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")[1359:147
```

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

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 114 entries, 1359 to 1472
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 | J F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1359** | 1359 | HARYANA DELHI & CHANDIGARH | 1903 | 14.7 | 0.5 | 2.3 | 0.5 | 8.5 | 8.6 | 151.6 | 138.2 | 97.7 | 4.0 | 0.0 | 2.3 | 428.9 | 1 |
| **1360** | 1360 | HARYANA DELHI & CHANDIGARH | 1904 | 7.6 | 0.7 | 48.0 | 0.5 | 29.3 | 34.3 | 109.7 | 162.9 | 102.3 | 1.5 | 10.4 | 20.3 | 527.8 | |
| **1361** | 1361 | HARYANA DELHI & CHANDIGARH | 1905 | 44.8 | 20.8 | 14.0 | 1.3 | 7.4 | 20.1 | 93.6 | 23.1 | 92.6 | 0.0 | 0.0 | 5.1 | 322.9 | 6 |
| **1362** | 1362 | HARYANA DELHI & CHANDIGARH | 1906 | 3.6 | 64.1 | 31.4 | 0.1 | 1.4 | 70.2 | 128.9 | 103.8 | 185.2 | 0.0 | 0.0 | 5.0 | 593.6 | 6 |
| **1363** | 1363 | HARYANA DELHI & CHANDIGARH | 1907 | 14.3 | 42.8 | 25.9 | 33.5 | 7.8 | 20.0 | 123.2 | 175.3 | 1.0 | 0.1 | 0.0 | 0.0 | 443.9 | 5 |

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 | ANNUAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1359** | 1359 | HARYANA DELHI & CHANDIGARH | 1903 | 14.7 | 0.5 | 2.3 | 0.5 | 8.5 | 8.6 | 151.6 | 138.2 | 97.7 | 4.0 | 0.0 | 2.3 | 428.9 | |
| **1360** | 1360 | HARYANA DELHI & CHANDIGARH | 1904 | 7.6 | 0.7 | 48.0 | 0.5 | 29.3 | 34.3 | 109.7 | 162.9 | 102.3 | 1.5 | 10.4 | 20.3 | 527.8 | |
| **1361** | 1361 | HARYANA DELHI & CHANDIGARH | 1905 | 44.8 | 20.8 | 14.0 | 1.3 | 7.4 | 20.1 | 93.6 | 23.1 | 92.6 | 0.0 | 0.0 | 5.1 | 322.9 | |
| **1362** | 1362 | HARYANA DELHI & CHANDIGARH | 1906 | 3.6 | 64.1 | 31.4 | 0.1 | 1.4 | 70.2 | 128.9 | 103.8 | 185.2 | 0.0 | 0.0 | 5.0 | 593.6 | |
| **1363** | 1363 | HARYANA DELHI & CHANDIGARH | 1907 | 14.3 | 42.8 | 25.9 | 33.5 | 7.8 | 20.0 | 123.2 | 175.3 | 1.0 | 0.1 | 0.0 | 0.0 | 443.9 | |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| **1468** | 1468 | HARYANA DELHI & CHANDIGARH | 2012 | 8.2 | 0.2 | 0.1 | 11.8 | 3.8 | 5.3 | 68.1 | 196.6 | 90.7 | 2.4 | 0.6 | 3.5 | 391.4 | |
| **1469** | 1469 | HARYANA DELHI & CHANDIGARH | 2013 | 21.1 | 52.2 | 5.3 | 3.3 | 1.4 | 62.1 | 96.5 | 161.9 | 42.8 | 10.9 | 1.7 | 2.1 | 461.2 | |
| **1470** | 1470 | HARYANA DELHI & CHANDIGARH | 2014 | 13.0 | 17.3 | 26.8 | 7.5 | 20.3 | 25.9 | 72.3 | 34.8 | 67.3 | 10.5 | 0.2 | 9.6 | 305.5 | |
| **1471** | 1471 | HARYANA DELHI & CHANDIGARH | 2015 | 12.4 | 6.6 | 71.8 | 34.8 | 8.4 | 43.7 | 130.3 | 89.2 | 32.1 | 3.7 | 2.3 | 0.2 | 435.3 | |
| **1472** | 1472 | PUNJAB | 1901 | 55.7 | 50.1 | 25.2 | 2.1 | 25.2 | 10.4 | 178.2 | 145.0 | 24.4 | 3.7 | 0.0 | 3.3 | 523.5 | 1 |

114 rows × 20 columns

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

Out[7]:
```
RangeIndex(start=1359, stop=1473, 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 0x2154c336f40>
```

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:>
```