

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("west_uttar_pradesh.csv")
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
0	1127	WEST UTTAR PRADESH	1901	51.4	25.6	9.5	0.7	5.6	23.8	201.9	374.3	67.7	7.6	(
1	1128	WEST UTTAR PRADESH	1902	4.6	4.6	0.6	4.8	7.2	54.5	325.9	180.6	143.1	9.6	(
2	1129	WEST UTTAR PRADESH	1903	13.4	0.4	1.2	0.0	8.2	32.7	145.4	279.1	150.4	177.3	(
3	1130	WEST UTTAR PRADESH	1904	6.3	2.0	29.7	0.4	24.8	68.5	358.8	311.1	97.1	2.7	1!
4	1131	WEST UTTAR PRADESH	1905	32.3	26.6	14.8	3.6	7.1	18.9	139.8	95.0	92.2	0.2	(
...	
110	1237	WEST UTTAR PRADESH	2011	2.1	10.4	3.9	2.8	29.6	175.9	215.9	232.3	101.7	0.7	(
111	1238	WEST UTTAR PRADESH	2012	14.5	0.1	1.4	4.7	0.3	4.0	145.1	149.1	67.8	0.5	(
112	1239	WEST UTTAR PRADESH	2013	20.4	69.5	3.5	1.6	2.1	190.6	233.9	287.1	52.2	61.2	·
113	1240	WEST UTTAR PRADESH	2014	48.3	29.4	22.6	5.3	11.0	22.0	151.6	81.0	84.7	14.6	(
114	1241	WEST UTTAR PRADESH	2015	31.6	7.2	66.8	21.0	8.1	72.0	194.2	143.5	26.5	6.9	;

115 rows × 20 columns

Data Cleaning and Data Preprocessing

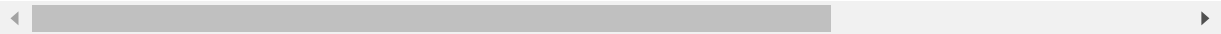
In [3]:

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

Out[3]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
0	1127	WEST UTTAR PRADESH	1901	51.4	25.6	9.5	0.7	5.6	23.8	201.9	374.3	67.7	7.6	(
1	1128	WEST UTTAR PRADESH	1902	4.6	4.6	0.6	4.8	7.2	54.5	325.9	180.6	143.1	9.6	(
2	1129	WEST UTTAR PRADESH	1903	13.4	0.4	1.2	0.0	8.2	32.7	145.4	279.1	150.4	177.3	(
3	1130	WEST UTTAR PRADESH	1904	6.3	2.0	29.7	0.4	24.8	68.5	358.8	311.1	97.1	2.7	1!
4	1131	WEST UTTAR PRADESH	1905	32.3	26.6	14.8	3.6	7.1	18.9	139.8	95.0	92.2	0.2	(
...
110	1237	WEST UTTAR PRADESH	2011	2.1	10.4	3.9	2.8	29.6	175.9	215.9	232.3	101.7	0.7	(
111	1238	WEST UTTAR PRADESH	2012	14.5	0.1	1.4	4.7	0.3	4.0	145.1	149.1	67.8	0.5	(
112	1239	WEST UTTAR PRADESH	2013	20.4	69.5	3.5	1.6	2.1	190.6	233.9	287.1	52.2	61.2	.
113	1240	WEST UTTAR PRADESH	2014	48.3	29.4	22.6	5.3	11.0	22.0	151.6	81.0	84.7	14.6	(
114	1241	WEST UTTAR PRADESH	2015	31.6	7.2	66.8	21.0	8.1	72.0	194.2	143.5	26.5	6.9	;

115 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()

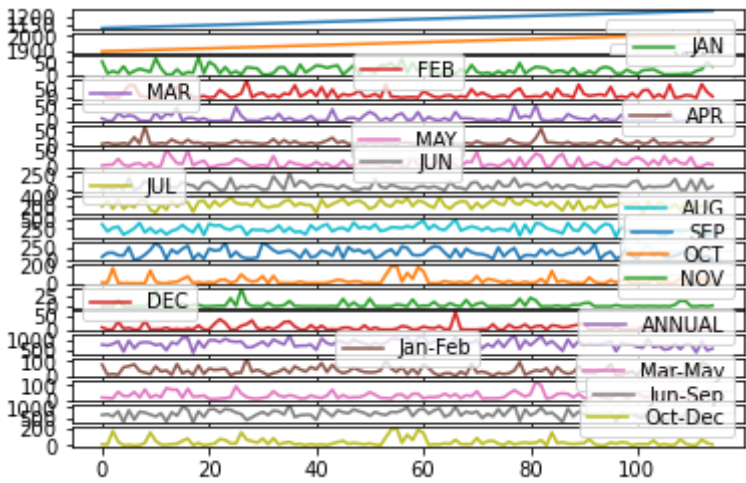
```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 115 entries, 0 to 114
Data columns (total 20 columns):
#   Column          Non-Null Count  Dtype
---  -
0   index           115 non-null    int64
1   SUBDIVISION     115 non-null    object
2   YEAR            115 non-null    int64
3   JAN             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)
```

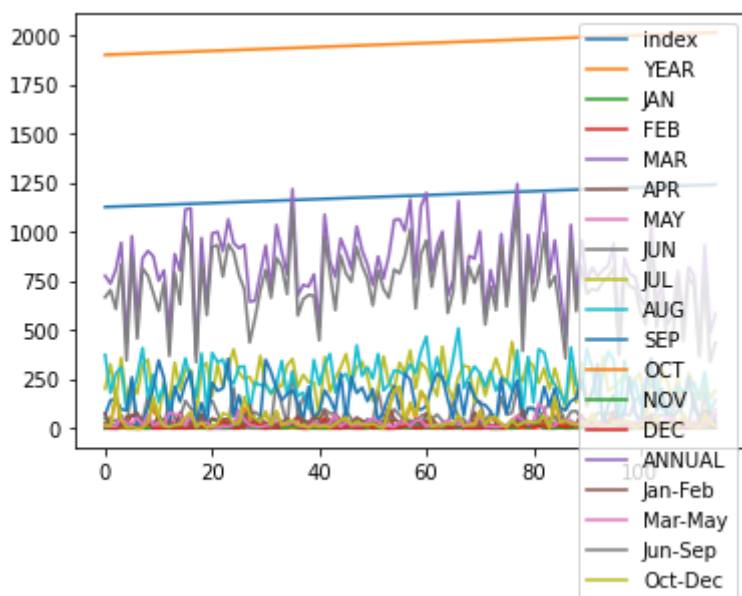
```
Out[6]: array([<AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>,
<AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>,
<AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>,
<AxesSubplot:~>, <AxesSubplot:~>, <AxesSubplot:~>], dtype=object)
```



Line chart

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

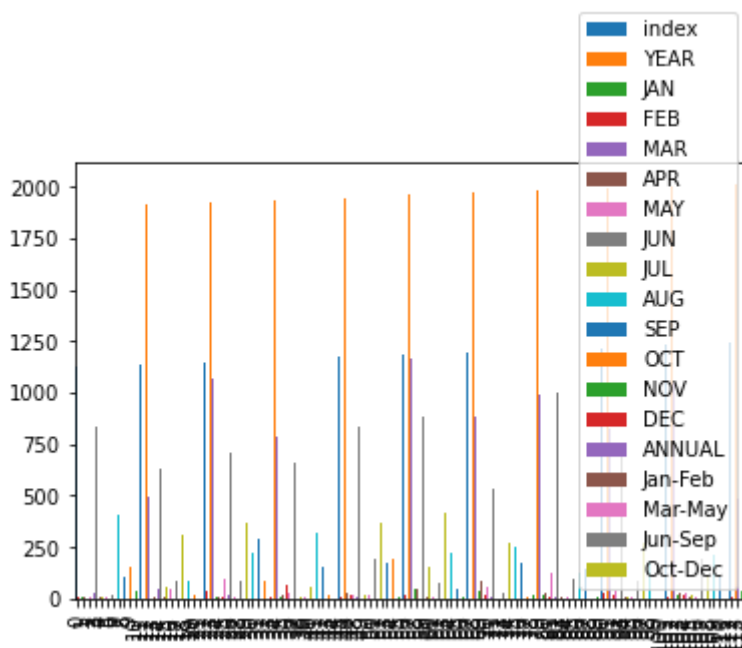
Out[7]: <AxesSubplot:>



Bar chart

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

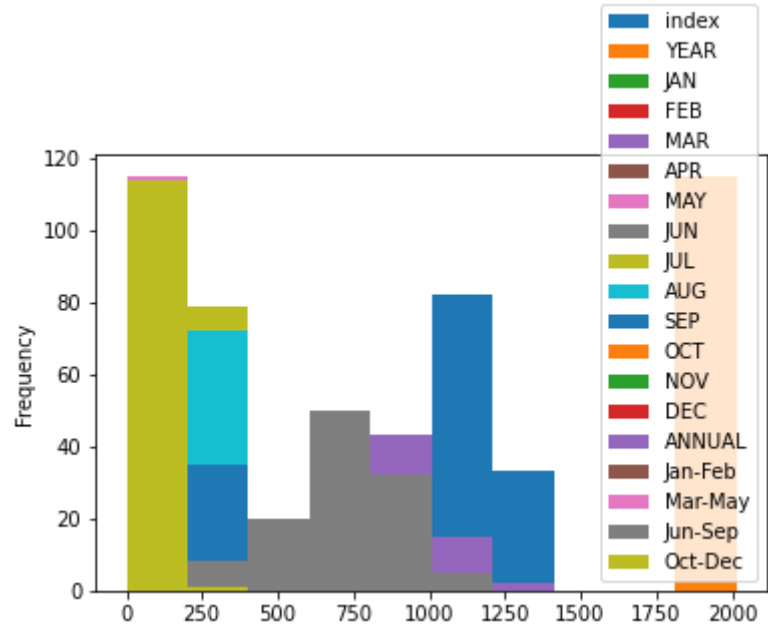
Out[8]: <AxesSubplot:>



Histogram

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

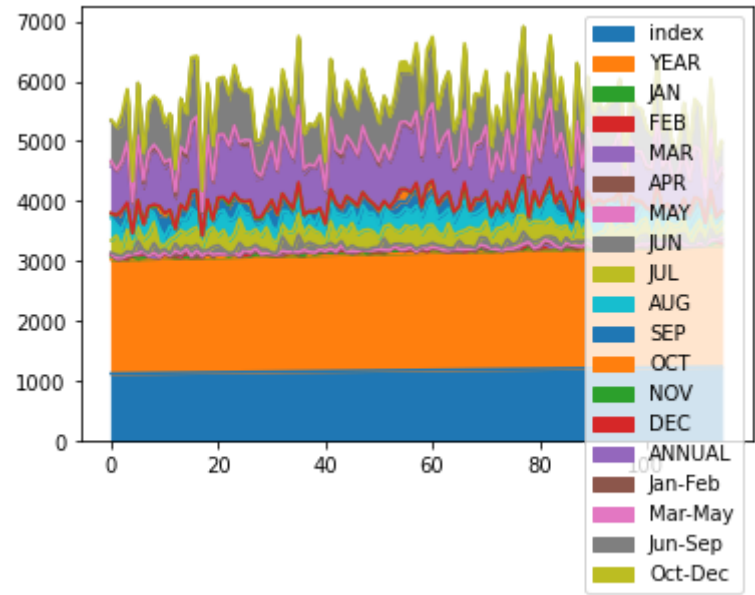
Out[9]: <AxesSubplot:ylabel='Frequency'>



Area chart

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

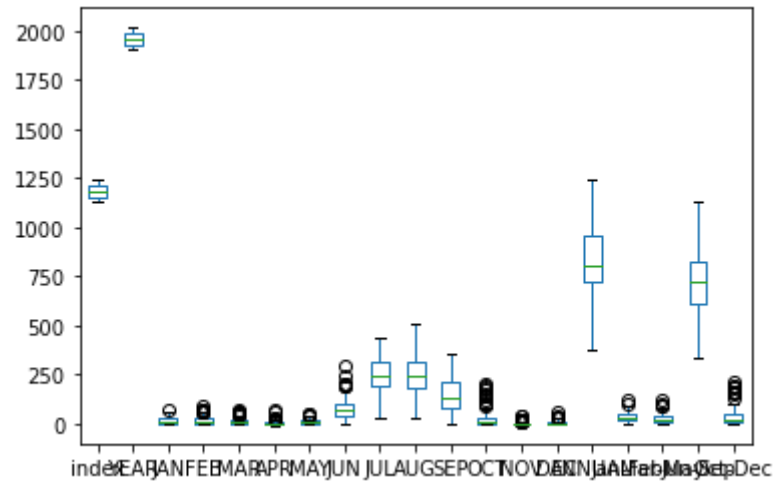
Out[10]: <AxesSubplot:>



Box chart

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

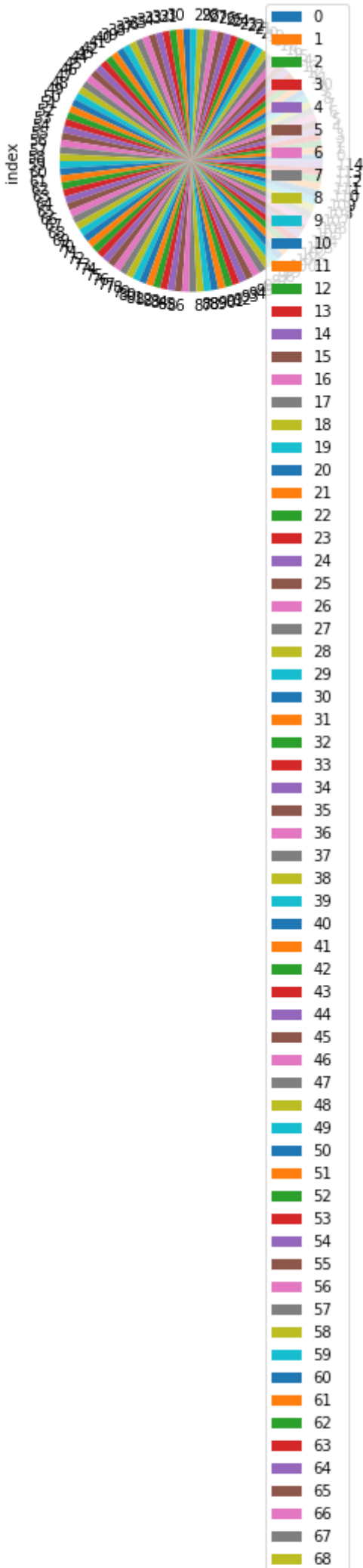
Out[11]: <AxesSubplot:>

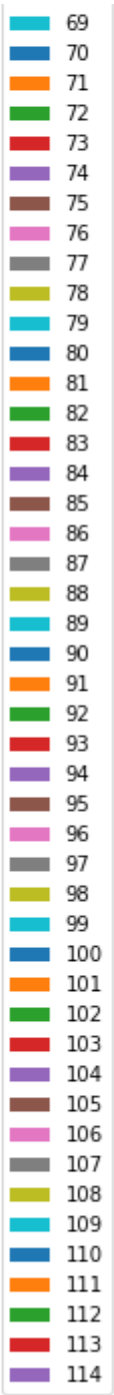


Pie chart

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

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

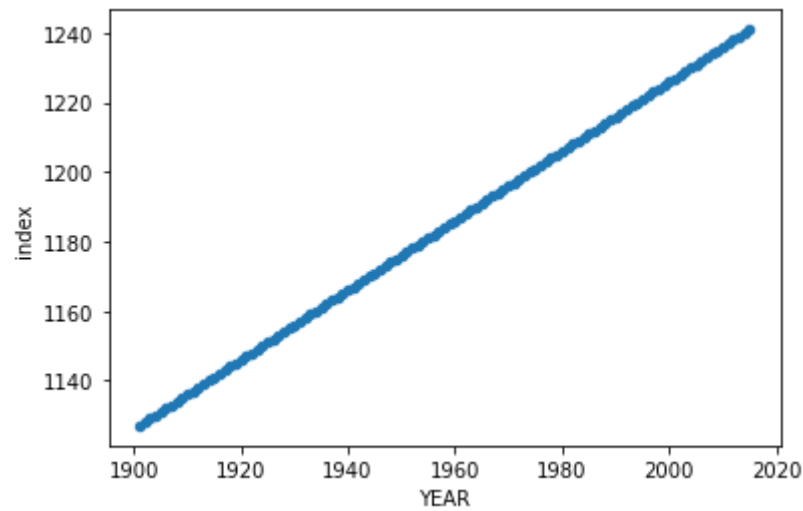




Scatter chart

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

Out[13]: <AxesSubplot:xlabel='YEAR', ylabel='index'>



In [14]:

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
```

In [15]:

df.describe()

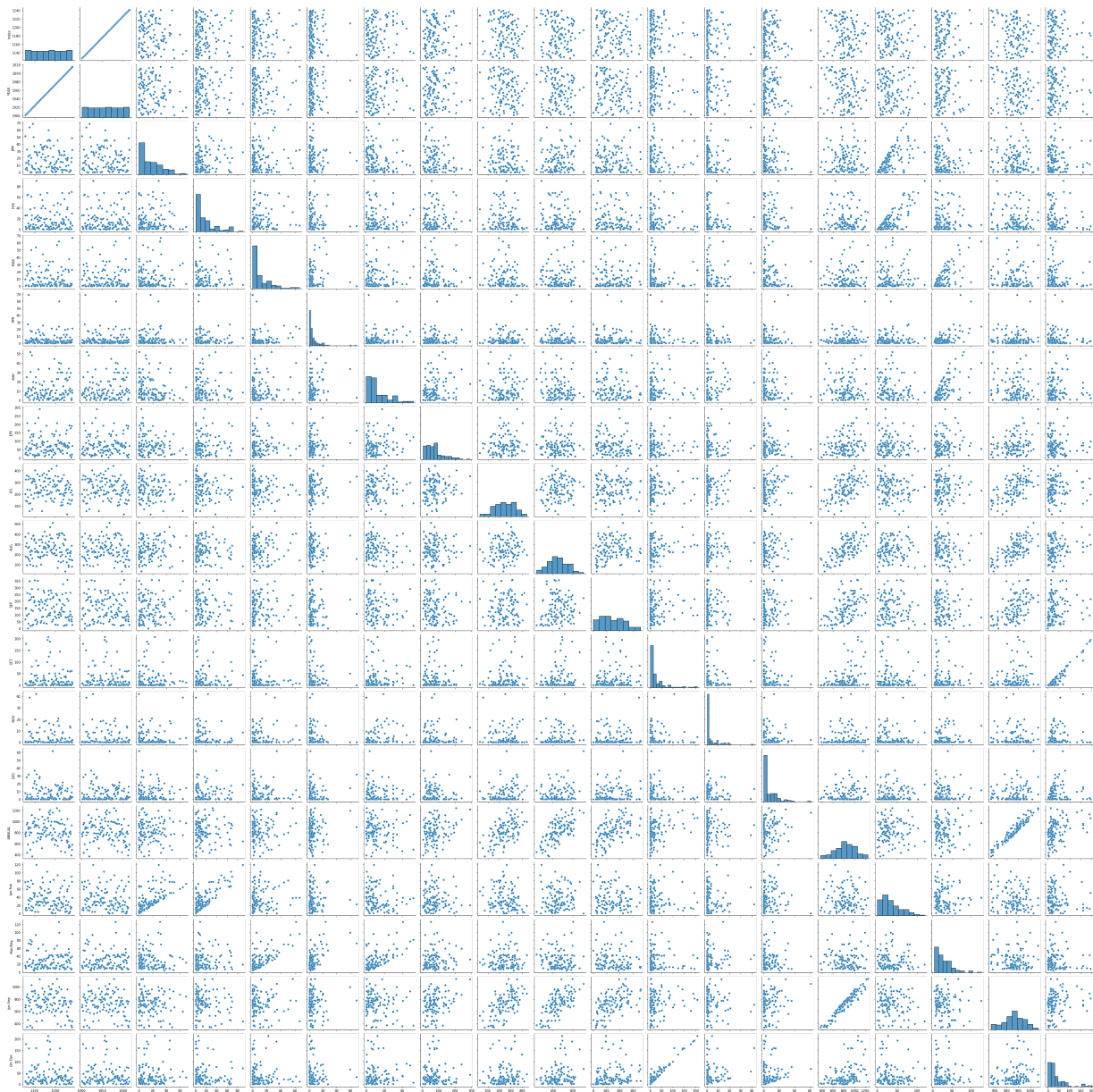
Out[15]:

	index	YEAR	JAN	FEB	MAR	APR	MAY	
count	115.000000	115.000000	115.000000	115.000000	115.000000	115.000000	115.000000	115.000000
mean	1184.000000	1958.000000	17.666087	17.893913	11.461739	6.253043	12.306087	77.597000
std	33.341666	33.341666	15.791531	19.972785	14.286434	10.015552	11.528510	55.681000
min	1127.000000	1901.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.700000
25%	1155.500000	1929.500000	4.100000	3.450000	1.700000	0.750000	3.750000	39.600000
50%	1184.000000	1958.000000	14.200000	10.400000	5.700000	3.100000	8.100000	67.200000
75%	1212.500000	1986.500000	28.100000	25.600000	18.350000	6.750000	18.300000	96.650000
max	1241.000000	2015.000000	68.600000	89.900000	66.800000	69.000000	52.000000	291.200000

EDA AND VISUALIZATION

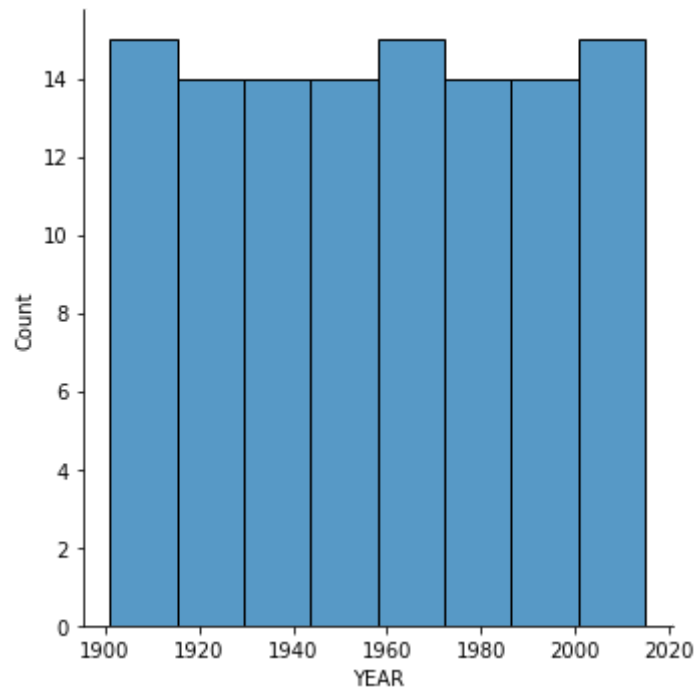
```
In [16]: sns.pairplot(df)
```

```
Out[16]: <seaborn.axisgrid.PairGrid at 0x251e9cbfcd0>
```



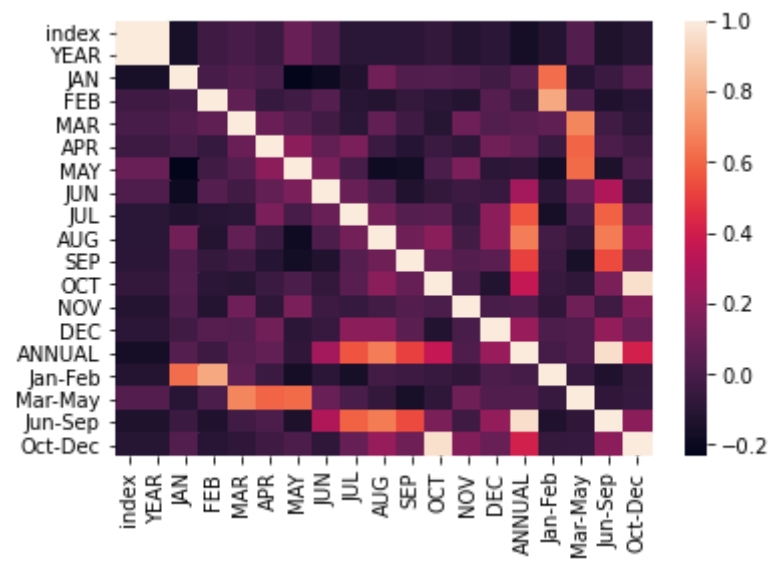
```
In [17]: sns.displot(df['YEAR'])
```

```
Out[17]: <seaborn.axisgrid.FacetGrid at 0x251f7b53e50>
```



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

Out[18]: <AxesSubplot:>



```
In [ ]:
```