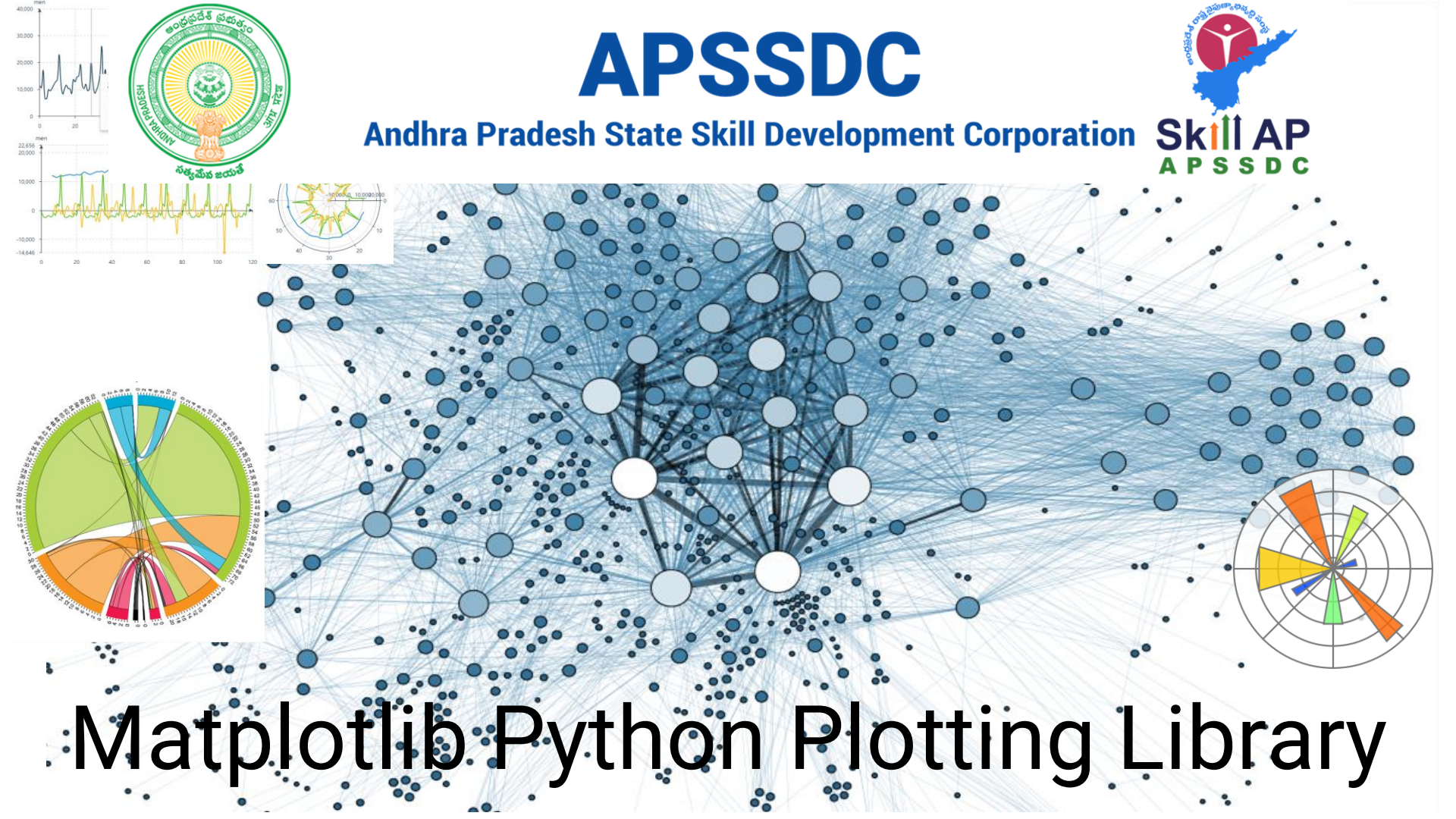
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Matplotlib Python Plotting Library

# Introduction :

- Matplotlib is an amazing visualization library in Python for 2D plots of arrays.
- Matplotlib is a multi-platform data visualization library built on NumPy arrays and designed to work with the broader SciPy stack. It was introduced by John Hunter in the year 2002.
- One of the greatest benefits of visualization is that it allows us visual access to huge amounts of data in easily digestible visuals.
- Matplotlib consists of several plots like line, bar, scatter, histogram etc

# Importing matplotlib :

from matplotlib import pyplot as plt

or

import matplotlib.pyplot as plt

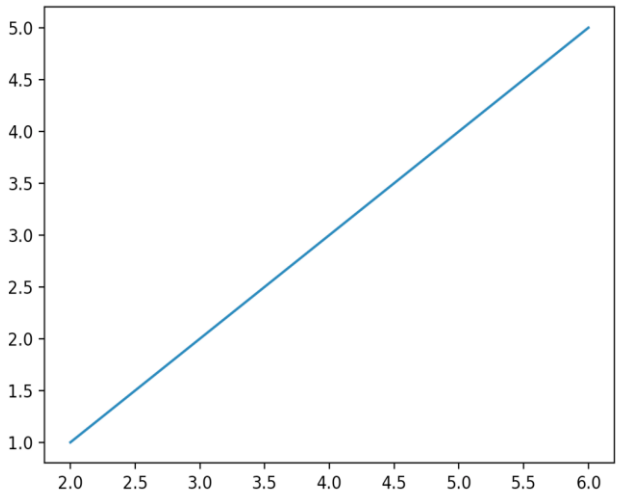
# Types of Plots:

The various types of plots available in matplotlib are

1. Line plot
2. Scatter Plot
3. Histogram
4. Bar Graph
5. Pie Chart
6. Box Plot
7. Polar Plot
8. Contour Plot
9. Quiver Plot
10. WireFrame Plot
11. Surface Plot

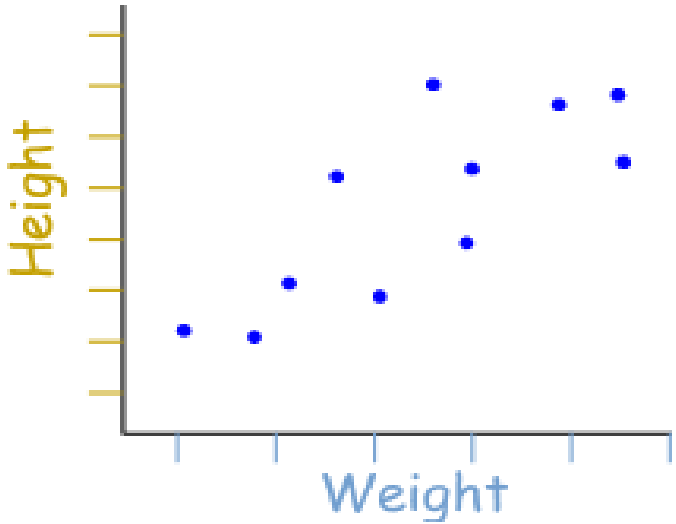
# Line Plot:

A **line chart** or **line graph** is a type of **chart** which displays information as a series of data points called 'markers' connected by straight **line** segments.



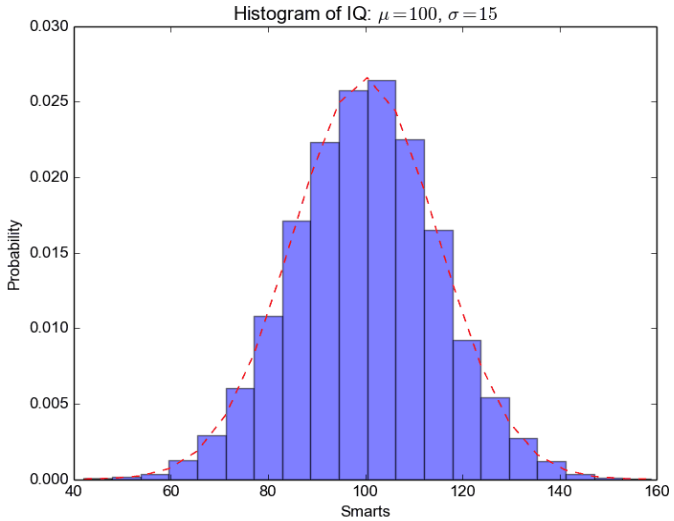
# Scatter Plot:

A scatter plot is a type of plot that shows the data as a collection of points. The position of a point depends on its two-dimensional value, where each value is a position on either the horizontal or vertical dimension.



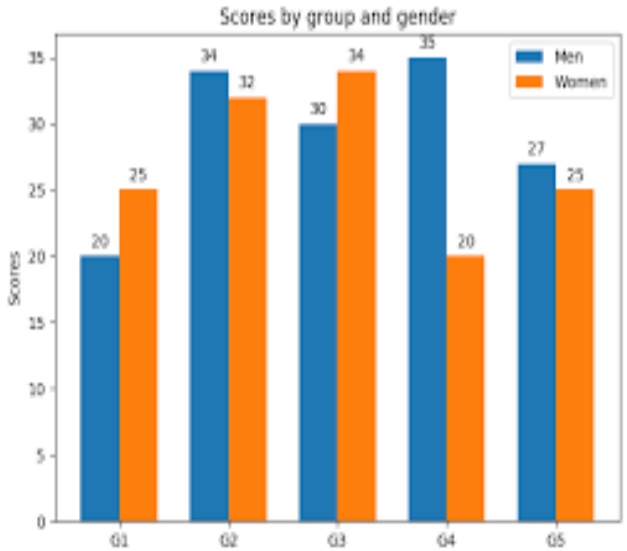
# Histogram:

A histogram shows the frequency on the vertical axis and the horizontal axis is another dimension. Usually it has bins, where every bin has a minimum and maximum value. Each bin also has a frequency between x and infinite.



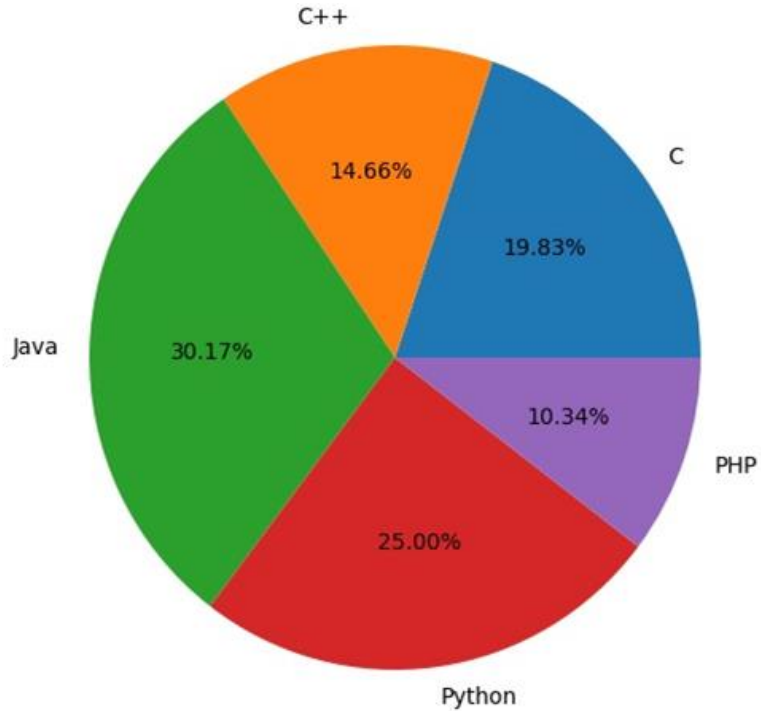
# Bar Graph:

- A bar chart or bar graph is a chart or graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally.
- A bar graph shows comparisons among discrete categories. One axis of the chart shows the specific categories being compared, and the other axis represents a measured value.



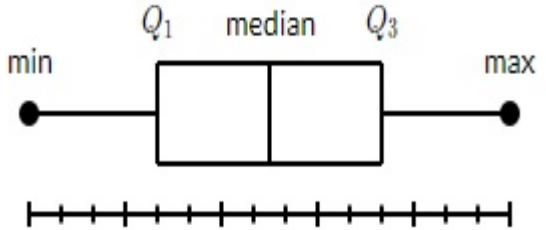
# Pie Chart:

- A Pie Chart can only display one series of data. Pie charts show the size of items (called wedge) in one data series, proportional to the sum of the items.
- Matplotlib API has a pie() function that generates a pie diagram representing data in an array. The fractional area of each wedge is given by x/sum(x).



# Box Plot:

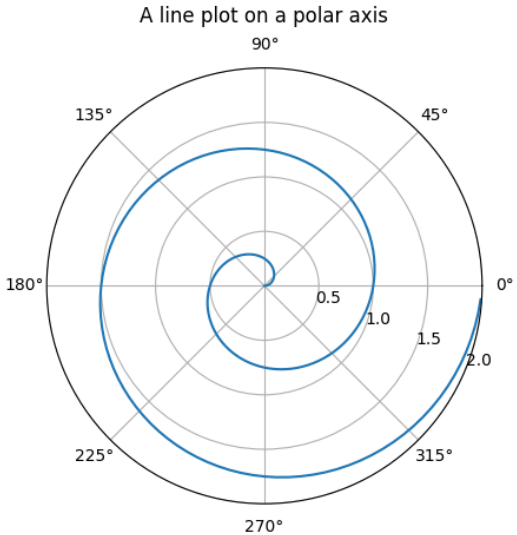
- A box plot which is also known as a whisker plot displays a summary of a set of data containing the minimum, first quartile, median, third quartile, and maximum.




- In a box plot, we dr[illegible] the third quartile. A vertical line goes through the box at the median. The whiskers go from each quartile to the minimum or maximum.

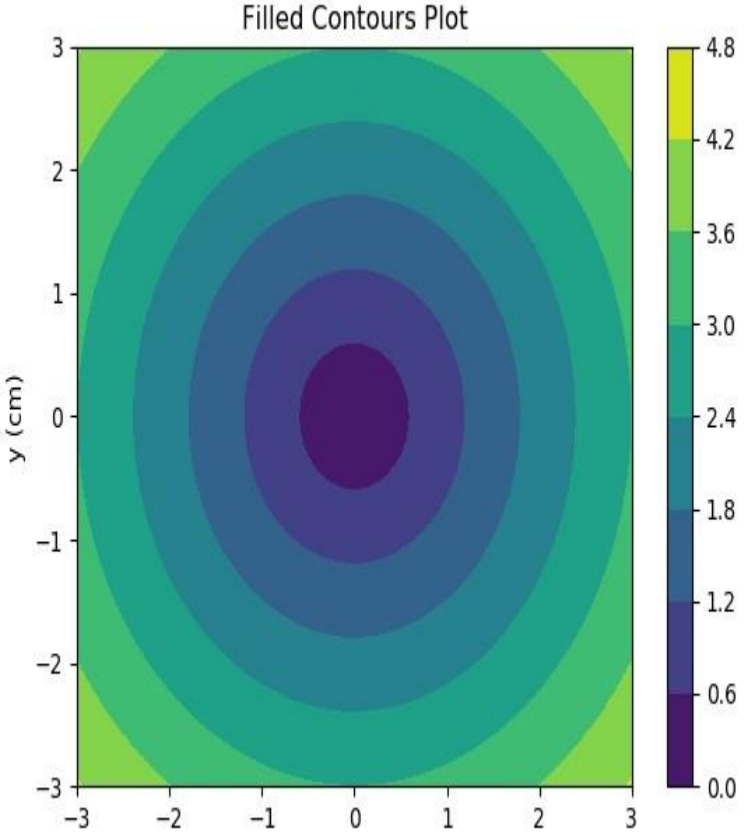
# Polar Plot:

- The **matplotlib.pyplot** module contains a function **polar()**, which can be used for plotting curves in polar coordinates.



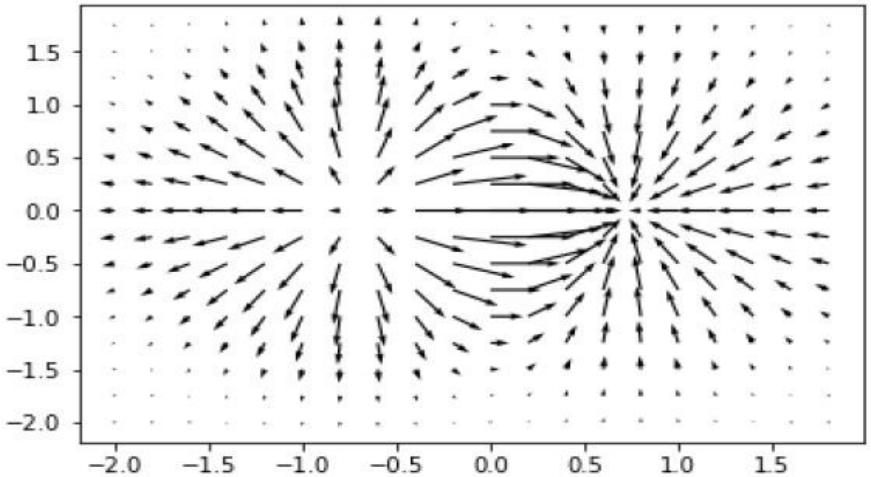
# Contour Plot:

- Contour plots (sometimes called Level Plots) are a way to show a three-dimensional surface on a two-dimensional plane.
- It graphs two predictor variables X Y on the y-axis and a response variable Z as contours.
- These contours are sometimes called the z-slices or the iso-response values.



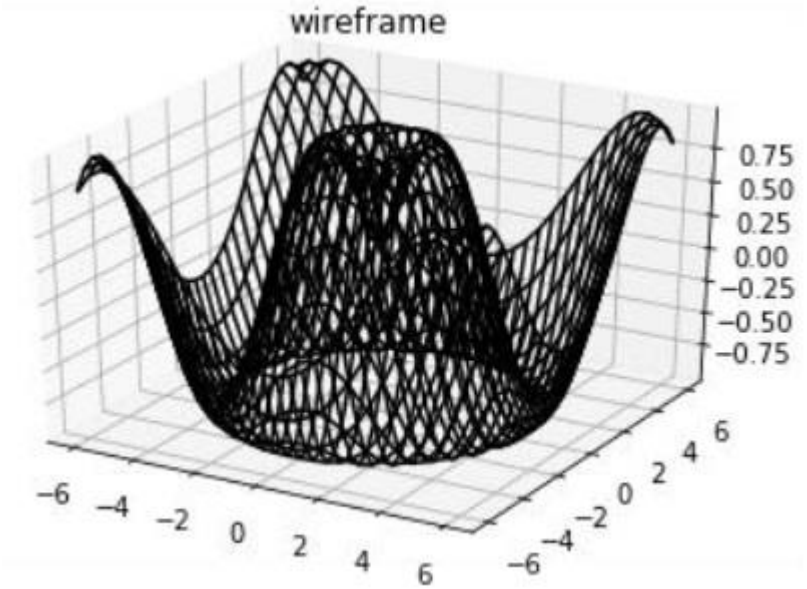
# Quiver Plot:

A quiver plot displays the velocity vectors as arrows with components (u,v) at the points (x,y).



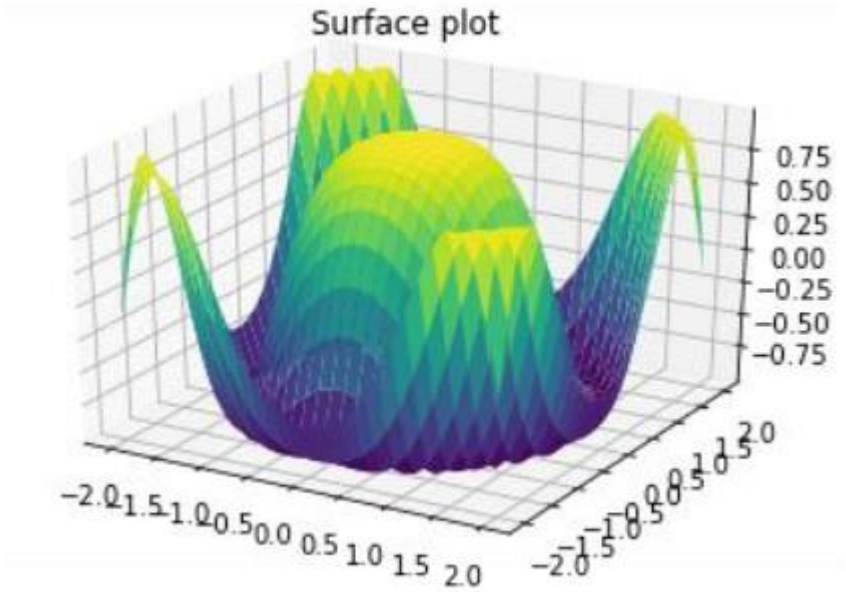
# Wireframe Plot:

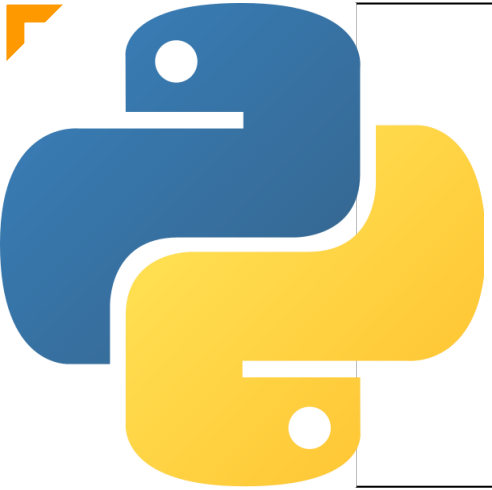
Wireframe plot takes a grid of values and projects it onto the specified three-dimensional surface, and can make the resulting three-dimensional forms quite easy to visualize



# Surface Plot:

- Surface plot shows a functional relationship between a designated dependent variable (Y), and two independent variables (X and Z).
- The plot is a companion plot to the contour plot.
- A surface plot is like a wireframe plot, but each face of the wireframe is a filled polygon.





# Print("THANK YOU")

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