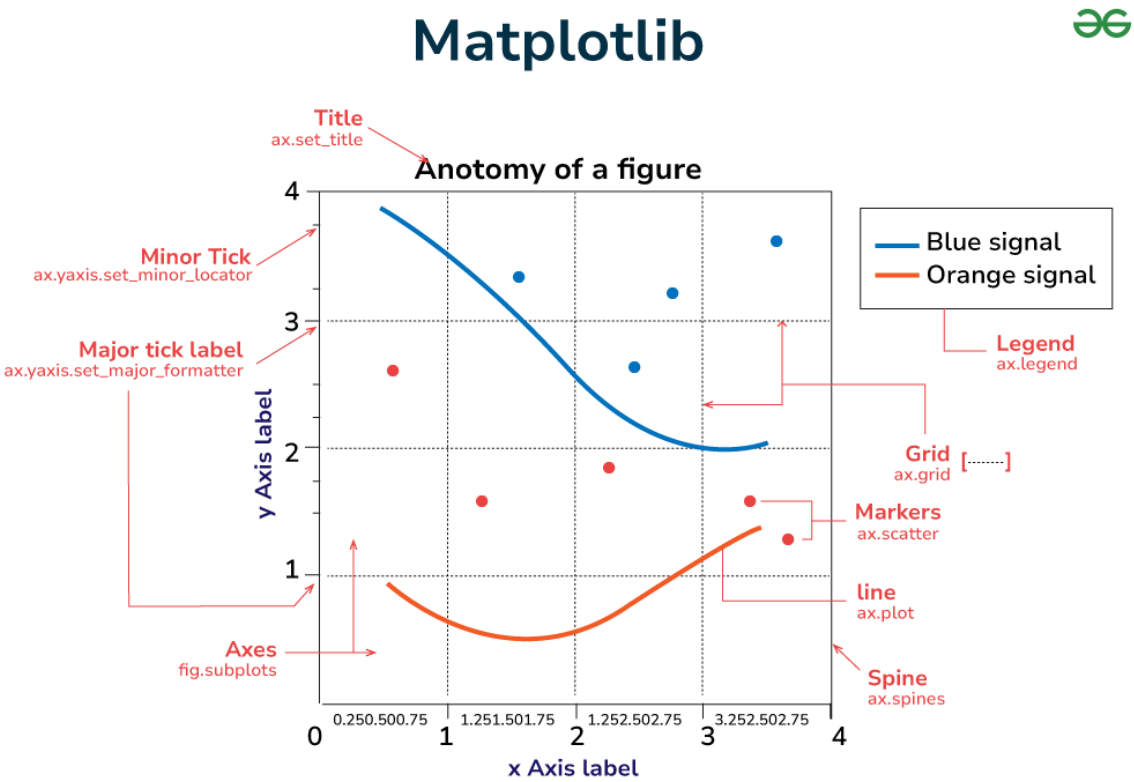
Introduction to Matplotlib

Key Features of Matplotlib:

1. **Versatility**: Matplotlib can generate a wide range of plots, including line plots, scatter plots, bar plots, histograms, pie charts, and more.
2. **Customization**: It offers extensive customization options to control every aspect of the plot, such as line styles, colors, markers, labels, and annotations.
3. **Integration with NumPy**: Matplotlib integrates seamlessly with NumPy, making it easy to plot data arrays directly.
4. **Publication Quality**: Matplotlib produces high-quality plots suitable for publication with fine-grained control over the plot aesthetics.
5. **Extensible**: Matplotlib is highly extensible, with a large ecosystem of add-on toolkits and extensions like Seaborn, Pandas plotting functions, and Basemap for geographical plotting.
6. **Cross-Platform**: It is platform-independent and can run on various operating systems, including Windows, macOS, and Linux.
7. **Interactive Plots**: Matplotlib supports interactive plotting through the use of widgets and event handling, enabling users to explore data dynamically.

What is a Matplotlib Figure?

In Matplotlib, a figure is the top-level container that holds all the elements of a plot. It represents the entire window or page where the plot is drawn.



Different Types of Plots in Matplotlib

Matplotlib offers a wide range of plot types to suit various data visualization needs. Here are some of the most commonly used types of plots in Matplotlib:

- Line Graph
- Stem Plot
- Bar chart
- Histograms
- Scatter Plot
- Stack Plot
- Box Plot
- Pie Chart
- Error Plot
- Violin Plot
- 3D Plots