hbmx0hbrz

August 4, 2023

1 20104169 - SUMESH R

2 Importing Libraries

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

[2]:
```
from google.colab import drive
drive.mount('/content/drive')
df=pd.read_csv("/content/drive/MyDrive/mydatasets/rainfall/rainfall_jharkhand.
 ↪csv")
df
```

```
Mounted at /content/drive
```

[2]:
```
     index SUBDIVISION  YEAR   JAN   FEB   MAR   APR    MAY    JUN    JUL  \
0      782   JHARKHAND  1901  92.7  66.6  11.1  18.4   33.5   70.9  269.4
1      783   JHARKHAND  1902   4.2   7.7  13.2  28.5   59.8   89.9  456.1
2      784   JHARKHAND  1903  25.1  19.5  10.7  32.8   56.4  142.1  206.1
3      785   JHARKHAND  1904   2.5  17.0  38.1   9.1  116.1  308.9  494.1
4      786   JHARKHAND  1905  38.4  53.3  61.6  32.9   66.2   41.5  420.3
..     …           …     …    …     …     …     …     …      …      …
110    892   JHARKHAND  2011   3.3   2.5   6.4  25.4   55.0  349.0  181.8
111    893   JHARKHAND  2012  34.6  10.3   1.5   9.6    6.6  121.1  287.2
112    894   JHARKHAND  2013   1.1  17.9   1.6  22.3   85.0  181.5  211.1
113    895   JHARKHAND  2014   9.9  47.5  22.9   1.9   98.2  139.7  321.3
114    896   JHARKHAND  2015  12.2   2.6  21.6  55.5   25.5  183.3  429.7

       AUG    SEP    OCT   NOV  DEC  ANNUAL  Jan-Feb  Mar-May  Jun-Sep  \
0    415.1  248.0   37.3  11.5  0.0  1274.5    159.3     63.0   1003.4
1    204.9  306.6   17.6   5.9  3.2  1197.6     11.9    101.5   1057.5
2    280.8  190.2  210.1   0.5  0.0  1174.3     44.6     99.9    819.3
3    336.1  125.6   30.6   2.3  0.4  1480.7     19.6    163.3   1264.6
4    293.7  322.8   21.3   0.0  2.7  1354.7     91.7    160.7   1078.3
..     …      …      …     …    …       …        …        …        …
```

```
110  403.2  324.6   23.3   0.0  0.1  1374.7      5.8     86.8   1258.7
111  282.4  217.6   37.8  48.6  7.6  1065.0     45.0     17.7    908.3
112  278.1  173.8  281.1   0.0  0.0  1253.6     19.0    109.0    844.5
113  290.9  178.2   44.9   0.0  1.2  1156.6     57.4    123.1    930.1
114  240.7   85.1   22.7   0.2  2.7  1081.8     14.8    102.6    938.8

     Oct-Dec
0       48.8
1       26.7
2      210.6
3       33.3
4       24.0
..       …
110     23.4
111     94.0
112    281.1
113     46.1
114     25.6

[115 rows x 20 columns]
```

3 Data Cleaning and Data Preprocessing

[3]:

```
df=df.dropna()
```

[4]:

```
df.columns
```

[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')
```

[5]:

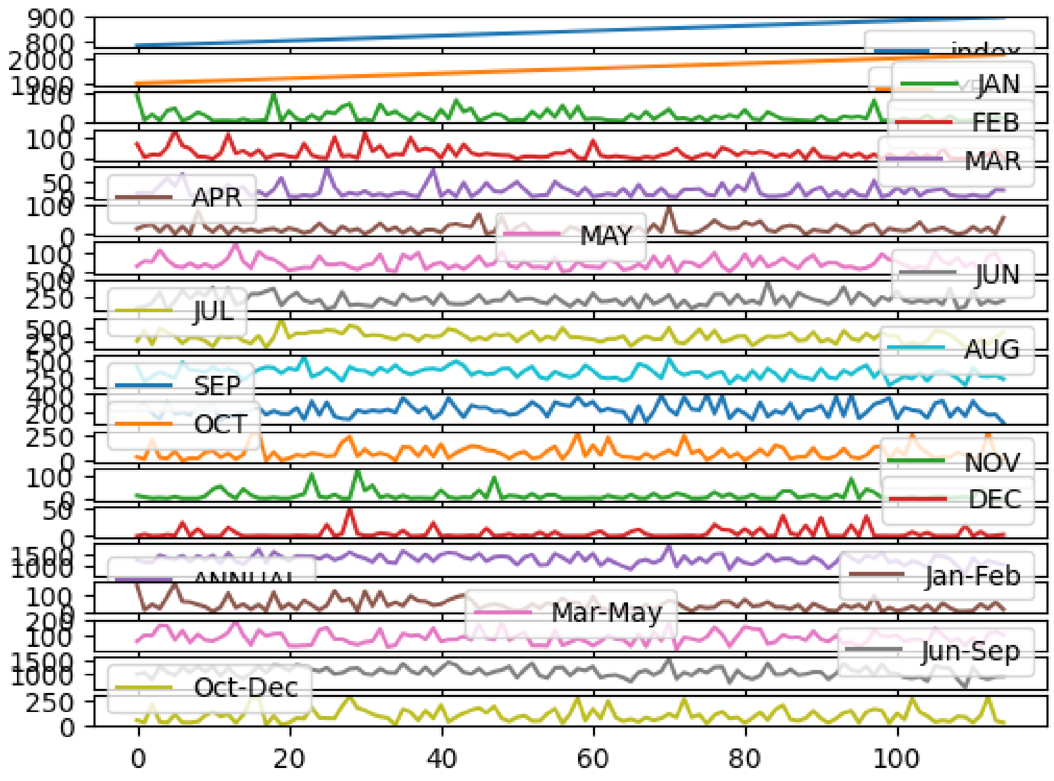
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 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: 18.1+ KB
```

4 Line chart

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

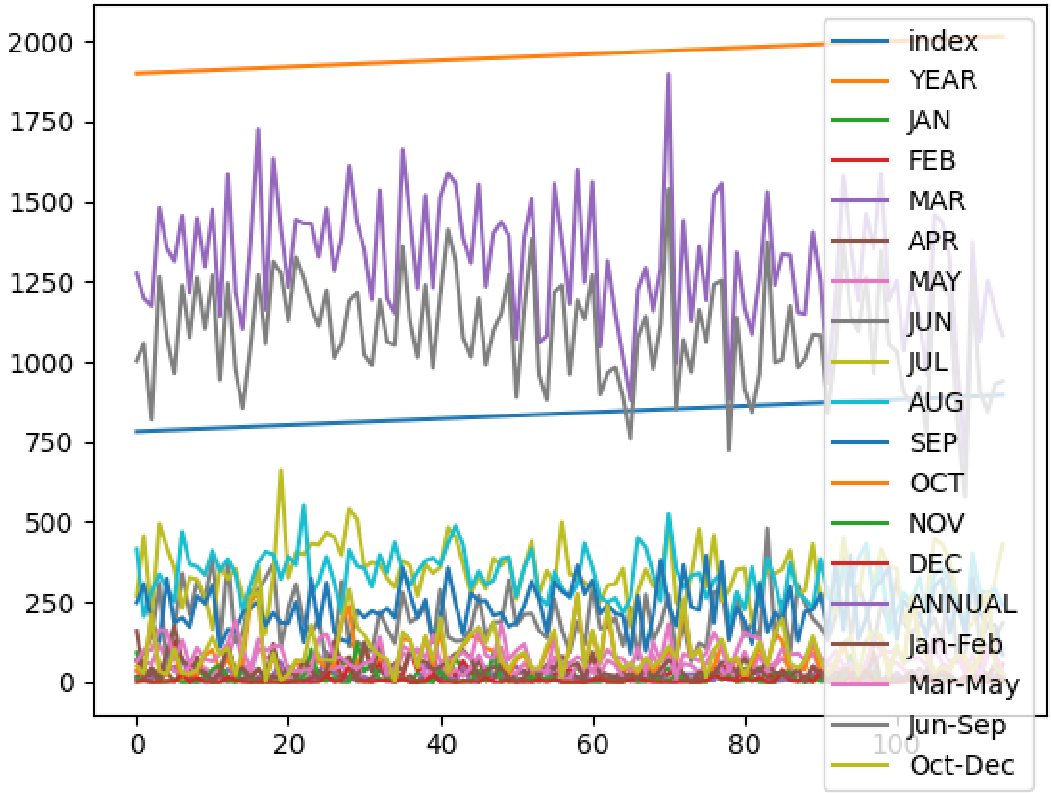
[6]:
```
array([<Axes: >, <Axes: >, <Axes: >, <Axes: >, <Axes: >, <Axes: >,
       <Axes: >, <Axes: >, <Axes: >, <Axes: >, <Axes: >, <Axes: >,
       <Axes: >, <Axes: >, <Axes: >, <Axes: >, <Axes: >, <Axes: >,
       <Axes: >], dtype=object)
```



5 Line chart

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

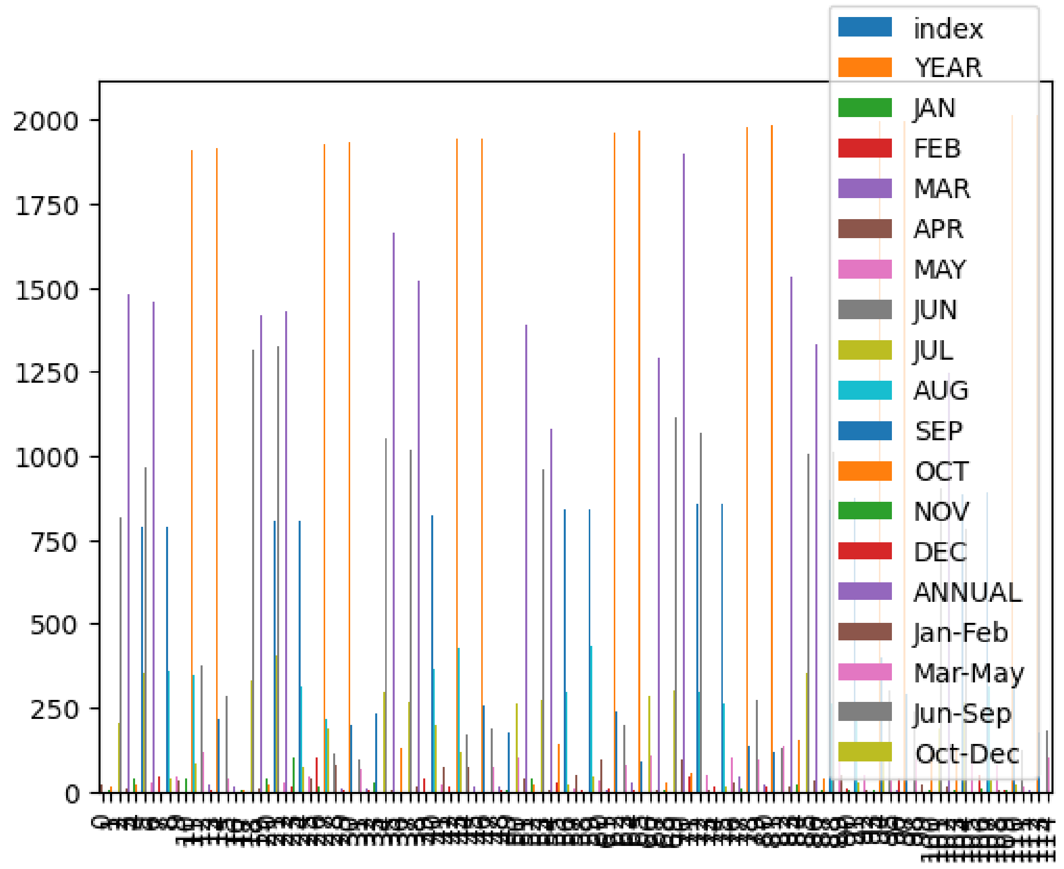
[7]:
```
<Axes: >
```



6 Bar chart

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

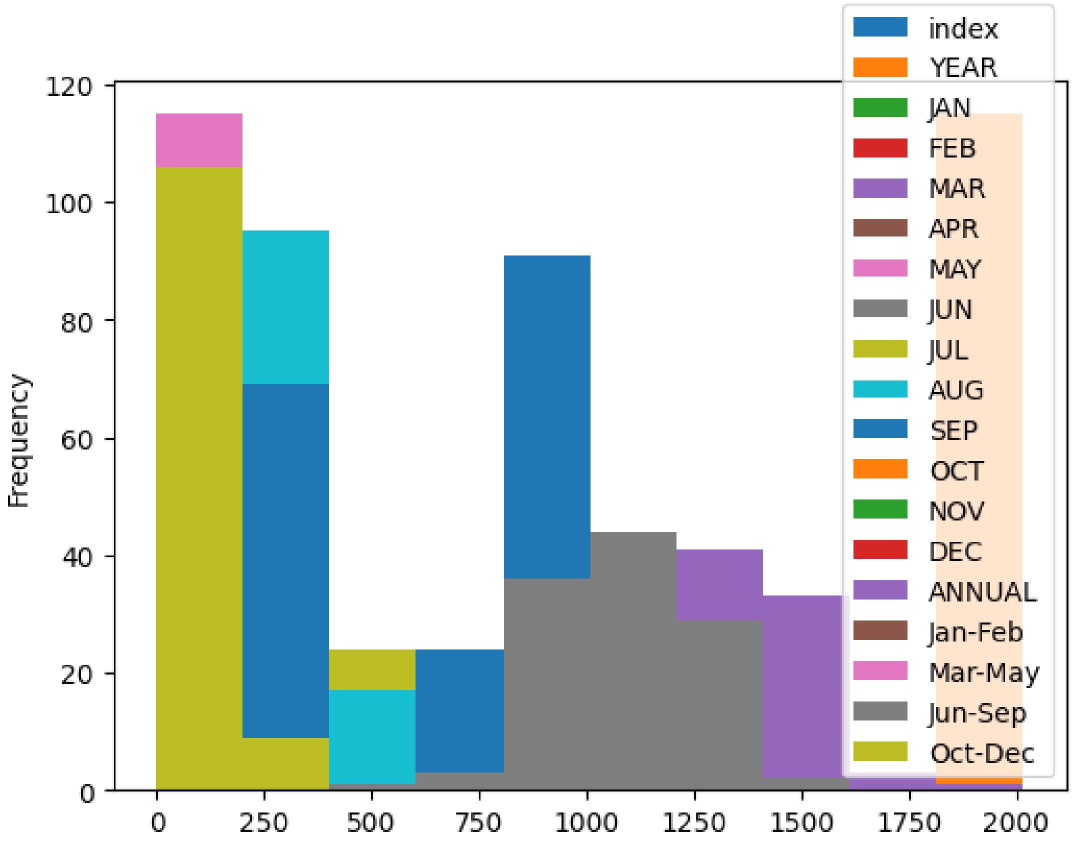
[8]:
```
<Axes: >
```



7 Histogram

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

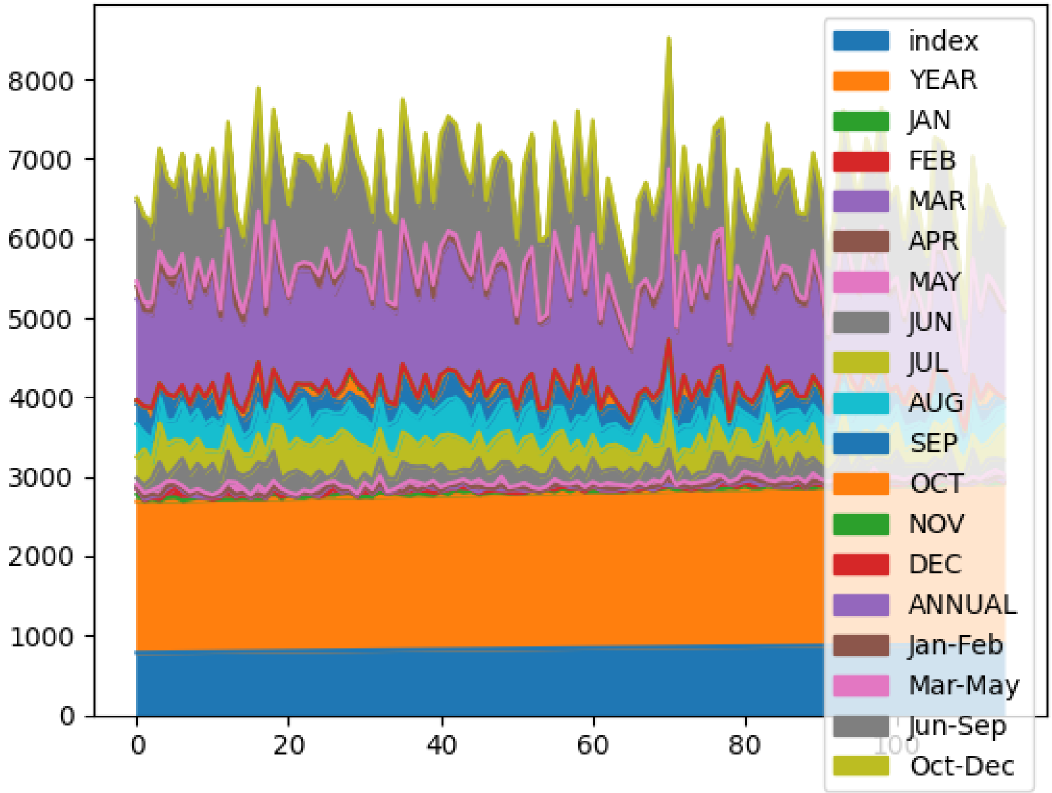
```
[9]: <Axes: ylabel='Frequency'>
```



8 Area chart

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

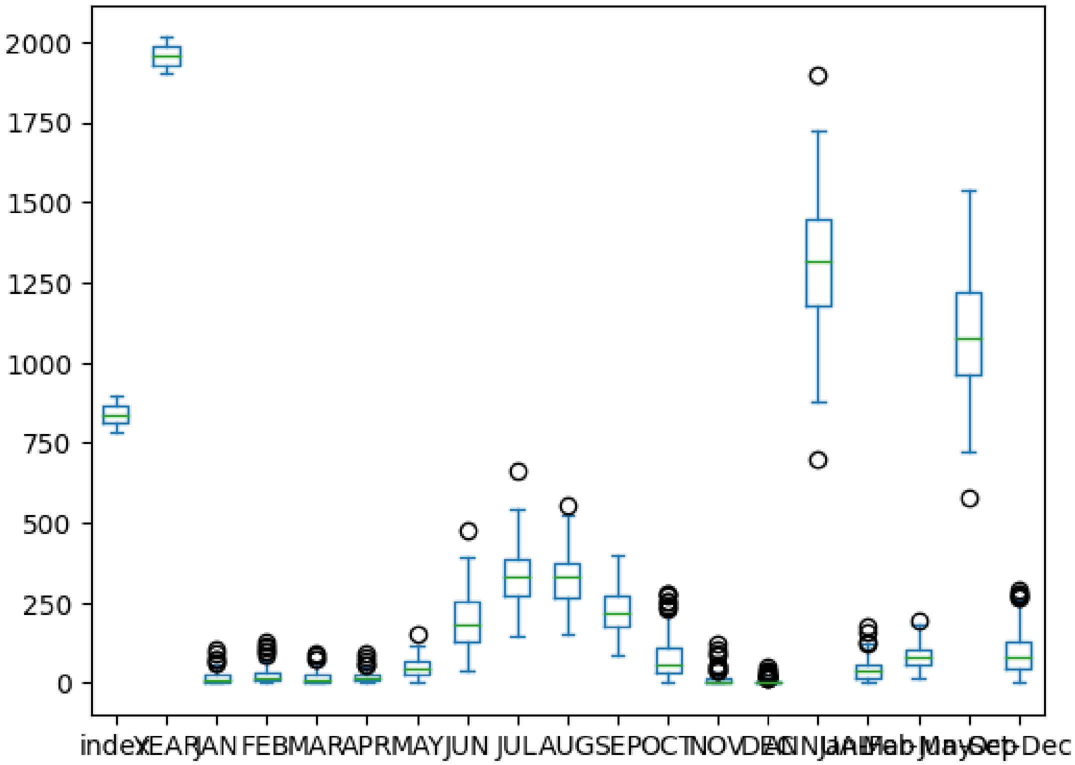
```
[10]: <Axes: >
```



9 Box chart

```
[11]: df.plot.box()
```

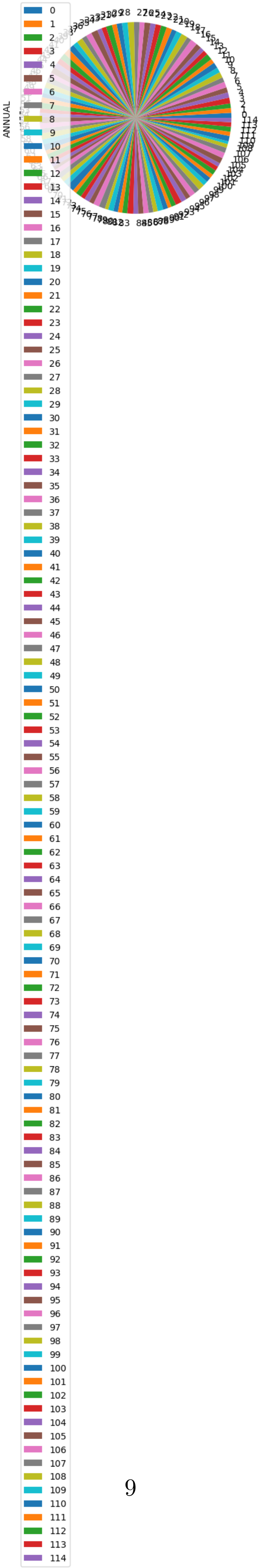
```
[11]: <Axes: >
```



10 Pie chart

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

```
[12]: <Axes: ylabel='ANNUAL'>
```


ANNUAL
0
1
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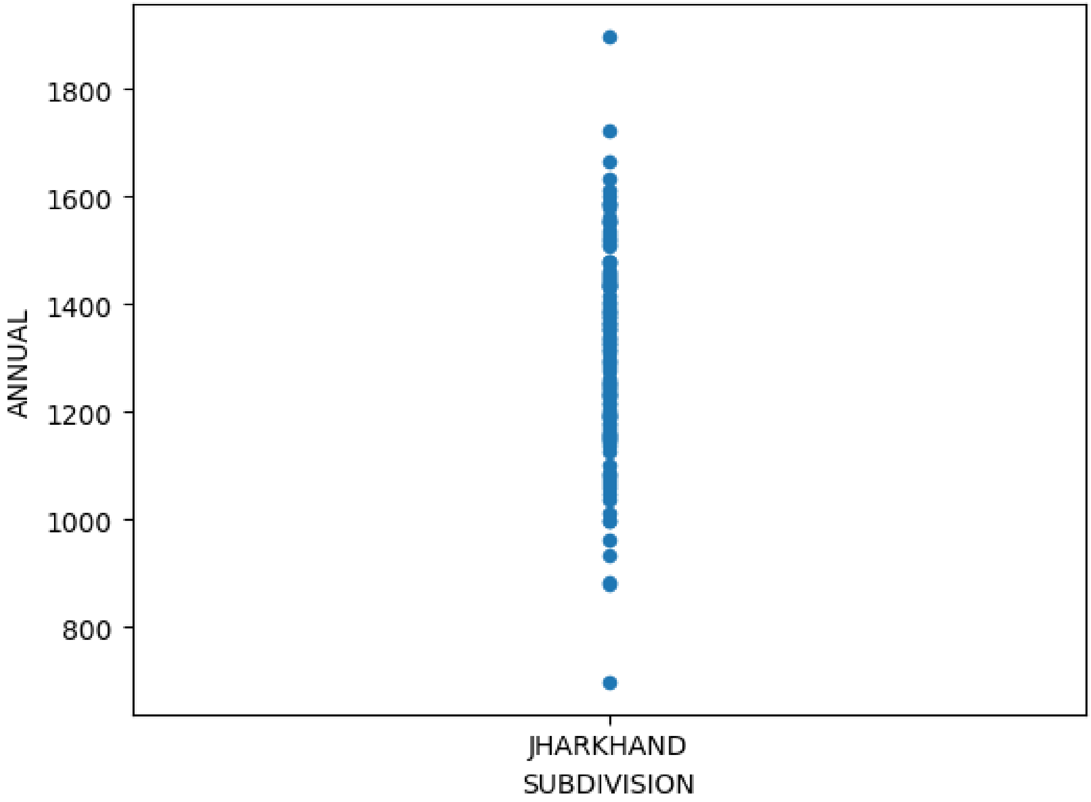
114

11 Scatter chart

[13]:
```
df.plot.scatter(x='SUBDIVISION' ,y='ANNUAL')
```

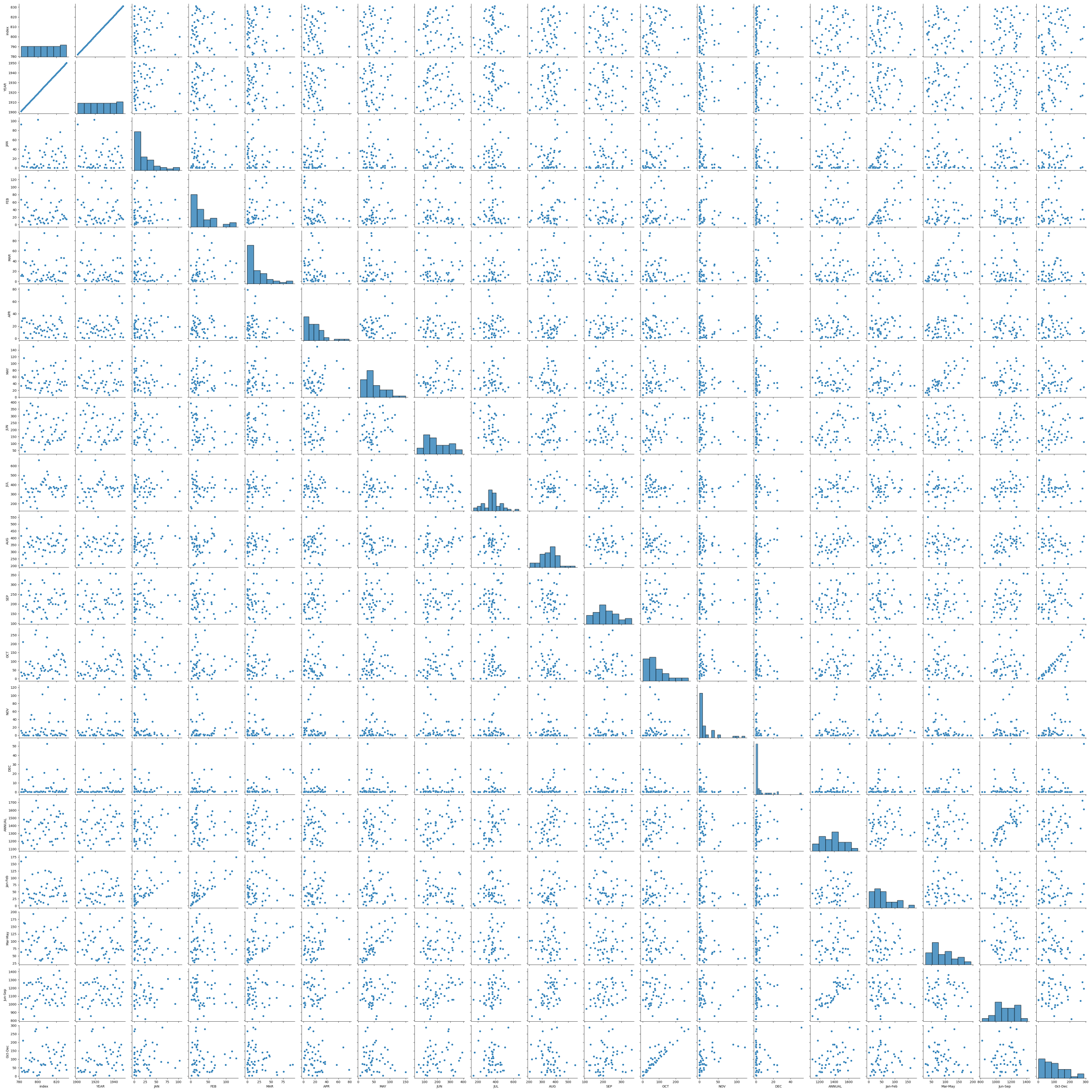
[13]:
```
<Axes: xlabel='SUBDIVISION', ylabel='ANNUAL'>
```



12 Seaborn

[14]:
```
sns.pairplot(df[0:50])
```

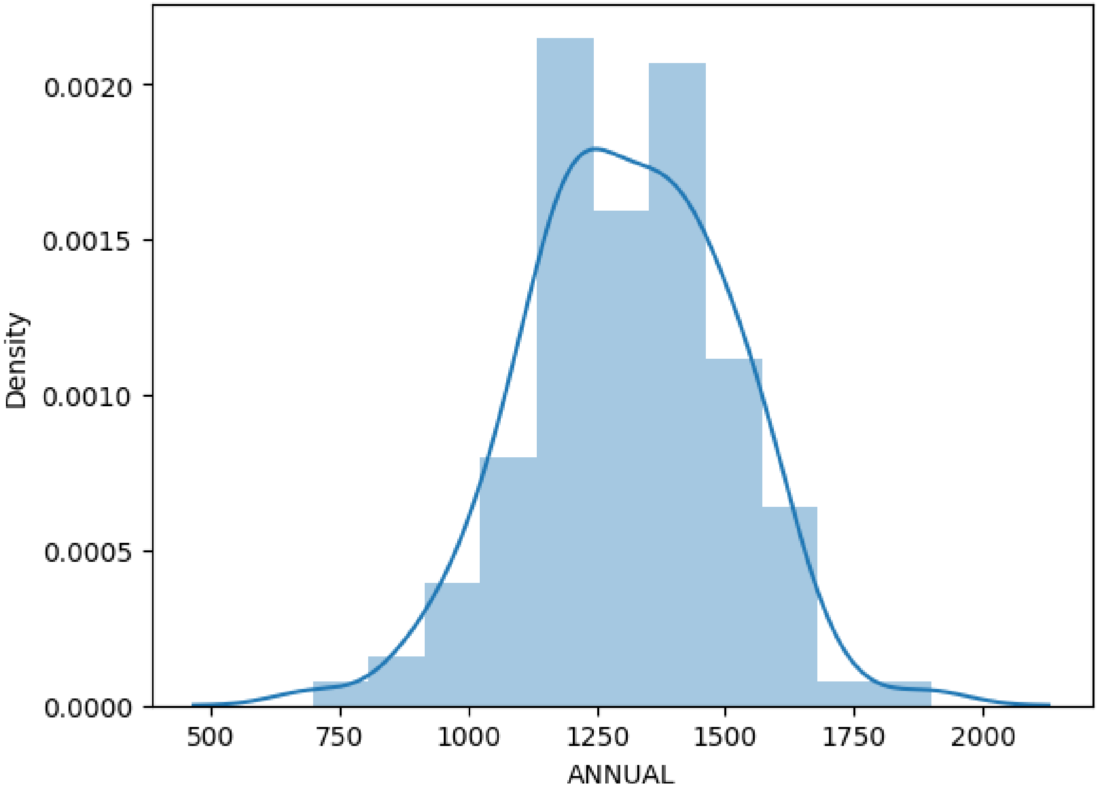
[14]:
```
<seaborn.axisgrid.PairGrid at 0x7cec366fcf70>
```



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

```
<ipython-input-15-5daa97052ca5>:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(df['ANNUAL'])
```

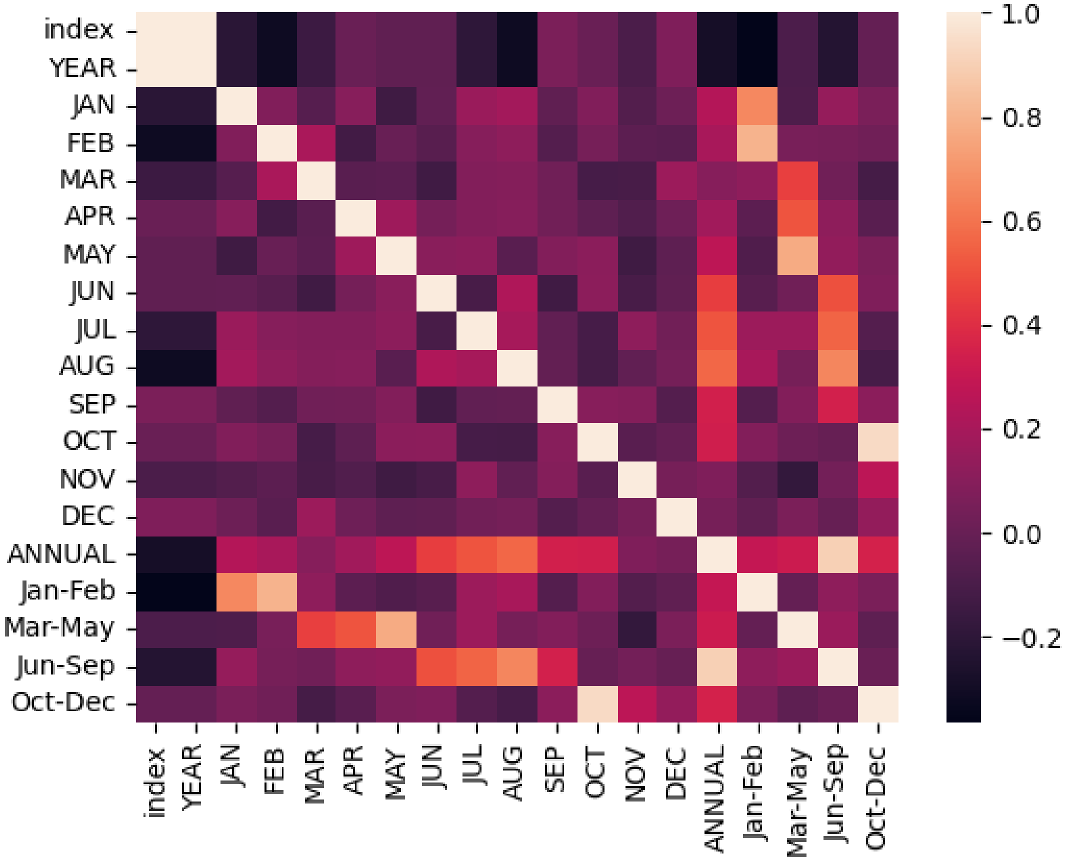
```
[15]: <Axes: xlabel='ANNUAL', ylabel='Density'>
```



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

```
<ipython-input-16-aa4f4450a243>: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.
  sns.heatmap(df.corr())
```

```
[16]: <Axes: >
```


index
YEAR
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
ANNUAL
Jan-Feb
Mar-May
Jun-Sep
Oct-Dec
1.0
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0.6
0.4
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