Area Plots :- Which is actually an extension of the line plot

→ Also known as area chart or area graph

It is a type of plot that depicts accumulated totals using numbers or percentages over time.

→ Is based on the line plot.... when trying to compare two or more quantities)

* Generating Area Plots .... last column cumulative sum of all values.

By sorting in descending order of cumulative total immigation

```
df_canda.sort_values['Total'], ascending = False,
axis = 0, inplace = True)
```

→ First we need the years to be plotted on the horizontal axis and annual immigration to be plotted on the vertical axis.

```
years = list (map(str, range (1980, 2014)))
df_canada.sort_value( ['Total'], ascending = False,
    axis=0, inplace= True)
df_top5 = df_canada.head()
df_top5 = df_top5[years].transpose()
```

Now generating Area Plot :-

```
import matplotlib as mp1
import matplotlib.pyplot as plt
```

```
df_top5.plot(kind='area')
plt.title('Immigation trend of top 5 countries')
plt.ylabel('No. of imigrants')
plt.xlabel('Years')
plt.show()
```

Lect :-

Histograms - A histogram is a way of representing the frequency distribution of a variable.

vertical axis :- the frequency or the no. of datapoints in each bin.

For histogram :-

```
df_canada['2013'].plot(kind='hist')
plt.title('Histogram of Immigration From 195 contries in 2013')
plt.ylabel('No. of countries')
plt.xlabel('No. of Imigrants')
plt.show()
```

→ Importing Numpy

```
import numpy as np
```

```
count, bin_edges = np.histogram(df_candda['2013'])
```

Lect :-Bar charts

→ Unlike histogram, a bar chart is commonly used to compare the values of a variable at a given point in time.

→ It is type of plot where the length of each bar is proportional to the value of item that it represents.

→
```
import matplotlib
    years = list(map(str, range(1980, 2014)))
df_iceland = df_canada.loc['Iceland', years]

df_iceland.plot(kind 'bar' )
        :
        :
        :

plt.show()
```

Lect :-

Pie charts :- A pie chart is a circular statistical graphic divided into slices to illustrate numerical proportion.

*
```
import matplotlib as mp1
import matplotlib.pyplot as plt

df_continents['Total'].plot(kind='pie')
plt.title('Imigration to canada by Continent
          [1980-2013]')
plt.show()
```

Lect Box plots :-

A Box plot is a way of statistically representin the distribution of given data through five main dimensions. The first dimension in minimum which smallest no. in the sorted data.

1st Quartile → 25% of the way through the sorted data.

Median → Median of the sorted data

3rd Quartile → 75% of way through the sorted data

Maximum → Highest no. in the sorted data.

Box Plots :-

```
import matplotlib as mp1
import matplotlib.pyplot as plt
df_japan = df_candda.loc[['Japan'], years].
           transpose()
df_japan.plot (kind = 'box')
plt.title ('Box plot of Japanese imigrants from
           1980-2013')
plt.ylabel ('No. of imgrants')
plt.show
```

Scatter Plots :-

A scatter plot is a type of plot that displays values pertaining to typically two variables against each other.

→ dependent variable

→ independent variable

```
import matplotlib as mpl
import matplotlib.pyplot as plt
```

```
df_total.plot { kind = 'scatter',
                x = 'year',
                y = 'total',
              }
plt.title ('                    ');
plt.xlabel ('Year')
plt.ylabel ('No. of imigrants')
plt.show()
```