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

In [2]:
```
data=pd.read_csv(r"C:\Users\user\Desktop\vicky\rainfall\rainfall in india 1901-2015.csv")[2509:262
```

In [3]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 114 entries, 2509 to 2622
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: 17.9+ KB
```

In [4]:
```
data.head()
```

Out[4]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
2509	2509	KONKAN & GOA	1903	0.0	0.0	0.1	0.0	201.1	470.5	1298.6	673.9	285.1	140.8	12.4	1.7	3084.3
2510	2510	KONKAN & GOA	1904	0.0	0.1	6.6	6.3	4.6	975.8	771.7	321.3	217.0	90.3	0.0	0.0	2393.7
2511	2511	KONKAN & GOA	1905	0.1	0.1	0.0	0.4	8.6	293.7	770.6	305.5	208.3	83.5	12.1	0.0	1682.8
2512	2512	KONKAN & GOA	1906	5.0	0.9	0.0	0.0	2.9	547.4	1090.9	506.7	222.5	31.6	10.2	0.7	2418.9
2513	2513	KONKAN & GOA	1907	1.7	1.0	0.0	20.1	0.0	583.1	1170.9	811.5	164.0	11.4	1.9	0.9	2766.6

In [5]:
```
data.shape
```

Out[5]:
```
(114, 20)
```

In [6]:
```
new_data=data.fillna(value=1)
new_data
```

Out[6]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNU
2509	2509	KONKAN & GOA	1903	0.0	0.0	0.1	0.0	201.1	470.5	1298.6	673.9	285.1	140.8	12.4	1.7	308
2510	2510	KONKAN & GOA	1904	0.0	0.1	6.6	6.3	4.6	975.8	771.7	321.3	217.0	90.3	0.0	0.0	239
2511	2511	KONKAN & GOA	1905	0.1	0.1	0.0	0.4	8.6	293.7	770.6	305.5	208.3	83.5	12.1	0.0	168
2512	2512	KONKAN & GOA	1906	5.0	0.9	0.0	0.0	2.9	547.4	1090.9	506.7	222.5	31.6	10.2	0.7	24
2513	2513	KONKAN & GOA	1907	1.7	1.0	0.0	20.1	0.0	583.1	1170.9	811.5	164.0	11.4	1.9	0.9	276
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2618	2618	KONKAN & GOA	2012	0.0	0.0	0.0	0.6	1.1	633.0	928.5	762.5	515.3	175.1	2.3	0.0	30
2619	2619	KONKAN & GOA	2013	1.8	5.4	0.1	0.1	18.5	1028.3	1478.5	497.6	340.7	149.3	2.1	1.5	352
2620	2620	KONKAN & GOA	2014	1.3	5.3	1.8	0.7	21.3	238.2	1293.2	658.0	419.5	98.7	8.0	11.7	275
2621	2621	KONKAN & GOA	2015	2.7	0.0	36.8	3.6	11.3	764.0	526.5	377.3	240.9	91.4	27.3	0.0	208
2622	2622	MADHYA MAHARASHTRA	1901	18.8	0.6	7.7	36.6	30.4	107.7	215.9	194.1	83.7	68.7	4.4	0.5	76

114 rows × 20 columns

In [7]:
```
new_data.index
```

Out[7]:
```
RangeIndex(start=2509, stop=2623, step=1)
```

In [8]:
```
new_data.columns
```

Out[8]:
```
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 [9]:
```
new_data.plot.line()
```

Out[9]:
```
<AxesSubplot:>
```

In [10]:
```
new_data.plot.bar()
```

Out[10]: <AxesSubplot:>

In [11]:
```
new_data.plot.area()
```

Out[11]: <AxesSubplot:>

In [12]:
```
new_data.plot.hist()
```

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

In [13]:
```
new_data.plot.pie(y='ANNUAL')
```

Out[13]:
```
<AxesSubplot:ylabel='ANNUAL'>
```

In [14]:
```
new_data.plot.scatter(x='YEAR',y='ANNUAL')
```

Out[14]:
```
<AxesSubplot:xlabel='YEAR', ylabel='ANNUAL'>
```

In [15]:
```
sns.pairplot(new_data)
```

Out[15]:
```
<seaborn.axisgrid.PairGrid at 0x25588b018e0>
```

In [16]:
```
sns.distplot(data['YEAR'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\distributions.py:2557: FutureWarning: `distplo
t` is a deprecated function and will be removed in a future version. Please adapt your code to us
e either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
  warnings.warn(msg, FutureWarning)
```

Out[16]:
```
<AxesSubplot:xlabel='YEAR', ylabel='Density'>
```

In [17]:
```
sns.heatmap(new_data.corr())
```

Out[17]:
```
<AxesSubplot:>
```