

Type *Markdown* and LaTeX: α^2

Importing Libraries ¶

```
In [1]: import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

Importing Datasets

```
In [2]: df=pd.read_csv(r"C:\Users\user\Downloads\drive-download-20230804T043023Z-001\rainfall_gujarat region.csv")
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	Jan-Feb	Mar-May
0	1012	EAST UTTAR PRADESH	1901	62.6	31.3	8.2	1.1	13.6	21.8	226.5	285.6	215.4	4.9	0.1	2.1	873.2	93.9	22
1	1013	EAST UTTAR PRADESH	1902	6.1	2.3	2.4	2.0	21.4	32.5	411.5	155.4	257.2	13.2	1.2	0.0	905.2	8.3	25
2	1014	EAST UTTAR PRADESH	1903	8.2	0.4	1.3	0.7	15.3	71.6	115.3	420.2	258.7	324.7	0.0	0.0	1216.4	8.6	17
3	1015	EAST UTTAR PRADESH	1904	7.3	1.5	8.3	0.4	28.7	148.0	359.4	328.8	95.0	50.6	17.0	26.3	1071.2	8.8	37
4	1016	EAST UTTAR PRADESH	1905	16.8	23.6	20.0	5.4	15.4	17.3	302.4	316.2	169.5	3.3	0.0	1.6	891.6	40.5	40
...
110	1122	EAST UTTAR PRADESH	2011	1.0	2.7	1.6	2.9	32.2	163.8	197.9	232.1	146.4	0.6	0.0	0.0	781.2	3.7	36
111	1123	EAST UTTAR PRADESH	2012	20.3	1.2	3.4	2.8	0.2	18.5	234.2	156.0	164.4	0.7	0.3	0.7	602.7	21.5	6
112	1124	EAST UTTAR PRADESH	2013	6.1	59.6	2.7	8.7	1.1	309.7	230.0	246.1	78.2	97.4	0.5	1.1	1041.4	65.8	12
113	1125	EAST UTTAR PRADESH	2014	47.4	25.8	15.4	1.7	10.7	47.8	224.5	138.1	106.7	74.7	0.0	8.4	701.2	73.3	27
114	1126	EAST UTTAR PRADESH	2015	30.0	4.1	48.2	23.2	8.6	95.3	179.0	175.8	21.9	11.8	0.5	4.9	603.3	34.1	80

115 rows × 20 columns

Data Cleaning and Data Preprocessing

```
In [3]: df=df.dropna()
```

```
In [4]: df.columns
```

```
Out[4]: Index(['index', 'SUBDIVISION', 'YEAR', 'JAN', 'FEB', 'MAR', 'APR', 'MAY',
              'JUN', 'JUL', 'AUG', 'SEP', 'OCT', 'NOV', 'DEC', 'ANNUAL', 'Jan-Feb',
              'Mar-May', 'Jun-Sep', 'Oct-Dec'],
              dtype='object')
```

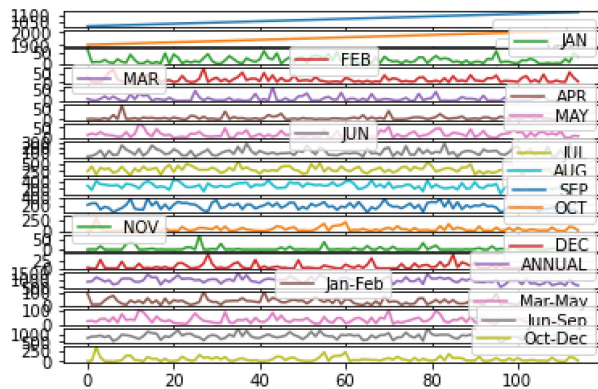
In [5]: `df.info()`

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 115 entries, 0 to 114
Data columns (total 20 columns):
#   Column          Non-Null Count  Dtype
---  -
0   index           115 non-null   int64
1   SUBDIVISION     115 non-null   object
2   YEAR            115 non-null   int64
3   JAN             115 non-null   float64
4   FEB             115 non-null   float64
5   MAR             115 non-null   float64
6   APR             115 non-null   float64
7   MAY             115 non-null   float64
8   JUN             115 non-null   float64
9   JUL             115 non-null   float64
10  AUG             115 non-null   float64
11  SEP             115 non-null   float64
12  OCT             115 non-null   float64
13  NOV             115 non-null   float64
14  DEC             115 non-null   float64
15  ANNUAL          115 non-null   float64
16  Jan-Feb         115 non-null   float64
17  Mar-May         115 non-null   float64
18  Jun-Sep         115 non-null   float64
19  Oct-Dec         115 non-null   float64
dtypes: float64(17), int64(2), object(1)
memory usage: 18.9+ KB
```

Line chart

In [6]: `df.plot.line(subplots=True)`

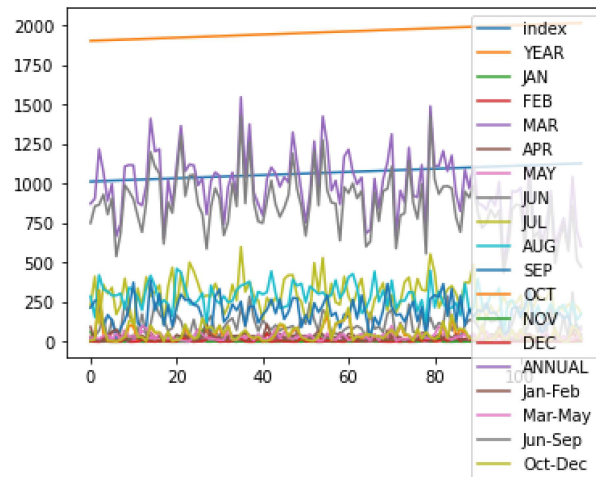
Out[6]: array([<AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>], dtype=object)



Line chart

```
In [7]: df.plot.line()
```

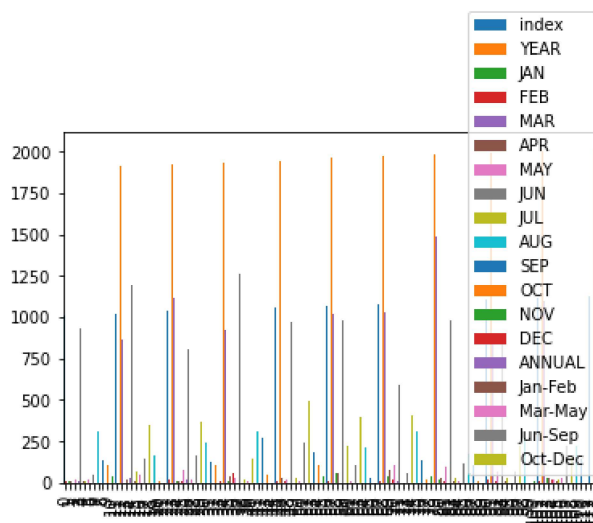
```
Out[7]: <AxesSubplot:>
```



Bar chart

```
In [8]: df.plot.bar()
```

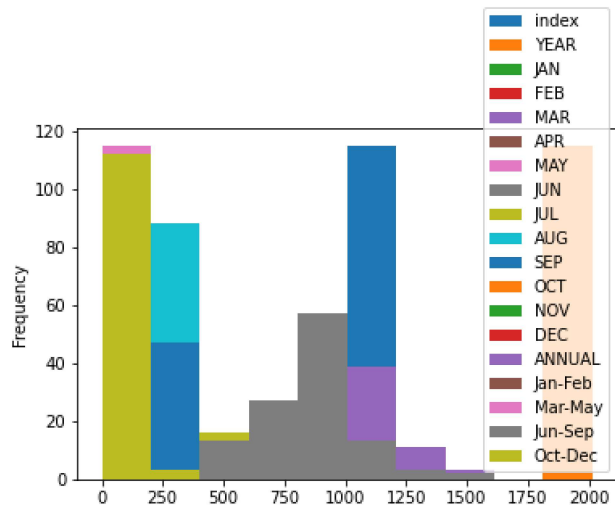
```
Out[8]: <AxesSubplot:>
```



Histogram

```
In [9]: df.plot.hist()
```

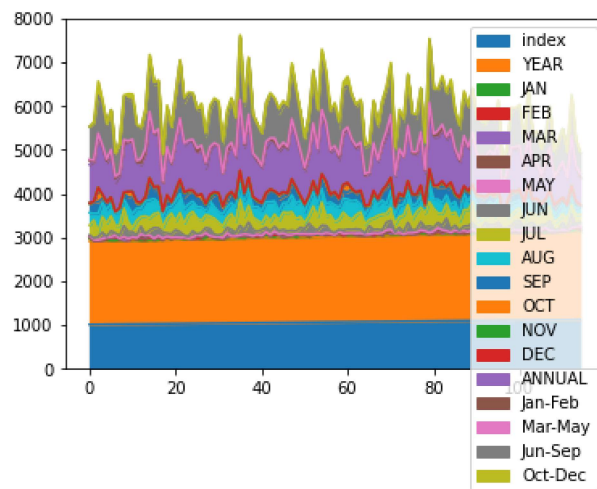
```
Out[9]: <AxesSubplot:ylabel='Frequency'>
```



Area chart

```
In [10]: df.plot.area()
```

```
Out[10]: <AxesSubplot:>
```

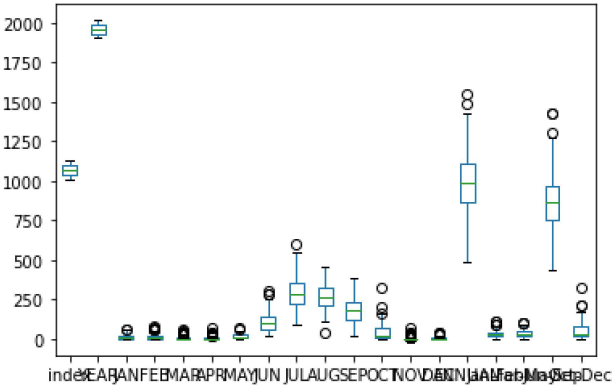


Box chart

In [11]:

df.plot.box()

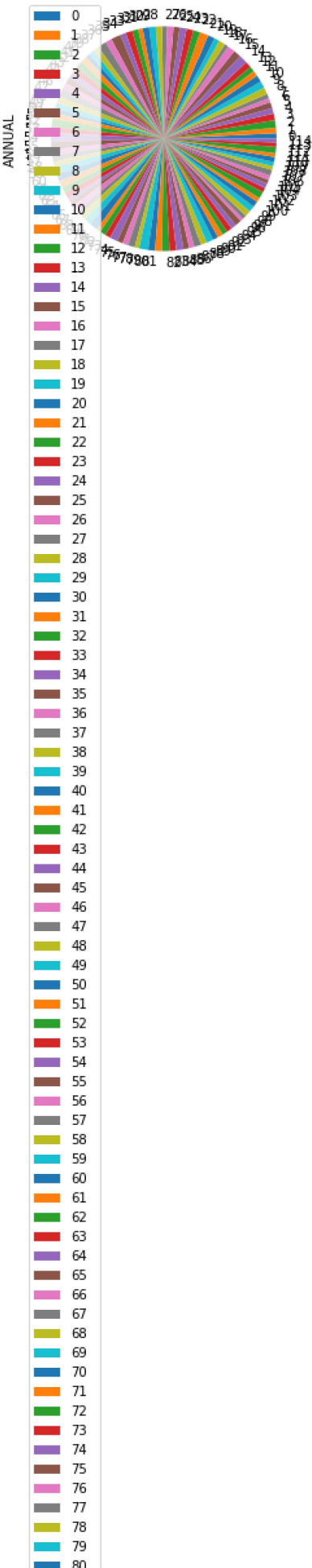
Out[11]: <AxesSubplot:>

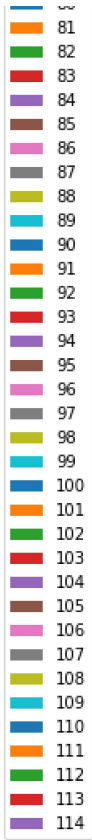


Pie chart

```
In [12]: df.plot.pie(y='ANNUAL' )
```

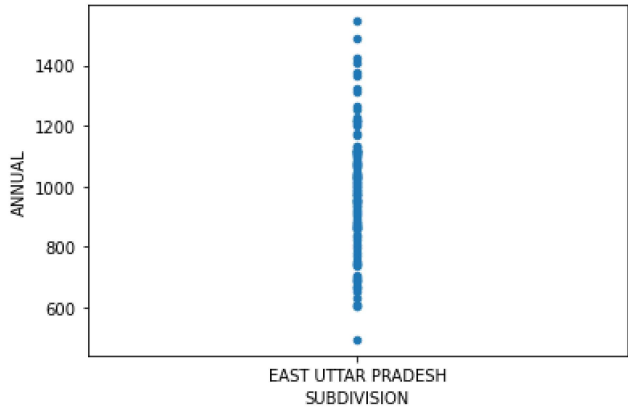
```
Out[12]: <AxesSubplot:ylabel='ANNUAL'>
```



Scatter chart

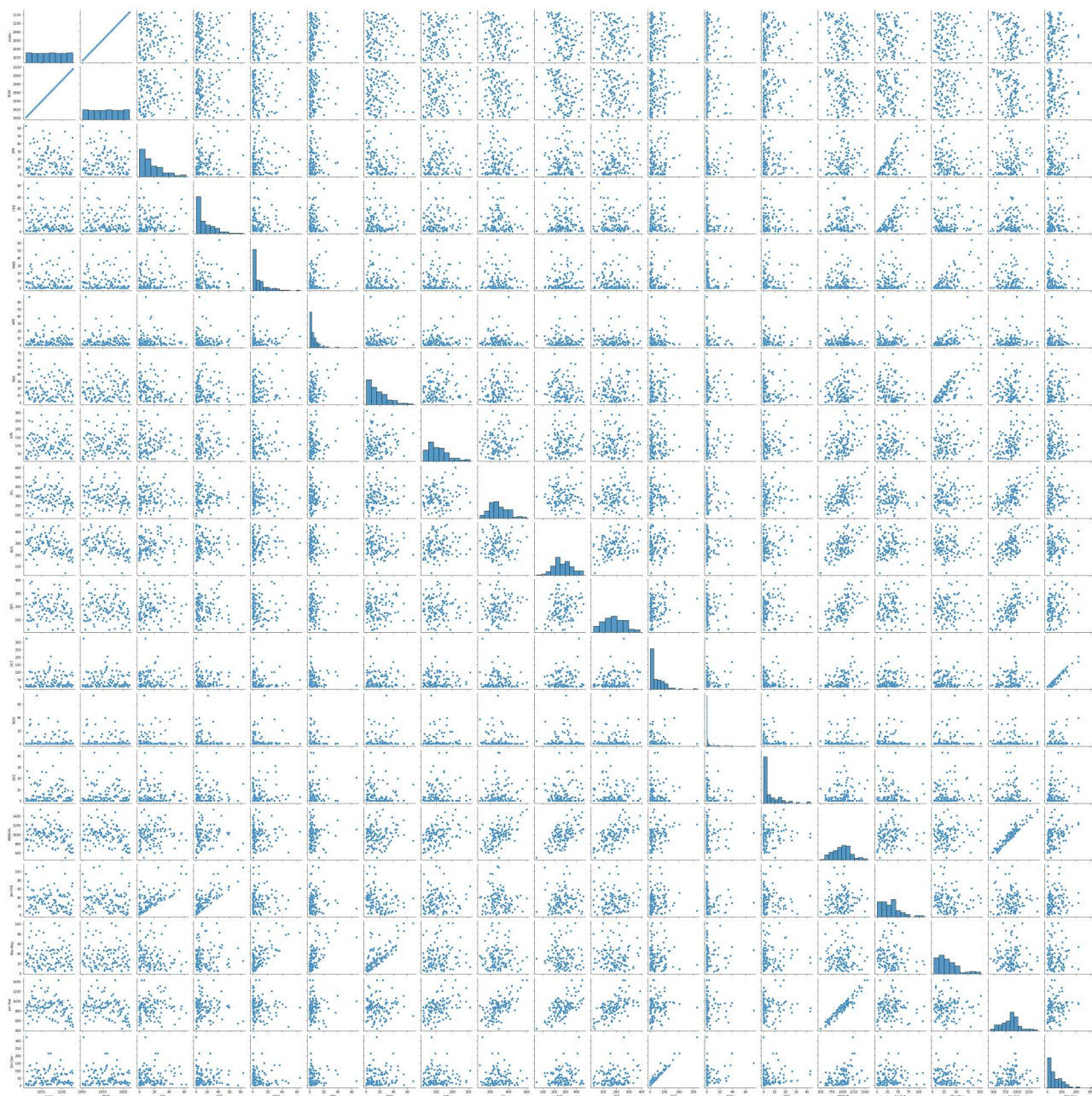
```
In [13]: df.plot.scatter(x='SUBDIVISION' ,y='ANNUAL')
Out[13]: <AxesSubplot:xlabel='SUBDIVISION', ylabel='ANNUAL'>
```



Seaborn

```
In [14]: sns.pairplot(df)
```

```
Out[14]: <seaborn.axisgrid.PairGrid at 0x2c337c48820>
```

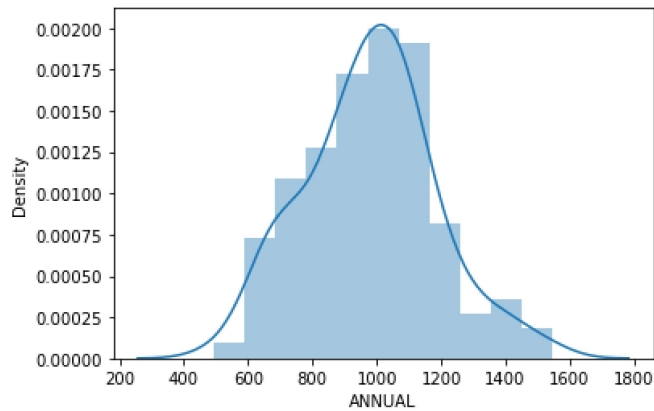


```
In [15]: sns.distplot(df['ANNUAL'])
```

C:\ProgramData\Anaconda3\lib\site-packages\seaborn\distributions.py:2557: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).

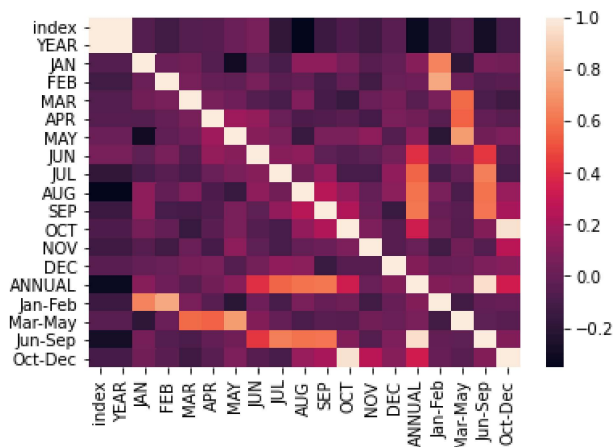
warnings.warn(msg, FutureWarning)

```
Out[15]: <AxesSubplot:xlabel='ANNUAL', ylabel='Density'>
```



```
In [16]: sns.heatmap(df.corr())
```

```
Out[16]: <AxesSubplot:>
```



```
In [ ]:
```