	0.000000	2.600000
50%	NaN	NaN	12.000000	22.600000	0.000000	4.800000
75%	NaN	NaN	16.800000	28.200000	0.800000	7.400000
max	NaN	NaN	33.000000	48.100000	371.000000	145.000000

In [18]: `1 weather.iloc[6]`

Out[18]:

Date	2008-12-07
Location	Albury
MinTemp	14.3
MaxTemp	25.0
Rainfall	0.0
Evaporation	NaN
Sunshine	NaN
WindGustDir	W
WindGustSpeed	50.0
WindDir9am	SW
WindDir3pm	W
WindSpeed9am	20.0
WindSpeed3pm	24.0
Humidity9am	49.0
Humidity3pm	19.0
Pressure9am	1009.6
Pressure3pm	1008.2
Cloud9am	1.0
Cloud3pm	NaN
Temp9am	18.1
Temp3pm	24.6
RainToday	No
RISK_MM	0.0
RainTomorrow	No

Name: 6, dtype: object

In [19]: `1 weather[0:3]`

Out[19]:

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustDi
0	2008-12-01	Albury	13.4	22.9	0.6	NaN	NaN	V
1	2008-12-02	Albury	7.4	25.1	0.0	NaN	NaN	WNV
2	2008-12-03	Albury	12.9	25.7	0.0	NaN	NaN	WSV

3 rows × 24 columns

In [21]: `1 weather.sort_index(axis=1, ascending=False)`

Out[21]:

	WindSpeed9am	WindSpeed3pm	WindGustSpeed	WindGustDir	WindDir9am	Wind
0	20.0	24.0	44.0	W	W	
1	4.0	22.0	44.0	WNW	NNW	
2	19.0	26.0	46.0	WSW	W	

	WindSpeed9am	WindSpeed3pm	WindGustSpeed	WindGustDir	WindDir9am	Wind
3	11.0	9.0	24.0	NE	SE	
4	7.0	20.0	41.0	W	ENE	
...
142188	15.0	13.0	31.0	E	ESE	
142189	13.0	11.0	31.0	E	SE	
142190	13.0	9.0	22.0	NNW	SE	
142191	9.0	9.0	37.0	N	SE	
142192	13.0	7.0	28.0	SE	SSE	

In [22]: `1 weather.sort_values(by="Location")`

Out[22]:

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGust
94847	2011-05-16	Adelaide	5.2	16.6	0.0	3.6	8.8	
95911	2014-08-14	Adelaide	9.8	15.5	0.0	2.2	NaN	
95912	2014-08-15	Adelaide	8.5	20.3	0.0	2.0	NaN	
95913	2014-08-16	Adelaide	10.3	14.0	0.0	NaN	NaN	
95914	2014-08-17	Adelaide	9.4	16.2	1.8	NaN	NaN	
...
104165	2012-05-09	Woomera	13.1	25.3	0.0	15.4	9.2	
104166	2012-05-10	Woomera	13.4	25.1	0.2	7.0	7.9	
104167	2012-05-11	Woomera	10.8	22.3	0.0	5.8	NaN	
104159	2012-05-03	Woomera	7.1	17.7	0.0	6.2	NaN	
105809	2017-01-17	Woomera	22.7	43.5	0.0	NaN	NaN	

142193 rows × 9 columns

In [23]: `1 weather['Location']`

Out[23]:

```
0      Albury
1      Albury
2      Albury
3      Albury
4      Albury
...
142188  Uluru
142189  Uluru
142190  Uluru
142191  Uluru
142192  Uluru
Name: Location, Length: 142193, dtype: object
```

In [28]: `1 weather.loc[:,["Date","Location"]]`

Out[28]:

	Date	Location
0	2008-12-01	Albury
1	2008-12-02	Albury
2	2008-12-03	Albury
3	2008-12-04	Albury
4	2008-12-05	Albury
...
142188	2017-06-20	Uluru
142189	2017-06-21	Uluru
142190	2017-06-22	Uluru
142191	2017-06-23	Uluru
142192	2017-06-24	Uluru

In [29]: `1 weather.iloc[2.:1`

Out[29]:

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustDi
0	2008-12-01	Albury	13.4	22.9	0.6	NaN	NaN	V
1	2008-12-02	Albury	7.4	25.1	0.0	NaN	NaN	WNV

2 rows × 9 columns

In [32]: `1 weather.iloc[:.:9]`

Out[32]:

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindC
0	2008-12-01	Albury	13.4	22.9	0.6	NaN	NaN	
1	2008-12-02	Albury	7.4	25.1	0.0	NaN	NaN	
2	2008-12-03	Albury	12.9	25.7	0.0	NaN	NaN	
3	2008-12-04	Albury	9.2	28.0	0.0	NaN	NaN	
4	2008-12-05	Albury	17.5	32.3	1.0	NaN	NaN	
...	
142188	2017-06-20	Uluru	3.5	21.8	0.0	NaN	NaN	
142189	2017-06-21	Uluru	2.8	23.4	0.0	NaN	NaN	
142190	2017-06-22	Uluru	3.6	25.3	0.0	NaN	NaN	
142191	2017-06-23	Uluru	5.4	26.9	0.0	NaN	NaN	
142192	2017-06-24	Uluru	7.8	27.0	0.0	NaN	NaN	

142193 rows × 9 columns

In [35]: `1 weather.isnull()`

Out[35]:

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustD
0	False	False	False	False	False	True	True	Fals
1	False	False	False	False	False	True	True	Fals
2	False	False	False	False	False	True	True	Fals
3	False	False	False	False	False	True	True	Fals
4	False	False	False	False	False	True	True	Fals
...
142188	False	False	False	False	False	True	True	Fals
142189	False	False	False	False	False	True	True	Fals
142190	False	False	False	False	False	True	True	Fals
142191	False	False	False	False	False	True	True	Fals
142192	False	False	False	False	False	True	True	Fals

142193 rows × 24 columns

In [37]: `1 weather.isnull().sum()`

Out[37]:

Date	0
Location	0
MinTemp	637
MaxTemp	322
Rainfall	1406
Evaporation	60843
Sunshine	67816
WindGustDir	9330
WindGustSpeed	9270
WindDir9am	10013
WindDir3pm	3778
WindSpeed9am	1348
WindSpeed3pm	2630
Humidity9am	1774
Humidity3pm	3610
Pressure9am	14014
Pressure3pm	13981
Cloud9am	53657
Cloud3pm	57094
Temp9am	904
Temp3pm	2726
RainToday	1406
RISK_MM	0
RainTomorrow	0
dtype:	int64

In []: `1`

