```
#importing libraries

import pandas as pd
import numpy as np

#read data

data=pd.read_csv("C:\\Users\\amitk\\OneDrive\\Desktop\\
austin_weather.csv")

data
```

```
            Date  TempHighF  TempAvgF  TempLowF DewPointHighF
DewPointAvgF  \
0     2013-12-21         74        60        45            67
49
1     2013-12-22         56        48        39            43
36
2     2013-12-23         58        45        32            31
27
3     2013-12-24         61        46        31            36
28
4     2013-12-25         58        50        41            44
40
...          ...        ...       ...       ...           ...
...
1314  2017-07-27        103        89        75            71
67
1315  2017-07-28        105        91        76            71
64
1316  2017-07-29        107        92        77            72
64
1317  2017-07-30        106        93        79            70
68
1318  2017-07-31         99        88        77            66
61

     DewPointLowF HumidityHighPercent HumidityAvgPercent
HumidityLowPercent  \
0              43                  93                 75
57
1              28                  93                 68
43
2              23                  76                 52
27
3              21                  89                 56
22
4              36                  86                 71
56
...           ...                 ...                ...
```

```
...
1314           61                  82                  54
25
1315           55                  87                  54
20
1316           55                  82                  51
19
1317           63                  69                  48
27
1318           54                  64                  43
22

      ... SeaLevelPressureAvgInches SeaLevelPressureLowInches  \
0     ...                     29.68                     29.59
1     ...                     30.13                     29.87
2     ...                     30.49                     30.41
3     ...                     30.45                      30.3
4     ...                     30.33                     30.27
...   ...                       ...                       ...
1314  ...                     29.97                     29.88
1315  ...                      29.9                     29.81
1316  ...                     29.86                     29.79
1317  ...                     29.91                     29.87
1318  ...                     29.97                     29.91

     VisibilityHighMiles VisibilityAvgMiles VisibilityLowMiles
WindHighMPH  \
0                     10                   7                   2
20
1                     10                  10                   5
16
2                     10                  10                  10
8
3                     10                  10                   7
12
4                     10                  10                   7
10
...                  ...                 ...                 ...
...
1314                  10                  10                  10
12
1315                  10                  10                  10
14
1316                  10                  10                  10
12
1317                  10                  10                  10
13
1318                  10                  10                  10
12
```

```
     WindAvgMPH WindGustMPH PrecipitationSumInches
Events
0              4          31                    0.46  Rain ,
Thunderstorm
1              6          25                       0

2              3          12                       0

3              4          20                       0

4              2          16                       T

...          ...         ...                     ...                  ..
.
1314           5          21                       0

1315           5          20                       0

1316           4          17                       0

1317           4          20                       0

1318           4          20                       0


[1319 rows x 21 columns]
```

```
#drop unnecessary columns

data=data.drop(["Events","Date","SeaLevelPressureLowInches"],axis=1)

data=data.replace('T',0.0)

data=data.replace('_',0.0)
data
```

```
      TempHighF  TempAvgF  TempLowF DewPointHighF DewPointAvgF
DewPointLowF  \
0            74        60        45            67           49
43
1            56        48        39            43           36
28
2            58        45        32            31           27
23
3            61        46        31            36           28
21
4            58        50        41            44           40
36
...         ...       ...       ...           ...          ...
...
```

```
1314        103        89        75            71           67
61
1315        105        91        76            71           64
55
1316        107        92        77            72           64
55
1317        106        93        79            70           68
63
1318         99        88        77            66           61
54

     HumidityHighPercent HumidityAvgPercent HumidityLowPercent  \
0                     93                  75                  57
1                     93                  68                  43
2                     76                  52                  27
3                     89                  56                  22
4                     86                  71                  56
...                  ...                 ...                 ...
1314                  82                  54                  25
1315                  87                  54                  20
1316                  82                  51                  19
1317                  69                  48                  27
1318                  64                  43                  22

     SeaLevelPressureHighInches SeaLevelPressureAvgInches
VisibilityHighMiles  \
0                         29.86                     29.68
10
1                         30.41                     30.13
10
2                         30.56                     30.49
10
3                         30.56                     30.45
10
4                         30.41                     30.33
10
...                         ...                       ...
...
1314                      30.04                     29.97
10
1315                      29.97                      29.9
10
1316                      29.91                     29.86
10
1317                      29.96                     29.91
10
1318                      30.04                     29.97
10

     VisibilityAvgMiles VisibilityLowMiles WindHighMPH WindAvgMPH
```

```
WindGustMPH  \
0                      7                   2          20          4
31
1                     10                   5          16          6
25
2                     10                  10           8          3
12
3                     10                   7          12          4
20
4                     10                   7          10          2
16
...                  ...                 ...         ...        ...
...
1314                  10                  10          12          5
21
1315                  10                  10          14          5
20
1316                  10                  10          12          4
17
1317                  10                  10          13          4
20
1318                  10                  10          12          4
20

     PrecipitationSumInches
0                      0.46
1                         0
2                         0
3                         0
4                       0.0
...                     ...
1314                      0
1315                      0
1316                      0
1317                      0
1318                      0

[1319 rows x 18 columns]
```

```
data.to_csv("austin_weather_final.csv")
```

```
#importing libraries

import numpy as np
import pandas as pd
import sklearn as sk
from sklearn.linear_model import LinearRegression
import matplotlib.pyplot as plt

data=pd.read_csv("austin_weather_final.csv")
```

```
data
```

```
      Unnamed: 0  TempHighF  TempAvgF  TempLowF DewPointHighF
DewPointAvgF  \
0               0         74        60        45            67
49
1               1         56        48        39            43
36
2               2         58        45        32            31
27
3               3         61        46        31            36
28
4               4         58        50        41            44
40
...           ...        ...       ...       ...           ...
...
1314         1314        103        89        75            71
67
1315         1315        105        91        76            71
64
1316         1316        107        92        77            72
64
1317         1317        106        93        79            70
68
1318         1318         99        88        77            66
61

     DewPointLowF HumidityHighPercent HumidityAvgPercent
HumidityLowPercent  \
0               43                  93                 75
57
1               28                  93                 68
43
2               23                  76                 52
27
3               21                  89                 56
22
4               36                  86                 71
56
...            ...                 ...                ...
...
1314            61                  82                 54
25
1315            55                  87                 54
20
1316            55                  82                 51
19
1317            63                  69                 48
27
1318            54                  64                 43
```

```
22

     SeaLevelPressureHighInches SeaLevelPressureAvgInches
VisibilityHighMiles  \
0                         29.86                      29.68
10
1                         30.41                      30.13
10
2                         30.56                      30.49
10
3                         30.56                      30.45
10
4                         30.41                      30.33
10
...                         ...                        ...
...
1314                      30.04                      29.97
10
1315                      29.97                       29.9
10
1316                      29.91                      29.86
10
1317                      29.96                      29.91
10
1318                      30.04                      29.97
10

     VisibilityAvgMiles VisibilityLowMiles WindHighMPH WindAvgMPH
WindGustMPH  \
0                     7                  2          20          4
31
1                    10                  5          16          6
25
2                    10                 10           8          3
12
3                    10                  7          12          4
20
4                    10                  7          10          2
16
...                 ...                ...         ...        ...
...
1314                 10                 10          12          5
21
1315                 10                 10          14          5
20
1316                 10                 10          12          4
17
1317                 10                 10          13          4
20
1318                 10                 10          12          4
```

```
20
```

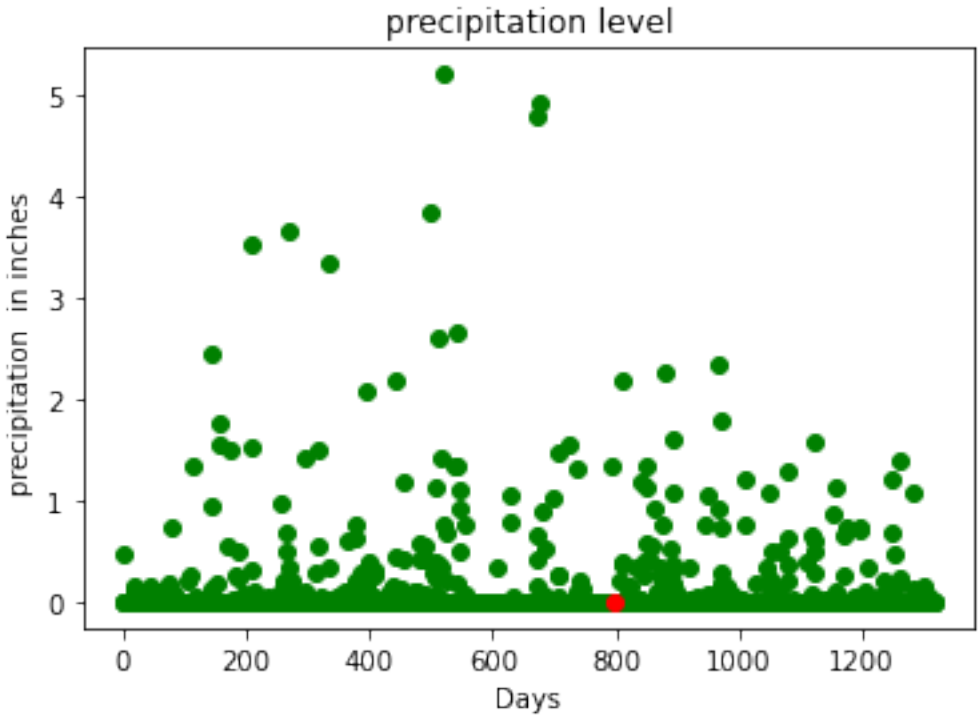
```
      PrecipitationSumInches
0                       0.46
1                       0.00
2                       0.00
3                       0.00
4                       0.00
...                      ...
1314                    0.00
1315                    0.00
1316                    0.00
1317                    0.00
1318                    0.00

[1319 rows x 19 columns]
```

```
X=data.drop(['PrecipitationSumInches'],axis=1)

Y=data["PrecipitationSumInches"]

#reshaping into 2D vector

Y=Y.values.reshape(-1,1)

day_index=798
days=[i for i in range(Y.size)]

#initialize the linear regression classifier

clf =LinearRegression()
#train the classifier
clf.fit
```

```
<bound method LinearRegression.fit of LinearRegression()>
```

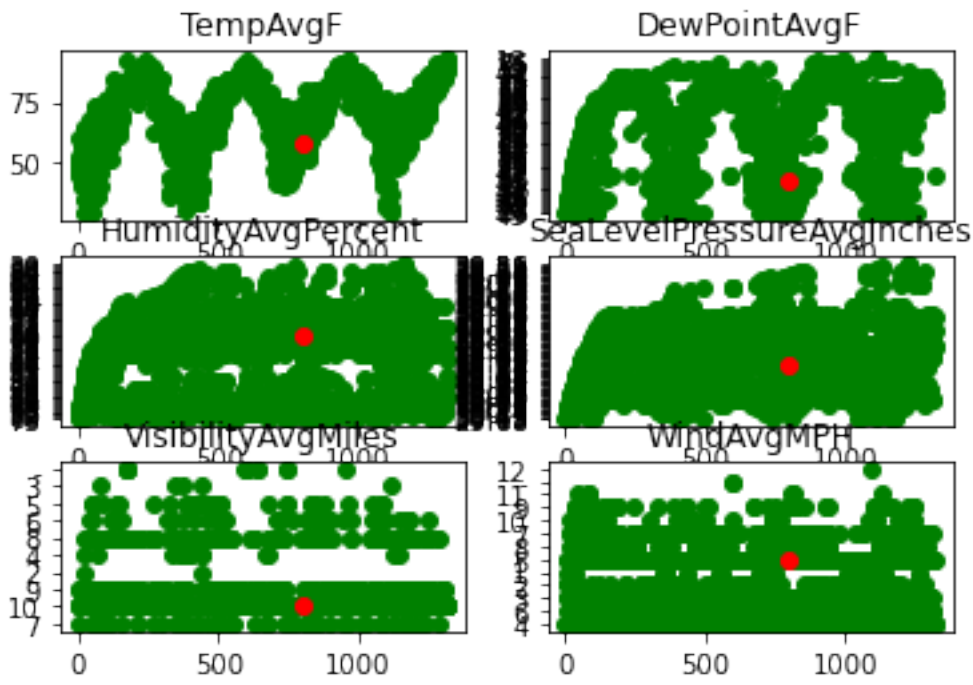
```
#plot a graph

print("The precipitation trend graph")
plt.scatter(days,Y,color="g")
plt.scatter(days[day_index],Y[day_index],color='r')
plt.title("precipitation level")
plt.xlabel("Days")
plt.ylabel("precipitation  in inches ")
plt.show()
x_vis=X.filter(['TempAvgF','DewPointAvgF','HumidityAvgPercent','SeaLev
elPressureAvgInches','VisibilityAvgMiles','WindAvgMPH'])
```

The precipitation trend graph




```
print("the precipitation vs attributes trend graph:")
for i in range(x_vis.columns.size):
    plt.subplot(3,2,i+1)
    plt.scatter(days,x_vis[x_vis.columns.values[i][:100]],color='g')
    plt.scatter(days[day_index],x_vis[x_vis.columns.values[i]]
[day_index],color='r')
    plt.title(x_vis.columns.values[i])
plt.show()
```

the precipitation vs attributes trend graph:


TempAvgF
DewPointAvgF
HumidityAvgPercent
SeaLevelPressureAvgInches
VisibilityAvgMiles
WindAvgMPH
75
50
0
500
1000
12
11
10