Importing Libraries

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

Importing Datasets

In [2]:
```
df=pd.read_csv(r'C:\Users\user\Downloads\Rainfall\MADHYA MAHARASHTRA.csv')
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OC
0	2623	MADHYA MAHARASHTRA	1902	7.8	0.0	0.1	5.0	9.8	102.6	210.9	114.5	169.5	60.
1	2624	MADHYA MAHARASHTRA	1903	7.6	0.0	0.0	3.2	77.2	86.3	281.8	155.5	142.3	74.
2	2625	MADHYA MAHARASHTRA	1904	0.4	4.7	1.7	3.0	18.7	114.6	126.5	59.5	183.0	91.
3	2626	MADHYA MAHARASHTRA	1905	0.0	1.2	0.0	2.3	23.6	65.0	252.8	79.0	52.6	52.
4	2627	MADHYA MAHARASHTRA	1906	10.5	0.8	0.0	0.1	9.3	184.8	199.3	205.0	88.8	19.
...	...	...	...	...	...	...	...	...	...	...	...	...	.
109	2732	MADHYA MAHARASHTRA	2011	0.0	0.3	0.3	5.0	2.9	133.3	261.4	238.1	148.4	62.
110	2733	MADHYA MAHARASHTRA	2012	0.0	0.0	0.0	3.0	1.4	67.9	203.0	187.8	129.5	95.
111	2734	MADHYA MAHARASHTRA	2013	0.1	5.3	0.8	5.7	6.0	212.4	311.8	147.0	210.3	57.
112	2735	MADHYA MAHARASHTRA	2014	3.1	6.2	24.4	7.5	29.8	44.0	277.9	240.3	120.4	38.
113	2736	MADHYA MAHARASHTRA	2015	1.4	0.8	41.2	9.6	24.4	177.0	111.7	67.2	146.6	48.

114 rows × 20 columns

Data Cleaning and Data Preprocessing

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

Out[3]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OC
0	2623	MADHYA MAHARASHTRA	1902	7.8	0.0	0.1	5.0	9.8	102.6	210.9	114.5	169.5	60.
1	2624	MADHYA MAHARASHTRA	1903	7.6	0.0	0.0	3.2	77.2	86.3	281.8	155.5	142.3	74.
2	2625	MADHYA MAHARASHTRA	1904	0.4	4.7	1.7	3.0	18.7	114.6	126.5	59.5	183.0	91.
3	2626	MADHYA MAHARASHTRA	1905	0.0	1.2	0.0	2.3	23.6	65.0	252.8	79.0	52.6	52.
4	2627	MADHYA MAHARASHTRA	1906	10.5	0.8	0.0	0.1	9.3	184.8	199.3	205.0	88.8	19.
...	...	...	...	...	...	...	...	...	...	...	...	...	...
109	2732	MADHYA MAHARASHTRA	2011	0.0	0.3	0.3	5.0	2.9	133.3	261.4	238.1	148.4	62.
110	2733	MADHYA MAHARASHTRA	2012	0.0	0.0	0.0	3.0	1.4	67.9	203.0	187.8	129.5	95.
111	2734	MADHYA MAHARASHTRA	2013	0.1	5.3	0.8	5.7	6.0	212.4	311.8	147.0	210.3	57.
112	2735	MADHYA MAHARASHTRA	2014	3.1	6.2	24.4	7.5	29.8	44.0	277.9	240.3	120.4	38.
113	2736	MADHYA MAHARASHTRA	2015	1.4	0.8	41.2	9.6	24.4	177.0	111.7	67.2	146.6	48.

114 rows × 20 columns

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')
```

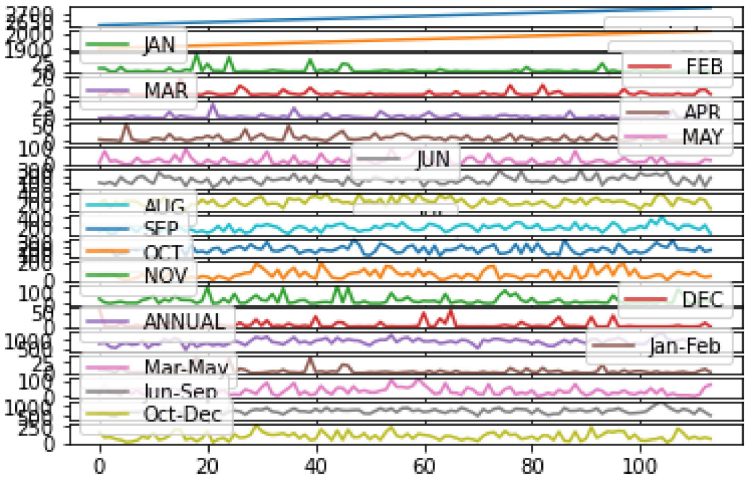
In [5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 114 entries, 0 to 113
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   index        114 non-null    int64  
 1   SUBDIVISION  114 non-null    object 
 2   YEAR         114 non-null    int64  
 3   JAN          114 non-null    float64
 4   FEB          114 non-null    float64
 5   MAR          114 non-null    float64
 6   APR          114 non-null    float64
 7   MAY          114 non-null    float64
 8   JUN          114 non-null    float64
 9   JUL          114 non-null    float64
 10  AUG          114 non-null    float64
 11  SEP          114 non-null    float64
 12  OCT          114 non-null    float64
 13  NOV          114 non-null    float64
 14  DEC          114 non-null    float64
 15  ANNUAL       114 non-null    float64
 16  Jan-Feb      114 non-null    float64
 17  Mar-May      114 non-null    float64
 18  Jun-Sep      114 non-null    float64
 19  Oct-Dec      114 non-null    float64
dtypes: float64(17), int64(2), object(1)
memory usage: 18.7+ KB
```

Line Chart

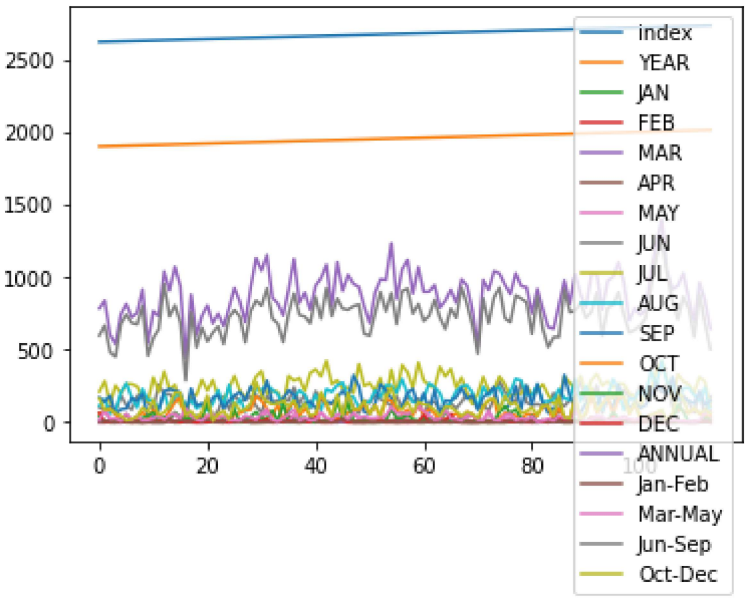
In [6]:
```
df.plot.line(subplots=True)
```

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



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

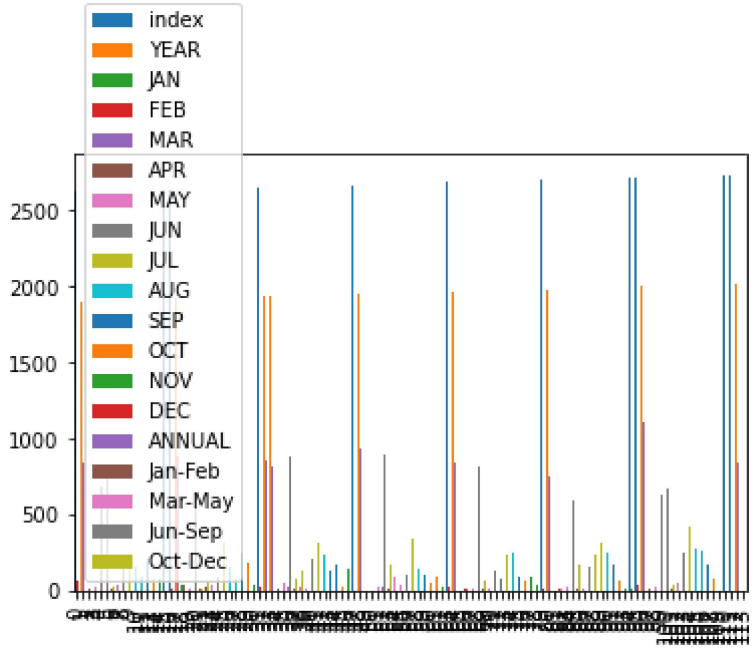
Out[7]:
```
<AxesSubplot:>
```



Bar Chart

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

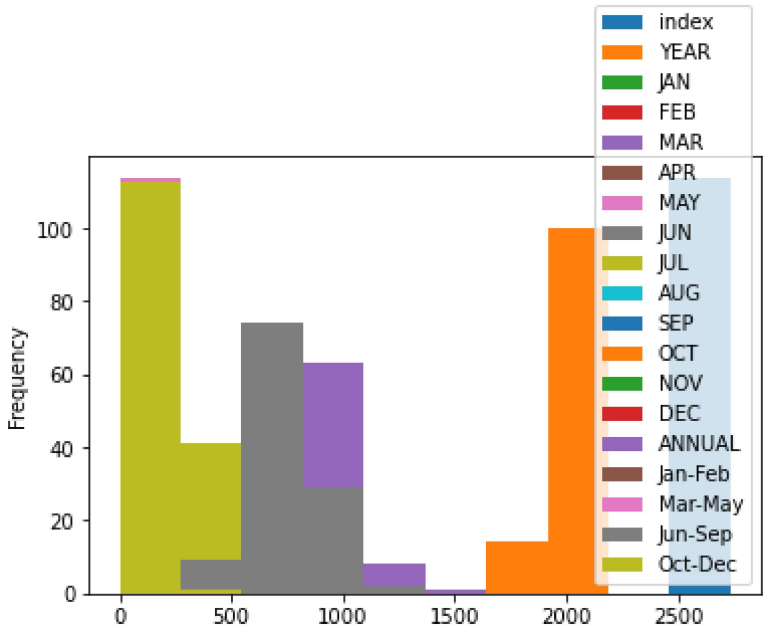
Out[8]: <AxesSubplot:>



Histogram

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

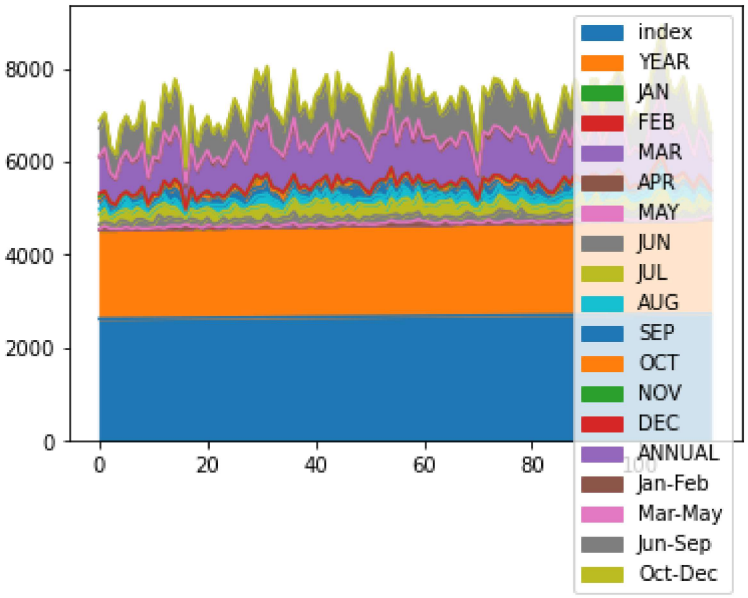
Out[9]: <AxesSubplot:ylabel='Frequency'>



Area Chart

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

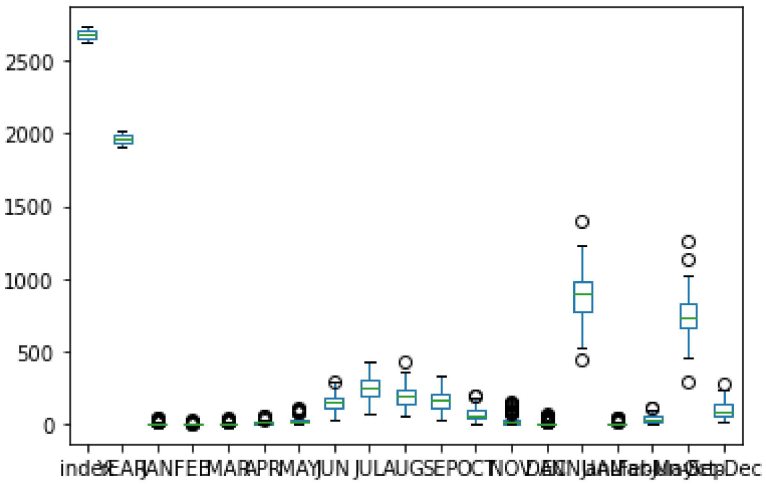
Out[10]: <AxesSubplot:>



Box Chart

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

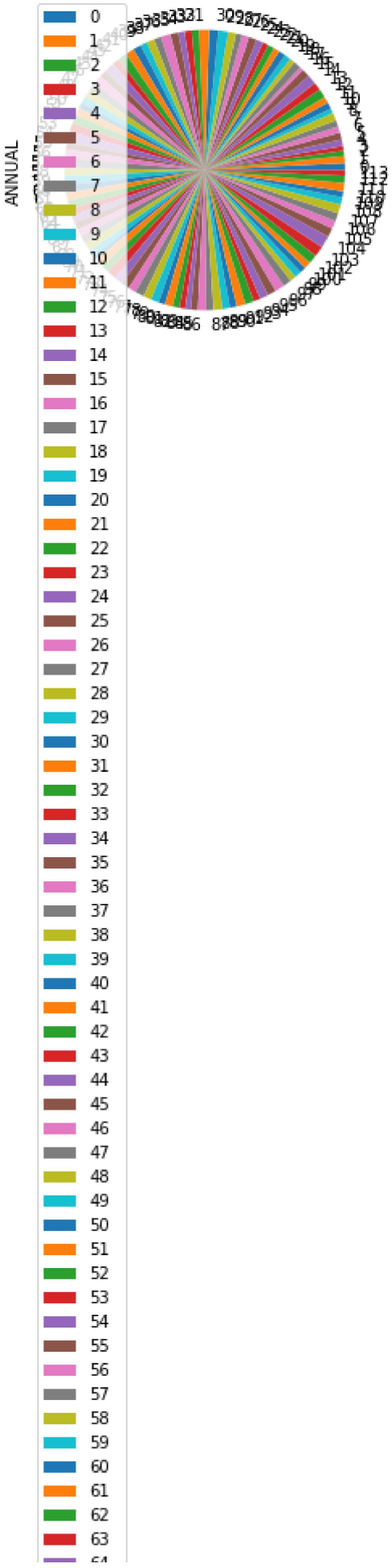
Out[11]: <AxesSubplot:>



Pie Chart

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

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


ANNUAL
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
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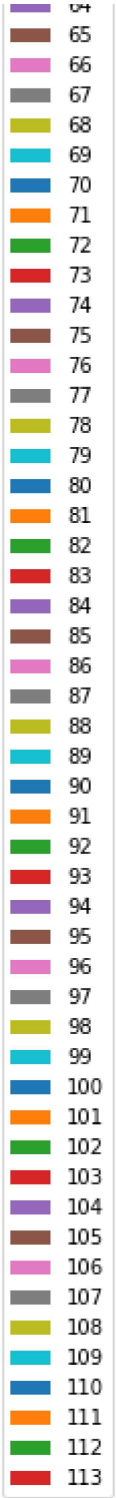
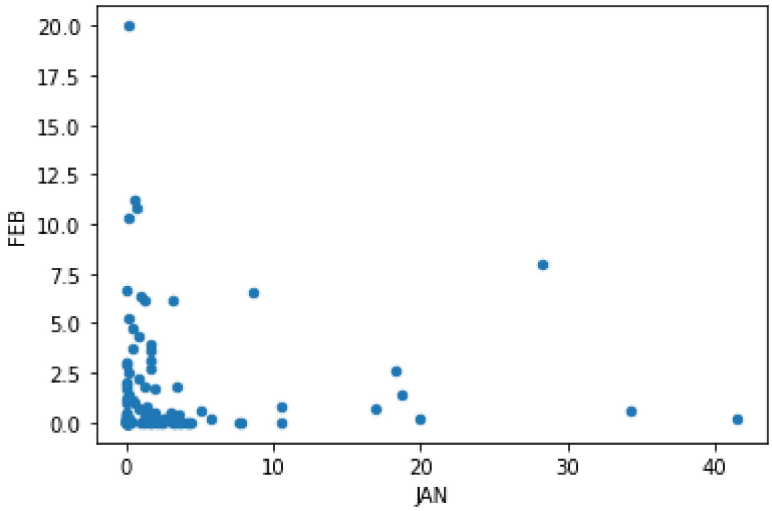


Scatter Plot

In [13]:
```
df.plot.scatter(x='JAN',y='FEB')
```

Out[13]:
```
<AxesSubplot:xlabel='JAN', ylabel='FEB'>
```



In [14]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 114 entries, 0 to 113
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   index        114 non-null    int64  
 1   SUBDIVISION  114 non-null    object 
 2   YEAR         114 non-null    int64  
 3   JAN          114 non-null    float64
 4   FEB          114 non-null    float64
 5   MAR          114 non-null    float64
 6   APR          114 non-null    float64
 7   MAY          114 non-null    float64
 8   JUN          114 non-null    float64
 9   JUL          114 non-null    float64
 10  AUG          114 non-null    float64
 11  SEP          114 non-null    float64
 12  OCT          114 non-null    float64
 13  NOV          114 non-null    float64
 14  DEC          114 non-null    float64
 15  ANNUAL       114 non-null    float64
 16  Jan-Feb      114 non-null    float64
 17  Mar-May      114 non-null    float64
 18  Jun-Sep      114 non-null    float64
 19  Oct-Dec      114 non-null    float64
dtypes: float64(17), int64(2), object(1)
memory usage: 18.7+ KB
```

In [15]:
```
df.describe()
```

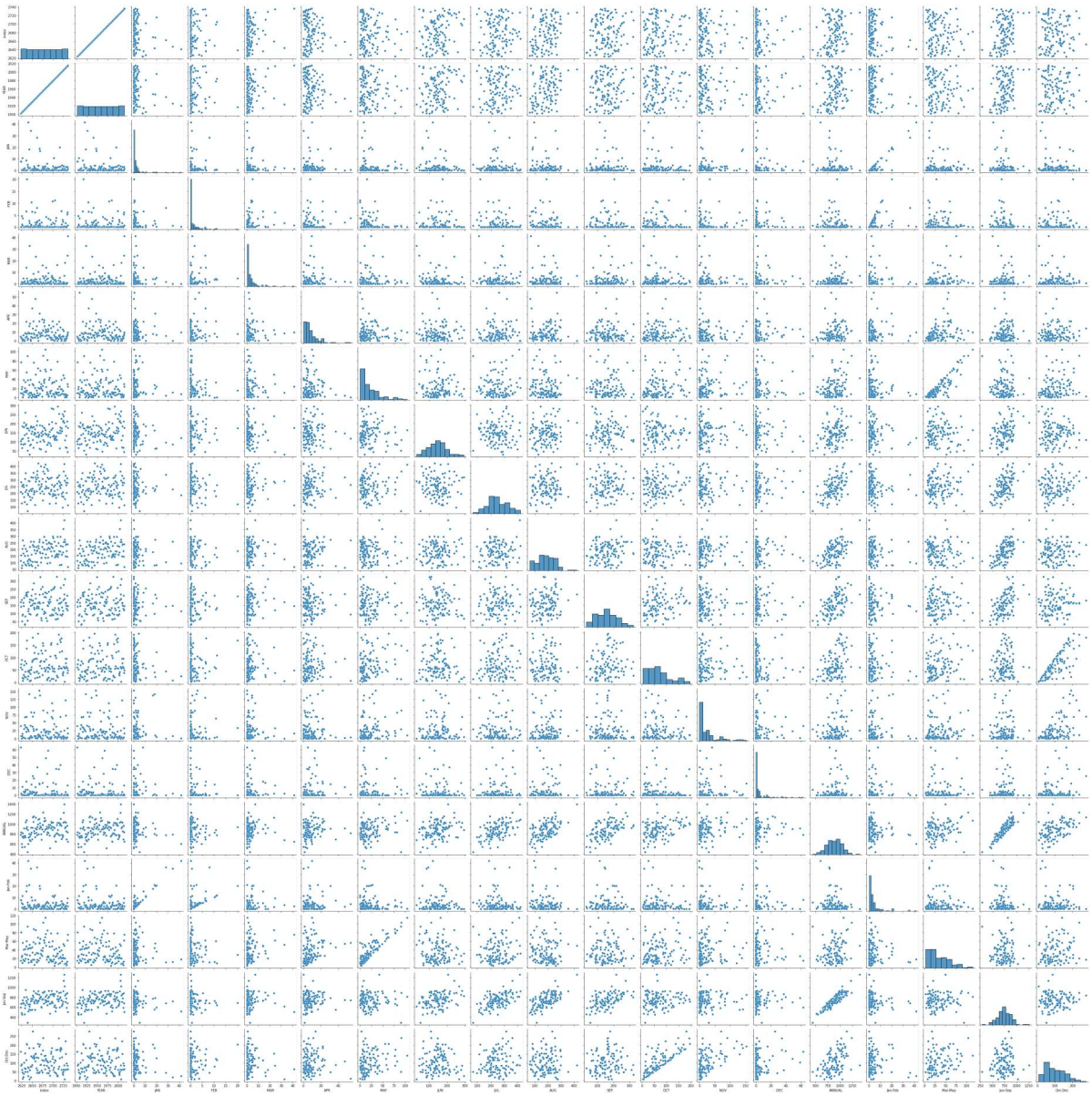
Out[15]:

	index	YEAR	JAN	FEB	MAR	APR	MAY	
count	114.000000	114.000000	114.000000	114.000000	114.000000	114.000000	114.000000	11
mean	2679.500000	1958.500000	2.916667	1.475439	3.560526	8.906140	22.878070	14
std	33.052988	33.052988	6.528737	2.927005	6.428251	9.080294	22.455804	5
min	2623.000000	1902.000000	0.000000	0.000000	0.000000	0.000000	0.300000	3
25%	2651.250000	1930.250000	0.000000	0.000000	0.200000	3.200000	7.225000	11
50%	2679.500000	1958.500000	0.650000	0.200000	1.450000	6.250000	15.150000	14
75%	2707.750000	1986.750000	2.575000	1.625000	4.100000	11.825000	33.050000	18
max	2736.000000	2015.000000	41.500000	20.000000	41.200000	54.500000	104.200000	29

EDA And Visualization

In [16]:
```
sns.pairplot(df)
```

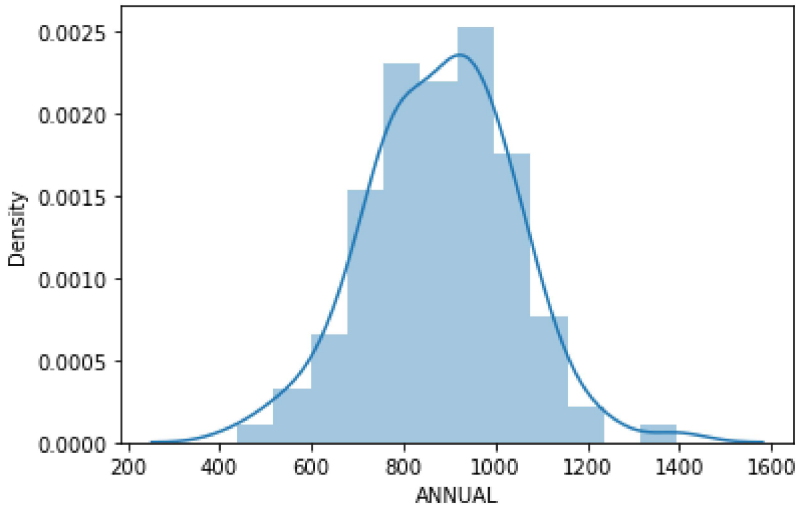
Out[16]:
```
<seaborn.axisgrid.PairGrid at 0x20cc525fb20>
```



In [17]:
```
sns.distplot(df['ANNUAL'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\distributions.py:2557: Fut
ureWarning: `distplot` is a deprecated function and will be removed in a futu
re version. Please adapt your code to use either `displot` (a figure-level fu
nction with similar flexibility) or `histplot` (an axes-level function for hi
stograms).
  warnings.warn(msg, FutureWarning)
```

Out[17]: <AxesSubplot:xlabel='ANNUAL', ylabel='Density'>



In [18]:
```
sns.heatmap(df.corr())
```

Out[18]: <AxesSubplot:>