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# EDS mini project

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- read-It is used to read the contents of the file opened. Syntax-f.read()
- splitlines- This function helps to split the given data row by row in lines.  
splitlines()
- for-It is a loop used for iterating over a sequence. syntax- for x in abc:
- split- It is used to differentiate data with a parameter. Syntax-lines.split("")
- append-It helps to change or update the data in the file. Syntax- f.append()
- max-It calculates the max value in a set or row or column.
- array- It is used to create an array with desired values.Syntax- np.array()
- reshape()- It is a numpy series function to convert a numpy series into a matrix.  
You can choose the
  - dimension of the matrix.Syntax- array.reshape(a,b) a is the row number and b is the column number.
  - transpose- Used to find transpose of a matrix

# Pandas:

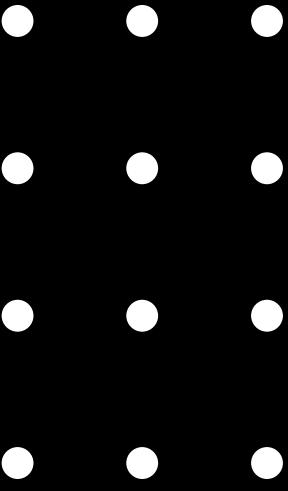
- Functions used:
- read-It is used to read a specific type of file. Syntax-  
`pd.read_filetype('filename')`
- dataframe- It is like a 2D data structure with rows and columns.
- idxmax()-It is a function in pandas dataframe which is used to call out the index of the max value.

# Python matplotlib

- Matplotlib is a low level graph plotting library in python that serves as a visualization utility.  
Functions:
  - .subplot- It is used to draw or plot many graphs in a single figure.Syntax- plt.subplot(r,c,p). r is the no of rows, c is the no of columns and p is the position of the graph you want.
  - plot- It plots a simple line graph, you can change the line width, color, and add markers.  
Syntax- plt.plot(x,y)
  - bar-It plots a bar graph.You can change the color of the graph.Syntax- plt.bar(x,y)
  - scatter- It plots a scatter graph,you can also change the color of the points.Syntax- plt.scatter(x,y)
  - xlabel- It is used to give a label to the markings on the x axis. Syntax- plt.xlabel("label")
  - 
  - ylabel- It is used to give a label to the markings on the y axis. Syntax-plt.ylabel("label")
  - title- It gives a title to the graph.Syntax- plt.title("title")
  - show- It is used to display all the currently active graphs.Syntax- plt.show()

# K-Means

- K-means is an unsupervised learning method for clustering data points.
- The algorithm iteratively divides data points into K clusters by minimizing the variance in each cluster.
- Each data point is randomly assigned to one of the K clusters. Then, we compute the centroid (functionally the center) of each cluster, and reassign each data point to the cluster with the closest centroid.
- We repeat this process until the cluster assignments for each data point are no longer changing.



# DATA Set

SUBDIVISION	YEAR	Jan-Feb	Mar-May	Jun-Sep	Oct-Dec	ANNUAL
KONKAN & GOA	2000	1.2	191.2	2841.2	99.7	3133.2
KONKAN & GOA	2001	5.6	62.4	2232.7	94.7	2395.4
KONKAN & GOA	2002	0	12.3	2446.4	78.6	2537.2
KONKAN & GOA	2003	1.2	13.2	2771.6	56.3	2842.3
KONKAN & GOA	2004	0	57.2	2885.5	43.1	2985.9
KONKAN & GOA	2005	1.4	15.6	3522.2	76.6	3615.7
KONKAN & GOA	2006	0	221.7	3035.6	224.9	3482.2
KONKAN & GOA	2007	0	36.9	3369.9	61.7	3468.5
KONKAN & GOA	2008	0.1	43	2949.3	60.6	3053.1
KONKAN & GOA	2009	0	5.9	2282.2	428.5	2716.6
KONKAN & GOA	2010	2.7	9.7	3467.4	298.3	3778.1
KONKAN & GOA	2011	0	4.5	3697.3	123.5	3825.2
KONKAN & GOA	2012	0	1.7	2839.3	177.4	3018.4
KONKAN & GOA	2013	7.3	18.7	3345.2	152.8	3524
KONKAN & GOA	2014	6.6	23.8	2608.8	118.4	2757.5
KONKAN & GOA	2015	2.7	51.7	1908.7	118.8	2082

# OUTPUT

```
Matrix of data of annual rainfall  
[[3133.2 2395.4 2537.2 2842.3]  
[2985.9 3615.7 3482.2 3468.5]  
[3053.1 2716.6 3778.1 3825.2]  
[3018.4 3524. 2757.5 2082. ]]
```

```
Transpose of annual matrix :  
[[3133.2 2985.9 3053.1 3018.4]  
[2395.4 3615.7 2716.6 3524. ]  
[2537.2 3482.2 3778.1 2757.5]  
[2842.3 3468.5 3825.2 2082. ]]
```

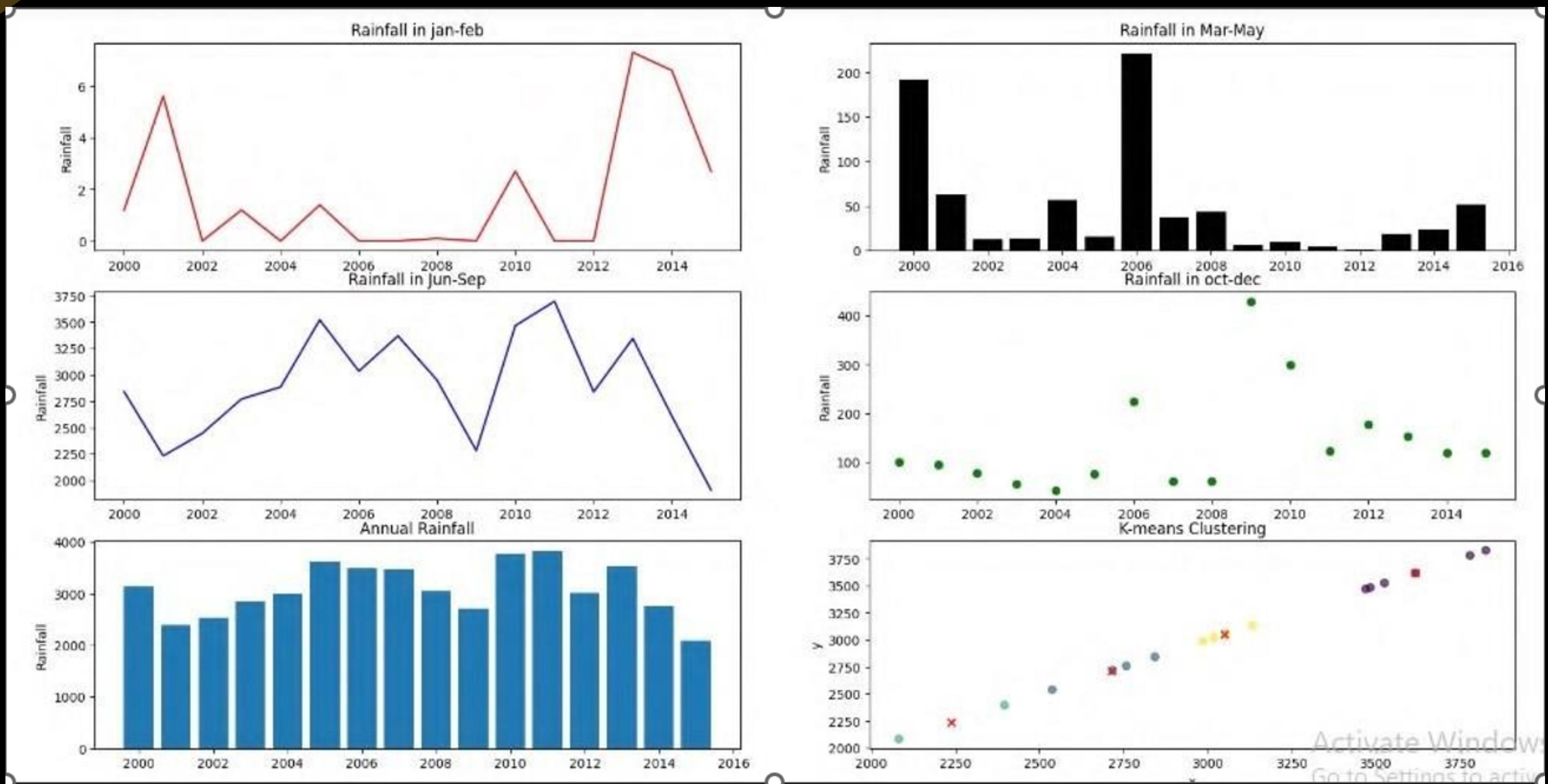
```
Maximum annual rainfall: 3825.2  
The year of maximum rainfall is: 2011  
Maximum rainfall in Jan-Feb: 7.3  
The year of maximum rainfall is: 2013  
Maximum rainfall in Mar-May: 221.7  
The year of maximum rainfall is: 2006  
Maximum rainfall in Jun-Sep: 3697.3  
The year of maximum rainfall is: 2011  
Maximum rainfall in Oct-Dec: 428.5  
The year of maximum rainfall is: 2009
```

```
Minimum annual rainfall: 2082.0  
The year of minimum rainfall is: 2015  
Minimum rainfall in Jan-Feb: 0.0  
The year of minimum rainfall is: 2002  
Minimum rainfall in Mar-May: 1.7  
The year of minimum rainfall is: 2012  
Minimum rainfall in Jun-Sep: 1908.7  
The year of minimum rainfall is: 2015  
Minimum rainfall in Oct-Dec: 43.1  
The year of minimum rainfall is: 2004
```

Total rainfall in 16 years 49215.3

```
Average rainfall annually 3075.95625  
Average rainfall in Jan-Feb 1.8  
Average rainfall in Mar-May 48.09375  
Average rainfall in Jun-Sep 2887.70625  
Average rainfall in Oct-Dec 138.36875
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# OUTPUT





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**Thank You**

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