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\Arunachal.csv')
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
0	111	ARUNACHAL PRADESH	1917	21.4	164.5	NaN	269.6	107.9	823.8	909.1	628.4	411.5	1
1	112	ARUNACHAL PRADESH	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	515.8	1
2	113	ARUNACHAL PRADESH	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	628.7	9
3	114	ARUNACHAL PRADESH	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	376.7	1
4	115	ARUNACHAL PRADESH	1921	78.9	54.3	180.3	358.0	598.0	1233.2	1433.0	885.9	603.4	2
...	...	...	...	...	...	...	...	...	...	...	...	...	
91	202	ARUNACHAL PRADESH	2011	40.0	51.3	174.5	240.8	219.6	288.4	531.4	277.6	286.7	
92	203	ARUNACHAL PRADESH	2012	57.8	35.8	134.2	403.4	187.4	645.8	638.9	316.0	724.9	2
93	204	ARUNACHAL PRADESH	2013	18.5	40.5	115.1	175.1	335.8	290.0	329.6	230.2	316.1	1
94	205	ARUNACHAL PRADESH	2014	19.0	101.9	80.3	86.7	299.0	415.8	392.4	599.6	343.0	
95	206	ARUNACHAL PRADESH	2015	30.8	47.5	97.5	287.1	238.9	637.9	329.3	595.5	374.2	

96 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	
1	112	ARUNACHAL PRADESH	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	515.8	1
2	113	ARUNACHAL PRADESH	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	628.7	9
3	114	ARUNACHAL PRADESH	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	376.7	1
4	115	ARUNACHAL PRADESH	1921	78.9	54.3	180.3	358.0	598.0	1233.2	1433.0	885.9	603.4	2
5	116	ARUNACHAL PRADESH	1922	50.7	59.4	170.4	299.5	350.5	1109.3	918.7	488.3	207.6	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...
91	202	ARUNACHAL PRADESH	2011	40.0	51.3	174.5	240.8	219.6	288.4	531.4	277.6	286.7	
92	203	ARUNACHAL PRADESH	2012	57.8	35.8	134.2	403.4	187.4	645.8	638.9	316.0	724.9	2
93	204	ARUNACHAL PRADESH	2013	18.5	40.5	115.1	175.1	335.8	290.0	329.6	230.2	316.1	1
94	205	ARUNACHAL PRADESH	2014	19.0	101.9	80.3	86.7	299.0	415.8	392.4	599.6	343.0	
95	206	ARUNACHAL PRADESH	2015	30.8	47.5	97.5	287.1	238.9	637.9	329.3	595.5	374.2	

91 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')
```

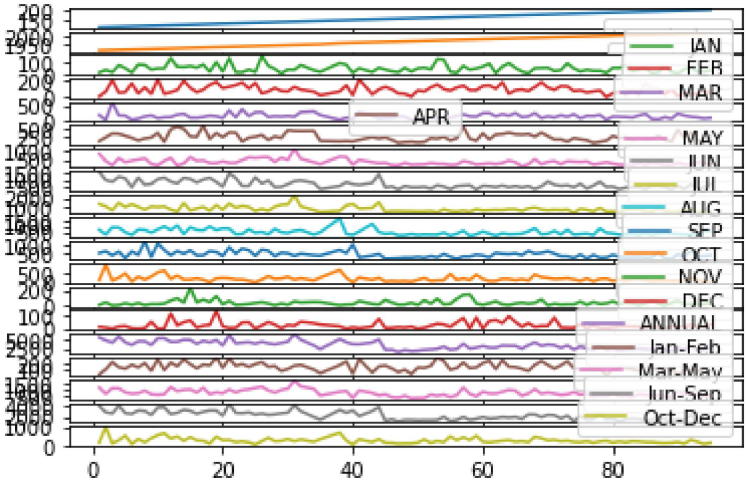
In [5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 91 entries, 1 to 95
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   index        91 non-null     int64  
 1   SUBDIVISION  91 non-null     object 
 2   YEAR         91 non-null     int64  
 3   JAN          91 non-null     float64
 4   FEB          91 non-null     float64
 5   MAR          91 non-null     float64
 6   APR          91 non-null     float64
 7   MAY          91 non-null     float64
 8   JUN          91 non-null     float64
 9   JUL          91 non-null     float64
 10  AUG          91 non-null     float64
 11  SEP          91 non-null     float64
 12  OCT          91 non-null     float64
 13  NOV          91 non-null     float64
 14  DEC          91 non-null     float64
 15  ANNUAL       91 non-null     float64
 16  Jan-Feb      91 non-null     float64
 17  Mar-May      91 non-null     float64
 18  Jun-Sep      91 non-null     float64
 19  Oct-Dec      91 non-null     float64
dtypes: float64(17), int64(2), object(1)
memory usage: 14.9+ KB
```

Line Chart

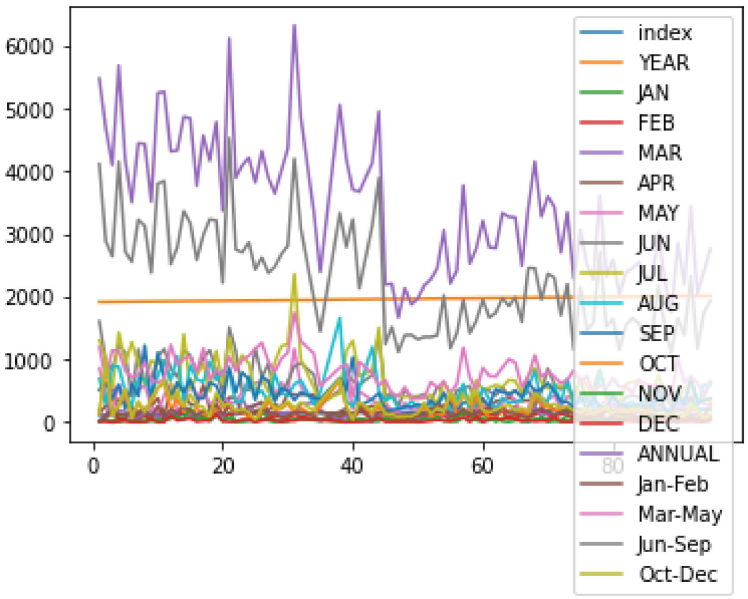
In [6]:
```
df.plot.line(subplots=True)
```

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



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

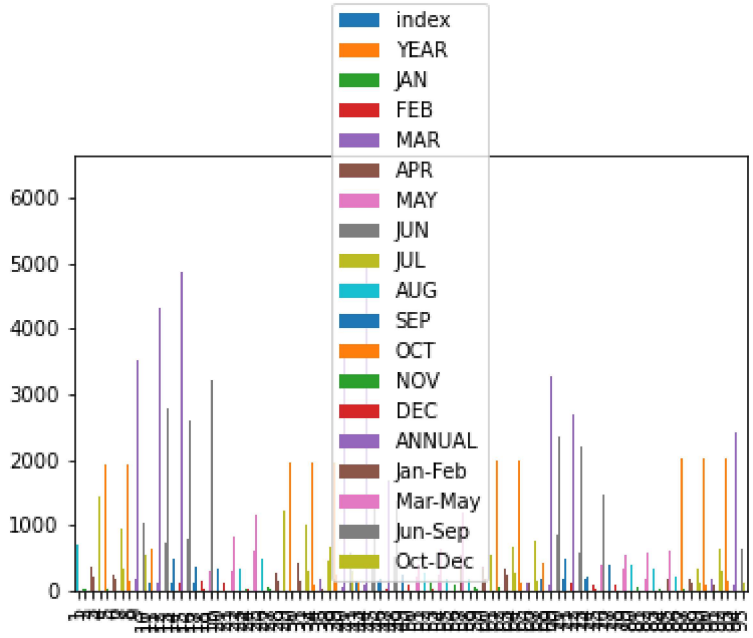
Out[7]:
```
<AxesSubplot:>
```



Bar Chart

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

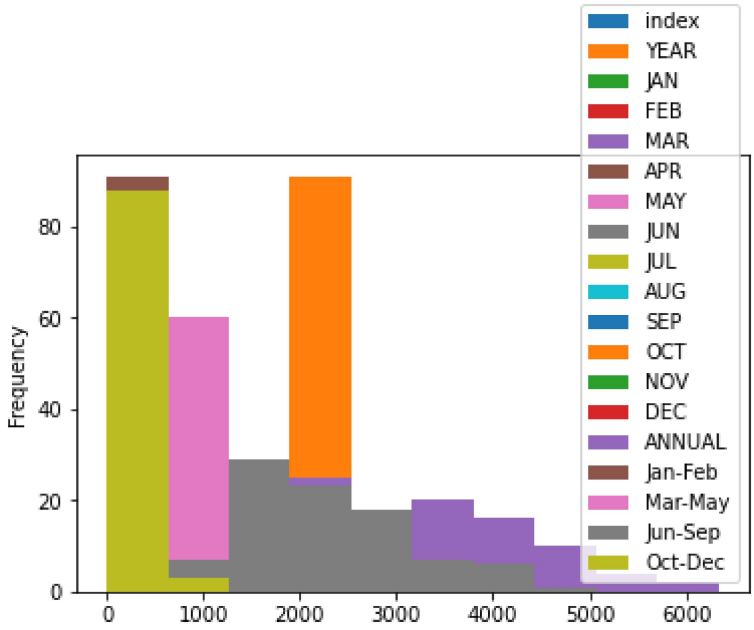
Out[8]: <AxesSubplot:>



Histogram

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

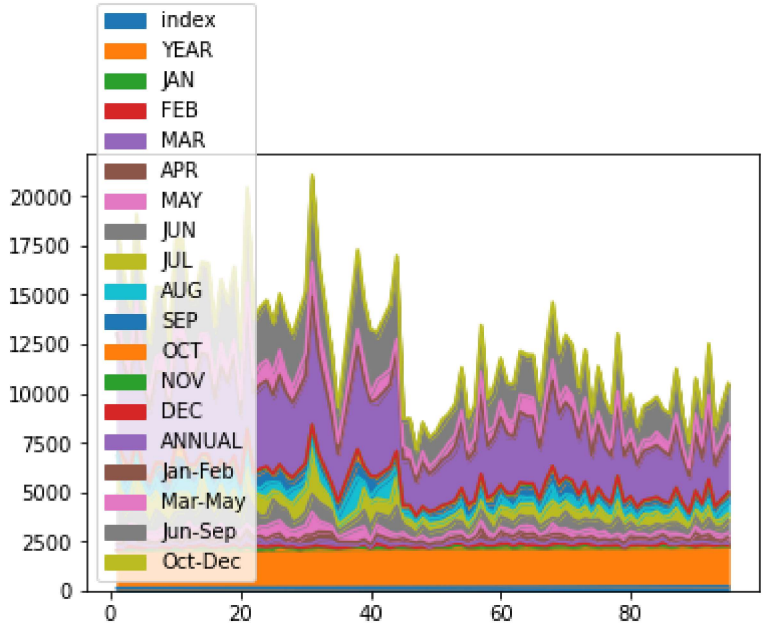
Out[9]: <AxesSubplot:ylabel='Frequency'>



Area Chart

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

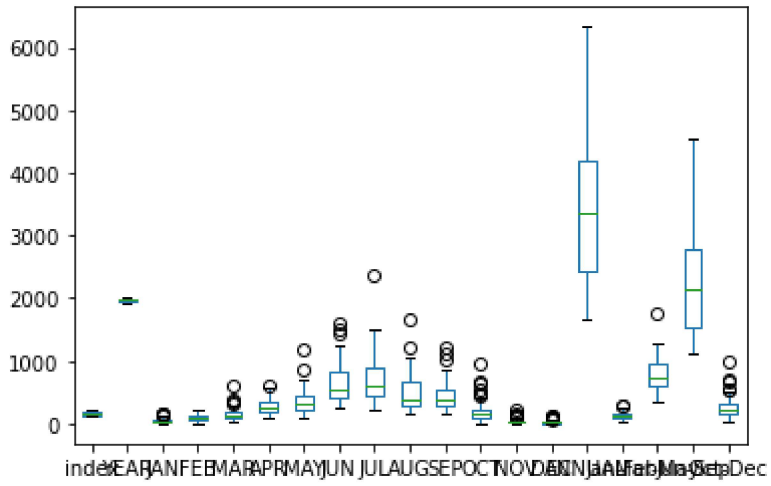
Out[10]: <AxesSubplot:>



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
1
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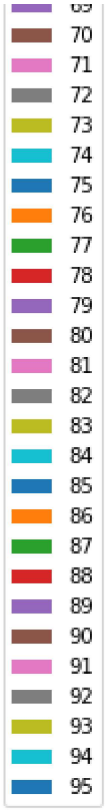
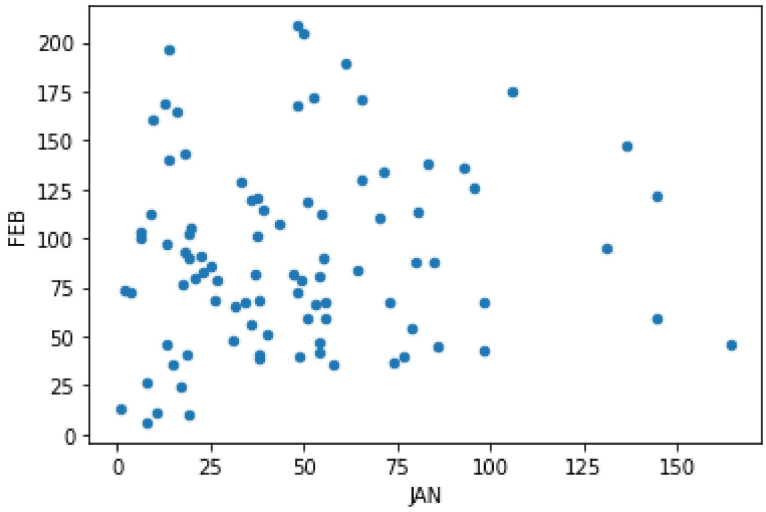


Scatter Plot

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: 91 entries, 1 to 95
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   index        91 non-null     int64  
 1   SUBDIVISION  91 non-null     object 
 2   YEAR         91 non-null     int64  
 3   JAN          91 non-null     float64
 4   FEB          91 non-null     float64
 5   MAR          91 non-null     float64
 6   APR          91 non-null     float64
 7   MAY          91 non-null     float64
 8   JUN          91 non-null     float64
 9   JUL          91 non-null     float64
 10  AUG          91 non-null     float64
 11  SEP          91 non-null     float64
 12  OCT          91 non-null     float64
 13  NOV          91 non-null     float64
 14  DEC          91 non-null     float64
 15  ANNUAL       91 non-null     float64
 16  Jan-Feb      91 non-null     float64
 17  Mar-May      91 non-null     float64
 18  Jun-Sep      91 non-null     float64
 19  Oct-Dec      91 non-null     float64
dtypes: float64(17), int64(2), object(1)
memory usage: 14.9+ KB
```

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

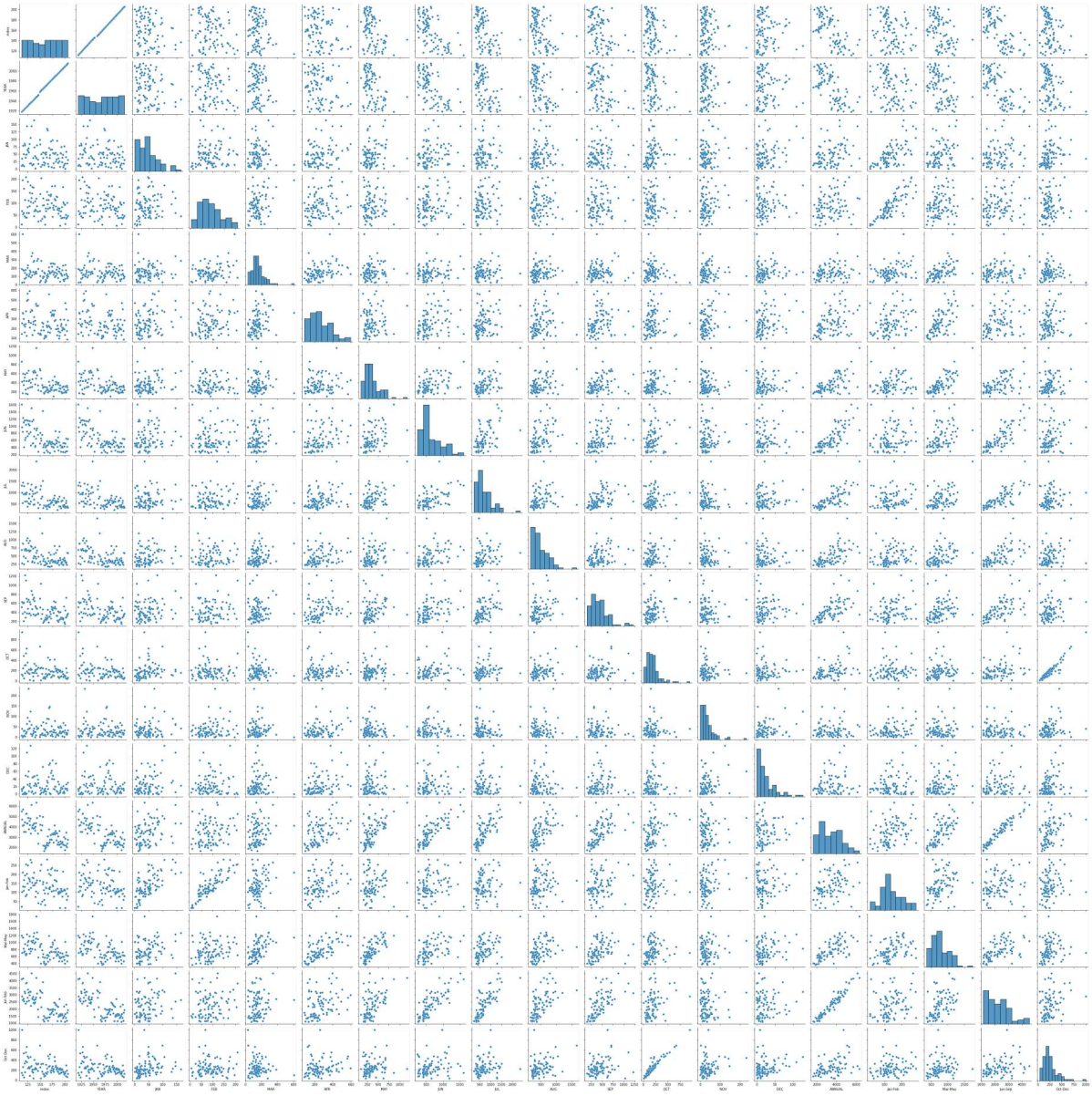
Out[15]:

	index	YEAR	JAN	FEB	MAR	APR	MAY	
count	91.000000	91.000000	91.000000	91.000000	91.000000	91.000000	91.000000	
mean	159.483516	1967.362637	47.680220	90.396703	154.143956	262.297802	358.289011	6
std	28.065939	29.324437	35.045676	47.178011	86.284987	116.737705	178.900132	3
min	112.000000	1918.000000	0.600000	6.100000	28.500000	86.700000	101.800000	2
25%	134.500000	1940.500000	19.100000	55.250000	102.700000	177.500000	232.950000	4
50%	161.000000	1970.000000	40.000000	83.200000	139.900000	240.800000	306.900000	5
75%	183.500000	1992.500000	64.900000	118.900000	182.450000	341.200000	433.600000	8
max	206.000000	2015.000000	164.500000	208.500000	605.600000	595.100000	1168.600000	16

EDA And Visualization

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

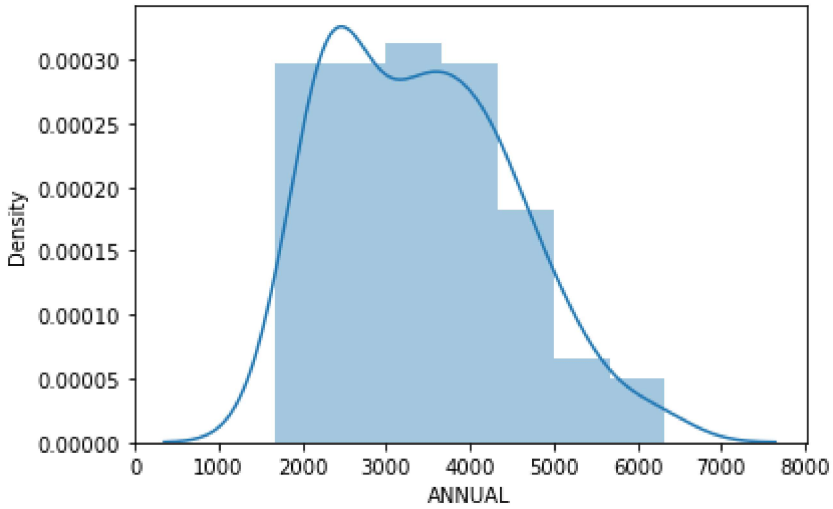
Out[16]:
```
<seaborn.axisgrid.PairGrid at 0x1b70c0ea7f0>
```



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:>