LIBRARIES

In [1]:
```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error
```

LOADING THE DATA

In [2]:
```python
df = pd.read_csv("C://Users//DHANUSHA//Desktop//Weather Dataset.csv")
df
```

Out[2]:

	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustDir	WindGustSpeed	WindDir9am	WindDir3pm	WindSpeed9am	...	Humidity3pm	Pressure9am	Pressure3pm	Cloud9am	Cloud3pm	Temp9am	Temp3pm
0	8.0	24.3	0.0	3.4	6.3	NW	30.0	SW	NW	6.0	...	29	1019.7	1015.0	7	7	14.4	23.6
1	14.0	26.9	3.6	4.4	9.7	ENE	39.0	E	W	4.0	...	36	1012.4	1008.4	5	3	17.5	25.7
2	13.7	23.4	3.6	5.8	3.3	NW	85.0	N	NNE	6.0	...	69	1009.5	1007.2	8	7	15.4	20.2
3	13.3	15.5	39.8	7.2	9.1	NW	54.0	WNW	W	30.0	...	56	1005.5	1007.0	2	7	13.5	14.1
4	7.6	16.1	2.8	5.6	10.6	SSE	50.0	SSE	ESE	20.0	...	49	1018.3	1018.5	7	7	11.1	15.4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
361	9.0	30.7	0.0	7.6	12.1	NNW	76.0	SSE	NW	7.0	...	15	1016.1	1010.8	1	3	20.4	30.0
362	7.1	28.4	0.0	11.6	12.7	N	48.0	NNW	NNW	2.0	...	22	1020.0	1016.9	0	1	17.2	28.2
363	12.5	19.9	0.0	8.4	5.3	ESE	43.0	ENE	ENE	11.0	...	47	1024.0	1022.8	3	2	14.5	18.3
364	12.5	26.9	0.0	5.0	7.1	NW	46.0	SSW	WNW	6.0	...	39	1021.0	1016.2	6	7	15.8	25.9
365	12.3	30.2	0.0	6.0	12.6	NW	78.0	NW	WNW	31.0	...	13	1009.6	1009.2	1	1	23.8	28.6

366 rows × 22 columns

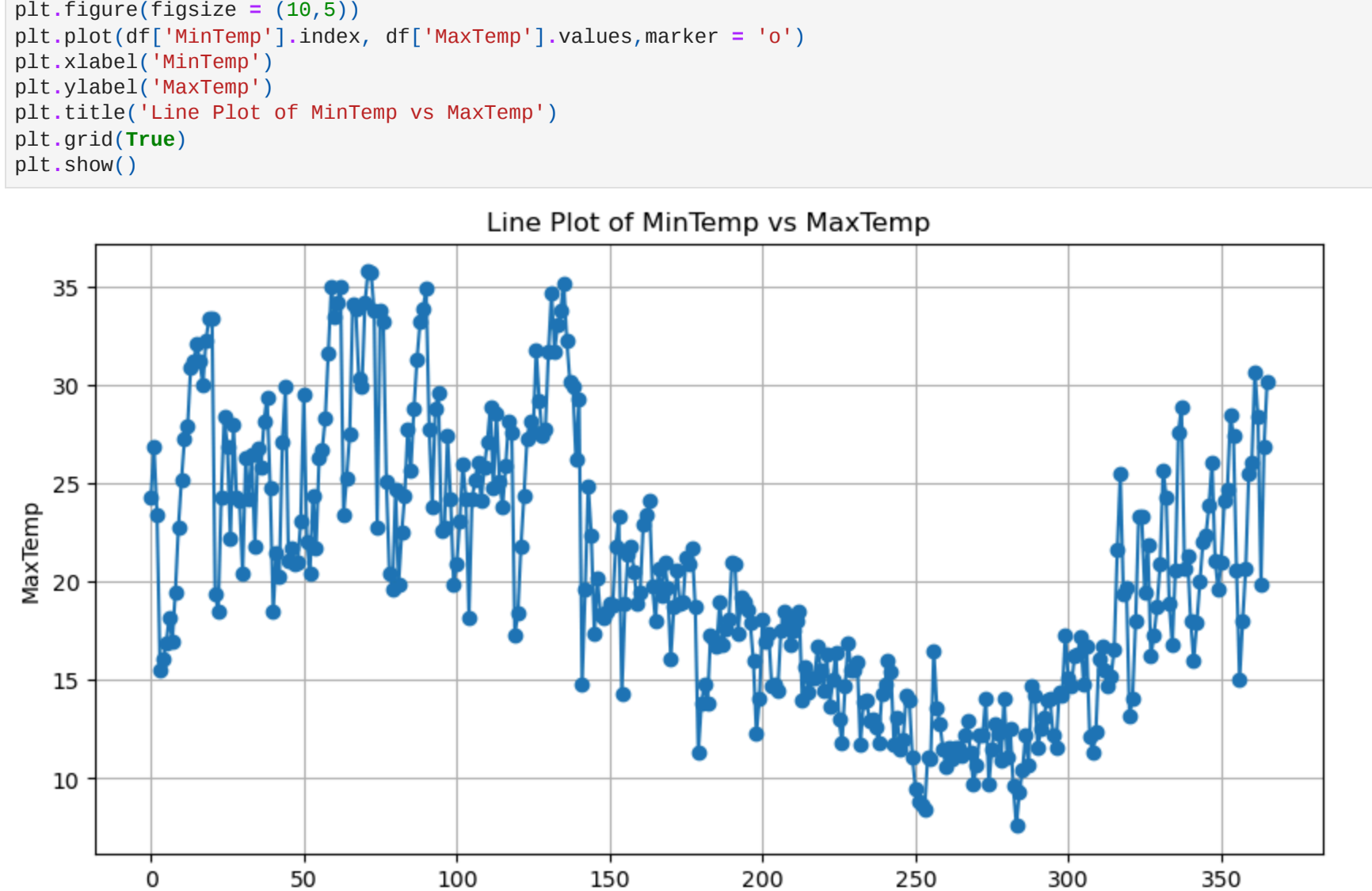
Data Exploration

In [3]:
```python
print(df.head())
print(df.info())
print(df.describe())
```

```
   MinTemp  MaxTemp  Rainfall  Evaporation  Sunshine WindGustDir  \
0      8.0     24.3       0.0          3.4       6.3          NW
1     14.0     26.9       3.6          4.4       9.7         ENE
2     13.7     23.4       3.6          5.8       3.3          NW
3     13.3     15.5      39.8          7.2       9.1          NW
4      7.6     16.1       2.8          5.6      10.6         SSE

   WindGustSpeed WindDir9am WindDir3pm  WindSpeed9am  ...  Humidity3pm  \
0           30.0         SW         NW           6.0  ...           29
1           39.0          E          W           4.0  ...           36
2           85.0          N        NNE           6.0  ...           69
3           54.0        WNW          W          30.0  ...           56
4           50.0        SSE        ESE          20.0  ...           49

   Pressure9am  Pressure3pm  Cloud9am  Cloud3pm  Temp9am  Temp3pm  RainToday  \
0       1019.7       1015.0         7         7     14.4     23.6         No
1       1012.4       1008.4         5         3     17.5     25.7        Yes
2       1009.5       1007.2         8         7     15.4     20.2        Yes
3       1005.5       1007.0         2         7     13.5     14.1        Yes
4       1018.3       1018.5         7         7     11.1     15.4        Yes

   RISK_MM RainTomorrow
0      3.6          Yes
1      3.6          Yes
2     39.8          Yes
3      2.8          Yes
4      0.0           No

[5 rows x 22 columns]
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 366 entries, 0 to 365
Data columns (total 22 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   MinTemp        366 non-null    float64
 1   MaxTemp        366 non-null    float64
 2   Rainfall       366 non-null    float64
 3   Evaporation    366 non-null    float64
 4   Sunshine       363 non-null    float64
 5   WindGustDir    363 non-null    object
 6   WindGustSpeed  364 non-null    float64
 7   WindDir9am     335 non-null    object
 8   WindDir3pm     365 non-null    object
 9   WindSpeed9am   359 non-null    float64
 10  WindSpeed3pm   366 non-null    int64
 11  Humidity9am    366 non-null    int64
 12  Humidity3pm    366 non-null    int64
 13  Pressure9am    366 non-null    float64
 14  Pressure3pm    366 non-null    float64
 15  Cloud9am       366 non-null    int64
 16  Cloud3pm       366 non-null    int64
 17  Temp9am        366 non-null    float64
 18  Temp3pm        366 non-null    float64
 19  RainToday      366 non-null    object
 20  RISK_MM        366 non-null    float64
 21  RainTomorrow   366 non-null    object
dtypes: float64(12), int64(5), object(5)
memory usage: 63.0+ KB
None
          MinTemp     MaxTemp    Rainfall  Evaporation    Sunshine  \
count  366.000000  366.000000  366.000000   366.000000  363.000000
mean     7.265574   20.550273    1.428415     4.521858    7.909366
std      6.025800    6.690516    4.225800     2.669383    3.481517
min     -5.300000    7.600000    0.000000     0.200000    0.000000
25%      2.300000   15.025000    0.000000     2.200000    5.950000
50%      7.450000   19.650000    0.000000     4.200000    8.600000
75%     12.500000   25.500000    0.200000     6.400000   10.500000
max     20.900000   35.800000   39.800000    13.800000   13.600000

       WindGustSpeed  WindSpeed9am  WindSpeed3pm  Humidity9am  Humidity3pm  \
count     364.000000    359.000000    366.000000   366.000000   366.000000
mean       39.840659      9.651811     17.986339    72.035519    44.519126
std        13.059807      7.951929      8.856997    13.137058    16.850947
min        13.000000      0.000000      0.000000    36.000000    13.000000
25%        31.000000      6.000000     11.000000    64.000000    32.250000
50%        39.000000      7.000000     17.000000    72.000000    43.000000
75%        46.000000     13.000000     24.000000    81.000000    55.000000
max        98.000000     41.000000     52.000000    99.000000    96.000000

       Pressure9am  Pressure3pm    Cloud9am    Cloud3pm     Temp9am  \
count   366.000000   366.000000  366.000000  366.000000  366.000000
mean   1019.709016  1016.810383    3.890710    4.024590   12.358470
std       6.686212     6.469422    2.956131    2.666268    5.630832
min     996.500000   996.800000    0.000000    0.000000    0.100000
25%    1015.350000  1012.800000    1.000000    1.000000    7.625000
50%    1020.150000  1017.400000    3.500000    4.000000   12.550000
75%    1024.475000  1021.475000    7.000000    7.000000   17.000000
max    1035.700000  1033.200000    8.000000    8.000000   24.700000

          Temp3pm     RISK_MM
count  366.000000  366.000000
mean    19.230874    1.428415
std      6.640346    4.225800
min      5.100000    0.000000
25%     14.150000    0.000000
50%     18.550000    0.000000
75%     24.000000    0.200000
max     34.500000   39.800000
```

Data Visualization

In [7]:
```python
plt.figure(figsize = (10,5))
plt.plot(df['MinTemp'].index, df['MaxTemp'].values,marker = 'o')
plt.xlabel('MinTemp')
plt.ylabel('MaxTemp')
plt.title('Line Plot of MinTemp vs MaxTemp')
plt.grid(True)
plt.show()
```



In [8]:
```python
corr = df.corr()
corr
```

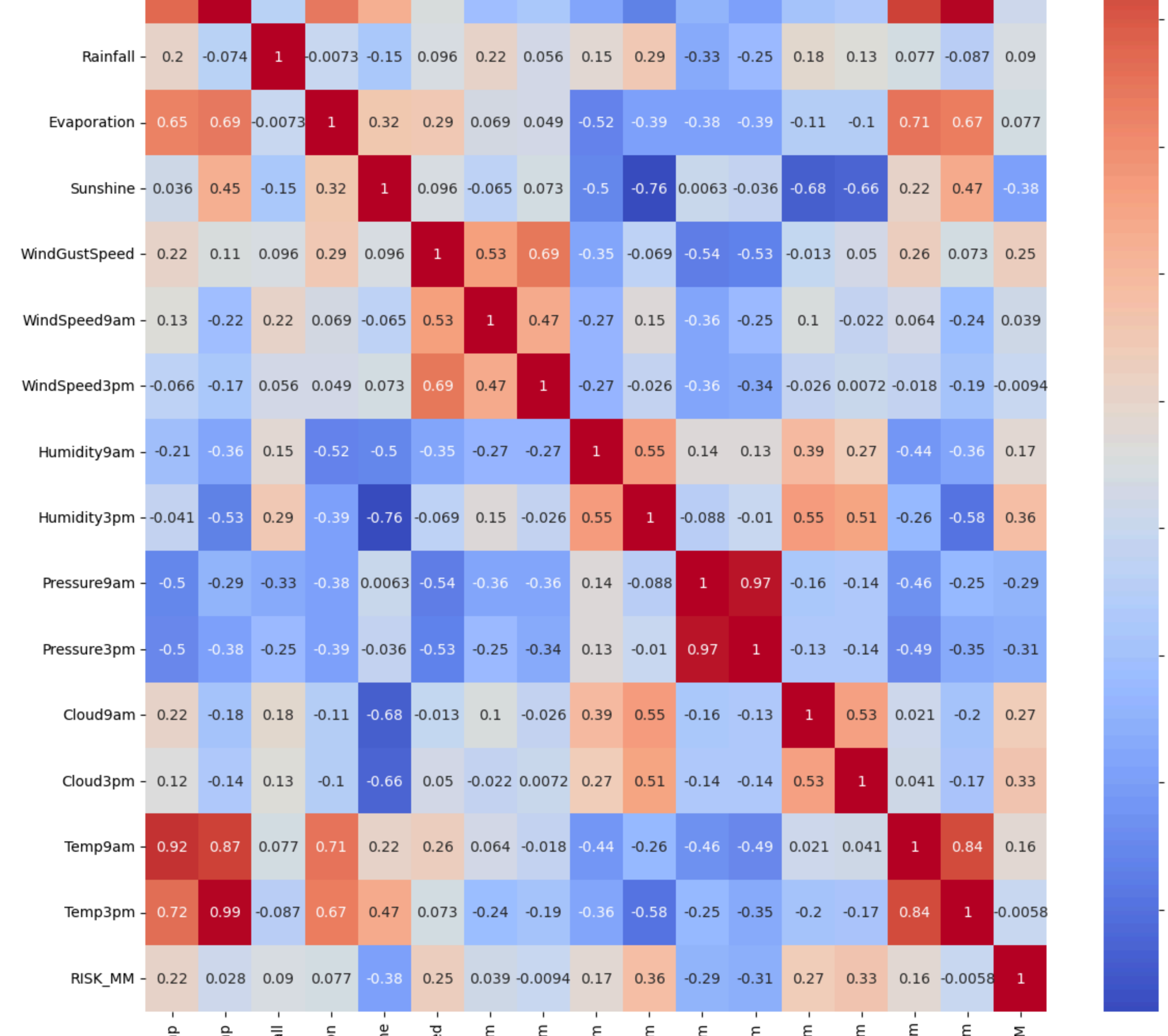
```
C:\Users\DHANUSHA\AppData\Local\Temp\ipykernel_24476\2438084875.py:1: FutureWarning: The default value of numeric_only in DataFrame.corr is deprecated. In a future version, it will
default to False. Select only valid columns or specify the value of numeric_only to silence this warning.
  corr = df.corr()
```

Out[8]:

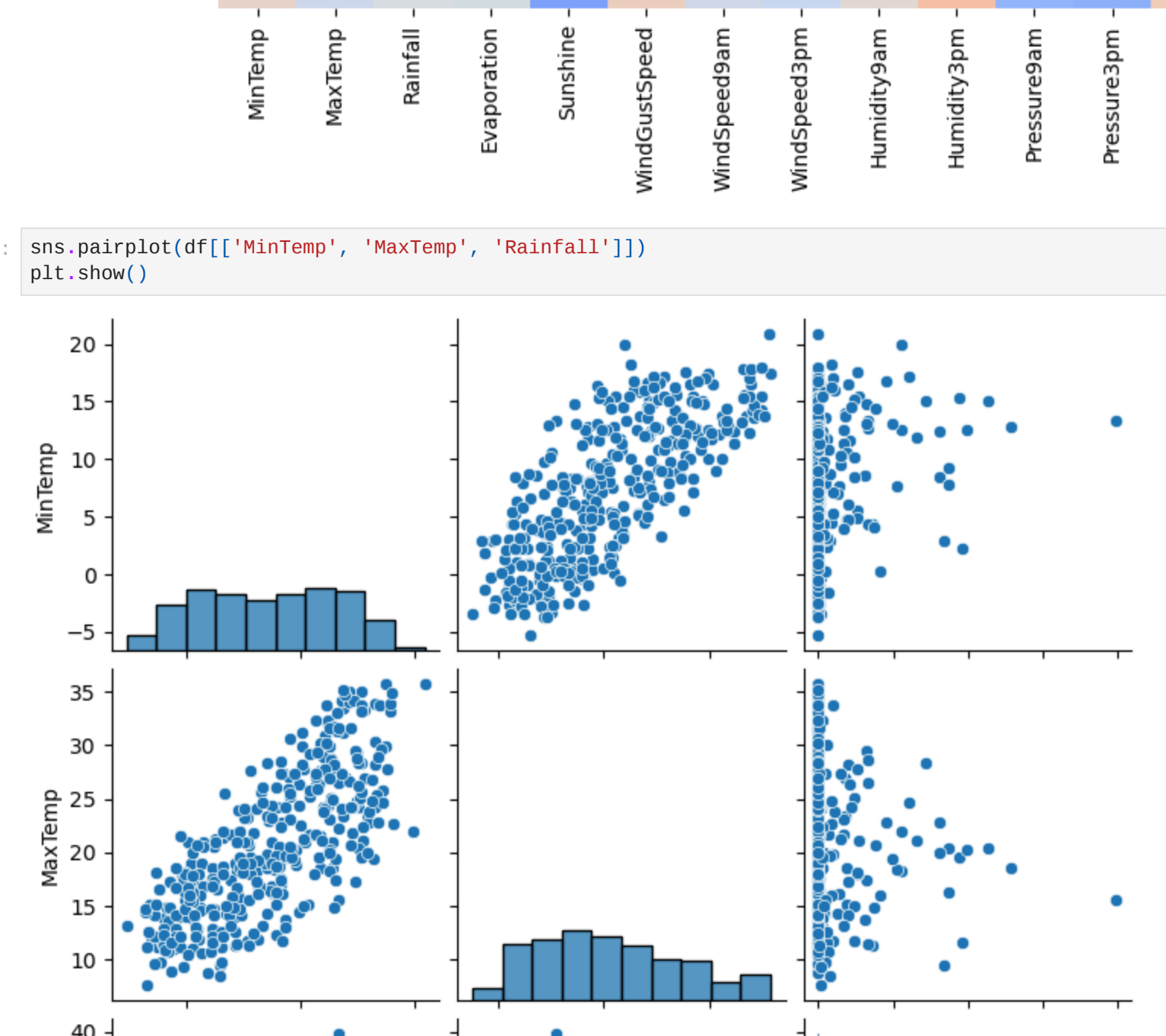
	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustSpeed	WindSpeed9am	WindSpeed3pm	Humidity9am	Humidity3pm	Pressure9am	Pressure3pm	Cloud9am	Cloud3pm	Temp9am	Temp3pm
MinTemp	1.000000	0.752471	0.201939	0.649930	0.035711	0.218020	0.127542	-0.065922	-0.207897	-0.040709	-0.501707	-0.498007	0.215776	0.118397	0.916745	0.722730
MaxTemp	0.752471	1.000000	-0.073560	0.690026	0.452064	0.109672	-0.216814	-0.167873	-0.359602	-0.533327	-0.290883	-0.379394	-0.175730	-0.135991	0.870604	0.989261
Rainfall	0.201939	-0.073560	1.000000	-0.007293	-0.150990	0.096190	0.219637	0.056008	0.150109	0.289013	-0.331581	-0.250218	0.180046	0.127792	0.077299	-0.087493
Evaporation	0.649930	0.690026	-0.007293	1.000000	0.318025	0.288477	0.068929	0.048601	-0.519587	-0.391780	-0.381906	-0.391093	-0.106007	-0.100045	0.707676	0.671632
Sunshine	0.035711	0.452064	-0.150990	0.318025	1.000000	0.095843	-0.064522	0.072573	-0.499017	-0.759429	0.006276	-0.036201	-0.681092	-0.661131	0.219509	0.470447
WindGustSpeed	0.218020	0.109672	0.096190	0.288477	0.095843	1.000000	0.527653	0.693945	-0.349793	-0.069439	-0.540180	-0.526885	-0.012666	0.050230	0.256223	0.072501
WindSpeed9am	0.127542	-0.216814	0.219637	0.068929	-0.064522	0.527653	1.000000	0.472966	-0.270623	0.146657	-0.356332	-0.247952	0.101842	-0.022471	0.064074	-0.235186
WindSpeed3pm	-0.065922	-0.167873	0.056008	0.048601	0.072573	0.693945	0.472966	1.000000	-0.266092	-0.026368	-0.359800	-0.337325	-0.026426	0.007207	-0.017766	-0.187570
Humidity9am	-0.207897	-0.359602	0.150109	-0.519587	-0.499017	-0.349793	-0.270623	-0.266092	1.000000	0.546718	0.135727	0.134420	0.392842	0.271938	-0.436551	-0.355119
Humidity3pm	-0.040709	-0.533327	0.289013	-0.391780	-0.759429	-0.069439	0.146657	-0.026368	0.546718	1.000000	-0.087946	-0.010052	0.551633	0.510108	-0.255681	-0.581676
Pressure9am	-0.501707	-0.290883	-0.331581	-0.381906	0.006276	-0.540180	-0.356332	-0.359800	0.135727	-0.087946	1.000000	0.967895	-0.157553	-0.141000	-0.460418	-0.253674
Pressure3pm	-0.498007	-0.379394	-0.250218	-0.391093	-0.036201	-0.526885	-0.247952	-0.337325	0.134420	-0.010052	0.967895	1.000000	-0.128944	-0.143837	-0.492636	-0.345485
Cloud9am	0.215776	-0.175730	0.180046	-0.106007	-0.681092	-0.012666	0.101842	-0.026426	0.392842	0.551633	-0.157553	-0.128944	1.000000	0.525218	0.021041	-0.202344
Cloud3pm	0.118397	-0.135991	0.127792	-0.100045	-0.661131	0.050230	-0.022471	0.007207	0.271938	0.510108	-0.141000	-0.143837	0.525218	1.000000	0.040945	-0.172814
Temp9am	0.916745	0.870604	0.077299	0.707676	0.219509	0.256223	0.064074	-0.017766	-0.436551	-0.255681	-0.460418	-0.492636	0.021041	0.040945	1.000000	0.844406
Temp3pm	0.722730	0.989261	-0.087493	0.671632	0.470447	0.072501	-0.235186	-0.187570	-0.355119	-0.581676	-0.253674	-0.345485	-0.202344	-0.172814	0.844406	1.000000
RISK_MM	0.218551	0.027557	0.089860	0.076762	-0.378823	0.251991	0.039091	-0.009447	0.165931	0.358752	-0.290584	-0.311421	0.273914	0.326455	0.164842	-0.005825

In [9]:
```python
plt.figure(figsize=(14, 14))
corr_matrix = df.corr()
sns.heatmap(corr_matrix, annot=True, cmap='coolwarm')
plt.show()
```

```
C:\Users\DHANUSHA\AppData\Local\Temp\ipykernel_24476\317091596.py:2: FutureWarning: The default value of numeric_only in DataFrame.corr is deprecated. In a future version, it will
default to False. Select only valid columns or specify the value of numeric_only to silence this warning.
  corr_matrix = df.corr()
```



In [4]:
```python
sns.pairplot(df[['MinTemp', 'MaxTemp', 'Rainfall']])
plt.show()
```



In [10]:
```python
stats = df.agg(['mean','median','min','max']).transpose()
stats
```

```
C:\Users\DHANUSHA\AppData\Local\Temp\ipykernel_24476\3334082010.py:1: FutureWarning: ['WindGustDir', 'WindDir9am', 'WindDir3pm', 'RainToday', 'RainTomorrow'] did not aggregate succ
essfully. If any error is raised this will raise in a future version of pandas. Drop these columns/ops to avoid this warning.
  stats = df.agg(['mean','median','min','max']).transpose()
```

Out[10]:

	mean	median	min	max
MinTemp	7.265574	7.45	-5.3	20.9
MaxTemp	20.550273	19.65	7.6	35.8
Rainfall	1.428415	0.0	0.0	39.8
Evaporation	4.521858	4.2	0.2	13.8
Sunshine	7.909366	8.6	0.0	13.6
WindGustSpeed	39.840659	39.0	13.0	98.0
WindSpeed9am	9.651811	7.0	0.0	41.0
WindSpeed3pm	17.986339	17.0	0.0	52.0
Humidity9am	72.035519	72.0	36.0	99.0
Humidity3pm	44.519126	43.0	13.0	96.0
Pressure9am	1019.709016	1020.15	996.5	1035.7
Pressure3pm	1016.810383	1017.4	996.8	1033.2
Cloud9am	3.89071	3.5	0.0	8.0
Cloud3pm	4.02459	4.0	0.0	8.0
Temp9am	12.35847	12.55	0.1	24.7
Temp3pm	19.230874	18.55	5.1	34.5
RainToday	NaN	NaN	No	Yes
RISK_MM	1.428415	0.0	0.0	39.8
RainTomorrow	NaN	NaN	No	Yes

In [11]:
```python
cov_mat = df.cov()
cov_mat
```

```
C:\Users\DHANUSHA\AppData\Local\Temp\ipykernel_24476\389477842.py:1: FutureWarning: The default value of numeric_only in DataFrame.cov is deprecated. In a future version, it will d
efault to False. Select only valid columns or specify the value of numeric_only to silence this warning.
  cov_mat = df.cov()
```

Out[11]:

	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustSpeed	WindSpeed9am	WindSpeed3pm	Humidity9am	Humidity3pm	Pressure9am	Pressure3pm	Cloud9am	Cloud3pm	Temp9am	Temp3pm
MinTemp	36.310264	30.336393	5.142132	10.454234	0.748488	17.141617	6.108382	-3.518280	-16.457404	-4.133586	-20.213661	-19.414025	3.843625	1.902219	31.105416	28.918901
MaxTemp	30.336393	44.763000	-2.079734	12.323556	10.557882	9.586647	-11.530989	-9.947804	-31.606722	-60.128087	-13.012400	-16.421592	-3.475586	-2.425897	32.798395	43.950224
Rainfall	5.142132	-2.079734	17.857382	-0.082267	-2.206003	5.321497	7.429987	2.096280	8.333235	20.580277	-9.368695	-6.840570	2.249141	1.439847	1.839320	-2.455126
Evaporation	10.454234	12.323556	-0.082267	7.125603	2.957679	10.057585	1.461235	1.149067	-18.220779	-17.622885	-6.816280	-6.753926	-0.836509	-0.712046	10.636965	11.905104
Sunshine	0.748488	10.557882	-2.206003	2.957679	12.120962	4.380600	-1.802766	2.244656	-22.857018	-44.487625	0.145798	-0.813373	-7.008003	-6.139762	4.316428	10.905379
WindGustSpeed	17.141617	9.586647	5.321497	10.057585	4.380600	170.558563	54.527264	80.454667	-60.116263	-15.321875	-47.031175	-44.431104	-0.489632	1.747631	18.828104	6.291356
WindSpeed9am	6.108382	-11.530989	7.429987	1.461235	-1.802766	54.527264	63.233174	33.217278	-28.232489	19.735796	-18.812257	-12.627928	2.396376	-0.477654	2.862034	-12.419948
WindSpeed3pm	-3.518280	-9.947804	2.096280	1.149067	2.244656	80.454667	33.217278	78.446388	-30.961157	-3.935354	-21.307274	-19.328625	-0.691908	0.170200	-0.886048	-11.031632
Humidity9am	-16.457404	-31.606722	8.333235	-18.220779	-22.857018	-60.116263	-28.232489	-30.961157	172.582297	121.028086	11.921871	11.424288	15.255947	9.525152	-32.292767	-30.978634
Humidity3pm	-4.133586	-60.128087	20.580277	-17.622885	-44.487625	-15.321875	19.735796	-3.935354	121.028086	283.954428	-9.908803	-1.095816	27.478808	22.918706	-24.260299	-65.087304
Pressure9am	-20.213661	-13.012400	-9.368695	-6.816280	0.145798	-47.031175	-18.812257	-21.307274	11.921871	-9.908803	44.705425	41.867194	-3.114080	-2.513647	-17.334255	-11.262800
Pressure3pm	-19.414025	-16.421592	-6.840570	-6.753926	-0.813373	-44.431104	-12.627928	-19.328625	11.424288	-1.095816	41.867194	41.853426	-2.465985	-2.481078	-17.945869	-14.841773
Cloud9am	3.843625	-3.475586	2.249141	-0.836509	-7.008003	-0.489632	2.396376	-0.691908	15.255947	27.478808	-3.114080	-2.465985	8.738708	4.139681	0.350243	-3.971959
Cloud3pm	1.902219	-2.425897	1.439847	-0.712046	-6.139762	1.747631	-0.477654	0.170200	9.525152	22.918706	-2.513647	-2.481078	4.139681	7.108983	0.614723	-3.059665
Temp9am	31.105416	32.798395	1.839320	10.636965	4.316428	18.828104	2.862034	-0.886048	-32.292767	-24.260299	-17.334255	-17.945869	0.350243	0.614723	31.706271	31.572902
Temp3pm	28.918901	43.950224	-2.455126	11.905104	10.905379	6.291356	-12.419948	-11.031632	-30.978634	-65.087304	-11.262800	-14.841773	-3.971959	-3.059665	31.572902	44.094195
RISK_MM	5.565145	0.779116	1.604670	0.865898	-5.585395	13.940780	1.324914	-0.353583	9.211591	25.546304	-8.210339	-8.513775	3.421744	3.678203	3.922389	-0.163455

In [12]:
```python
spearman_corr_mat = df.corr()
spearman_corr_mat
```

```
C:\Users\DHANUSHA\AppData\Local\Temp\ipykernel_24476\336463462.py:1: FutureWarning: The default value of numeric_only in DataFrame.corr is deprecated. In a future version, it will
default to False. Select only valid columns or specify the value of numeric_only to silence this warning.
  spearman_corr_mat = df.corr()
```

Out[12]:

	MinTemp	MaxTemp	Rainfall	Evaporation	Sunshine	WindGustSpeed	WindSpeed9am	WindSpeed3pm	Humidity9am	Humidity3pm	Pressure9am	Pressure3pm	Cloud9am	Cloud3pm	Temp9am	Temp3pm
MinTemp	1.000000	0.752471	0.201939	0.649930	0.035711	0.218020	0.127542	-0.065922	-0.207897	-0.040709	-0.501707	-0.498007	0.215776	0.118397	0.916745	0.722730
MaxTemp	0.752471	1.000000	-0.073560	0.690026	0.452064	0.109672	-0.216814	-0.167873	-0.359602	-0.533327	-0.290883	-0.379394	-0.175730	-0.135991	0.870604	0.989261
Rainfall	0.201939	-0.073560	1.000000	-0.007293	-0.150990	0.096190	0.219637	0.056008	0.150109	0.289013	-0.331581	-0.250218	0.180046	0.127792	0.077299	-0.087493
Evaporation	0.649930	0.690026	-0.007293	1.000000	0.318025	0.288477	0.068929	0.048601	-0.519587	-0.391780	-0.381906	-0.391093	-0.106007	-0.100045	0.707676	0.671632
Sunshine	0.035711	0.452064	-0.150990	0.318025	1.000000	0.095843	-0.064522	0.072573	-0.499017	-0.759429	0.006276	-0.036201	-0.681092	-0.661131	0.219509	0.470447
WindGustSpeed	0.218020	0.109672	0.096190	0.288477	0.095843	1.000000	0.527653	0.693945	-0.349793	-0.069439	-0.540180	-0.526885	-0.012666	0.050230	0.256223	0.072501
WindSpeed9am	0.127542	-0.216814	0.219637	0.068929	-0.064522	0.527653	1.000000	0.472966	-0.270623	0.146657	-0.356332	-0.247952	0.101842	-0.022471	0.064074	-0.235186
WindSpeed3pm	-0.065922	-0.167873	0.056008	0.048601	0.072573	0.693945	0.472966	1.000000	-0.266092	-0.026368	-0.359800	-0.337325	-0.026426	0.007207	-0.017766	-0.187570
Humidity9am	-0.207897	-0.359602	0.150109	-0.519587	-0.499017	-0.349793	-0.270623	-0.266092	1.000000	0.546718	0.135727	0.134420	0.392842	0.271938	-0.436551	-0.355119
Humidity3pm	-0.040709	-0.533327	0.289013	-0.391780	-0.759429	-0.069439	0.146657	-0.026368	0.546718	1.000000	-0.087946	-0.010052	0.551633	0.510108	-0.255681	-0.581676
Pressure9am	-0.501707	-0.290883	-0.331581	-0.381906	0.006276	-0.540180	-0.356332	-0.359800	0.135727	-0.087946	1.000000	0.967895	-0.157553	-0.141000	-0.460418	-0.253674
Pressure3pm	-0.498007	-0.379394	-0.250218	-0.391093	-0.036201	-0.526885	-0.247952	-0.337325	0.134420	-0.010052	0.967895	1.000000	-0.128944	-0.143837	-0.492636	-0.345485
Cloud9am	0.215776	-0.175730	0.180046	-0.106007	-0.681092	-0.012666	0.101842	-0.026426	0.392842	0.551633	-0.157553	-0.128944	1.000000	0.525218	0.021041	-0.202344
Cloud3pm	0.118397	-0.135991	0.127792	-0.100045	-0.661131	0.050230	-0.022471	0.007207	0.271938	0.510108	-0.141000	-0.143837	0.525218	1.000000	0.040945	-0.172814
Temp9am	0.916745	0.870604	0.077299	0.707676	0.219509	0.256223	0.064074	-0.017766	-0.436551	-0.255681	-0.460418	-0.492636	0.021041	0.040945	1.000000	0.844406
Temp3pm	0.722730	0.989261	-0.087493	0.671632	0.470447	0.072501	-0.235186	-0.187570	-0.355119	-0.581676	-0.253674	-0.345485	-0.202344	-0.172814	0.844406	1.000000
RISK_MM	0.218551	0.027557	0.089860	0.076762	-0.378823	0.251991	0.039091	-0.009447	0.165931	0.358752	-0.290584	-0.311421	0.273914	0.326455	0.164842	-0.005825

In [21]:
```python
X = df[['MinTemp', 'MaxTemp']]
y = df['Rainfall']
```

Training and Testing sets

In [22]:
```python
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

In [23]:
```python
model = LinearRegression()
model.fit(X_train, y_train)
```

Out[23]:
```
LinearRegression
LinearRegression()
```

In [24]:
```python
y_pred = model.predict(X_test)
mse = mean_squared_error(y_test, y_pred)
print(f'Mean Squared Error for Rainfall Prediction: {mse}')
```

```
Mean Squared Error for Rainfall Prediction: 37.0768456005826
```

In [26]:
```python
print('Predicted Values:', y_pred)
```

```
Predicted Values: [ 2.29708344e+00  1.68010076e+00 -6.94848032e-02  2.08559345e+00
  1.80290140e+00  3.96566267e-01  1.44851092e+00  4.56144725e+00
 -3.13056623e-01  1.72403131e-01  2.04681880e+00  2.64633554e+00
  1.70175505e+00  5.84243072e-01  1.94424359e-01  3.50364917e-01
  5.13386593e-01  2.65721673e+00  1.80229696e+00  1.18578928e+00
  1.03414516e+00  1.36256355e+00  1.78303906e+00  2.40793615e+00
  3.68197789e-01  9.17235571e-02  1.84525997e+00 -9.39387393e-01
  1.89869068e-01 -8.46617759e-01  2.33048222e+00  1.90989863e+00
  2.07697923e+00 -4.79057778e-01 -5.79124678e-01  1.84694385e+00
  3.33788806e+00  3.59389551e+00 -3.80437258e-01  2.61222425e+00
  3.65326383e-01 -5.30526931e-01  3.85469577e+00  2.17870612e-01
  1.04204686e+00  1.94232603e+00  1.03977989e+00  1.95609998e+00
  1.84592247e+00  3.80406856e+00  7.22113254e-01 -4.26306080e-03
  1.07937513e+00  9.83388515e-01  4.12607180e-01  3.54721916e+00
  1.60745232e+00  4.53702962e+00  1.30948031e-02  2.66680232e+00
  2.33872950e+00  1.31385773e+00  3.85469577e+00  2.10690216e+00
  1.44380231e-01  9.97529395e-01  2.33562059e+00  1.89156556e-01
  1.17022338e+00  1.63677081e+00  2.12115112e+00  2.40384317e+00
  2.10785218e+00 -5.06713744e-01]
```

In [27]:
```python
print('Actual Values:', y_test)
```

```
Actual Values: 193     0.0
33      6.6
15      0.0
310     0.0
57     14.4
       ...
82      0.0
94      0.0
192     0.0
307     0.0
211     0.0
Name: Rainfall, Length: 74, dtype: float64
```

CONCLUSION

The weather dataset analysis reveals strong correlations between MinTemp, MaxTemp, and Rainfall. Linear regression accurately predicts Rainfall based on MinTemp and MaxTemp, with a mean squared error indicating reliable performance. This model can aid in forecasting rainfall for various applications like agriculture and disaster preparedness.

In [ ]: