

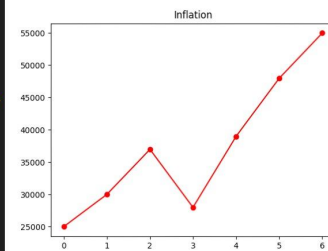
# Visualization with Matplotlib, Seaborn, Plotly

## Matplotlib:

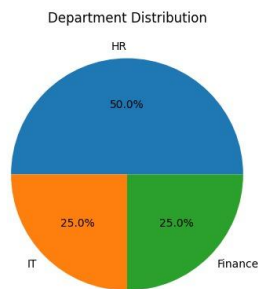
Matplotlib is a popular Python library that helps in making static, animated, and interactive data visualizations. It offers a complete range of tools for creating different kinds of plots and charts, allowing users to represent and analyze data effectively.

### Example:

```
1 import matplotlib.pyplot as plt
2 import pandas as pd
3
4 # Data
5 data = {"Salary": [25000, 30000, 37000, 28000, 39000, 48000, 55000]}
6 df = pd.DataFrame(data)
7
8 # Plotting
9 plt.plot(df["Salary"], color = "red", marker = "o")
10 plt.title("Inflation")
11 plt.show()
```



```
1 import matplotlib.pyplot as plt
2 import pandas as pd
3
4 # Data
5 data = {"Salary": [10, 30, 60, 10]}
6 df = pd.DataFrame(data)
7
8 # Departments (exactly 7 values)
9 df["dept"] = ['HR', 'IT', 'Finance', 'HR']
10
11 # Count each department
12 count = df["dept"].value_counts()
13
14 # Plot pie chart
15 plt.pie(count.values, labels=count.index, autopct='%1.1f%%')
16 plt.title("Department Distribution")
17 plt.show()
```

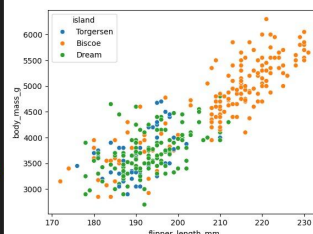


## Seaborn:

Seaborn is a popular Python library for creating attractive statistical visualizations. Built on Matplotlib and integrated with Pandas, it simplifies complex plots like line charts, heatmaps and violin plots with minimal code.

### Example:

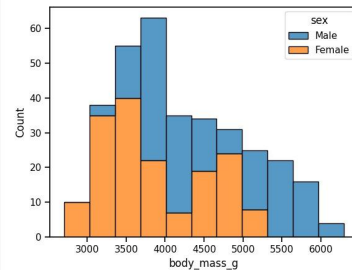
```
1 import seaborn as sns
2 import pandas as pd
3 import numpy as np
4 import matplotlib.pyplot as plt
5
6 # Load penguins dataset
7 penguins = sns.load_dataset('penguins')
8
9 # Scatter plot
10 sns.scatterplot(data=penguins, x="flipper_length_mm", y="body_mass_g", hue = "island")
11
12 # Show plot
13 plt.show()
```



```

1 import seaborn as sns
2 import pandas as pd
3 import numpy as np
4 import matplotlib.pyplot as plt
5
6 # Load penguins dataset
7 penguins = sns.load_dataset('penguins')
8
9 # histogram:
10 sns.set_context("notebook")
11 sns.histplot(data = penguins, x = "body_mass_g", hue="sex", multiple="stack")
12
13 # Show plot
14 plt.show()

```



## Plotly

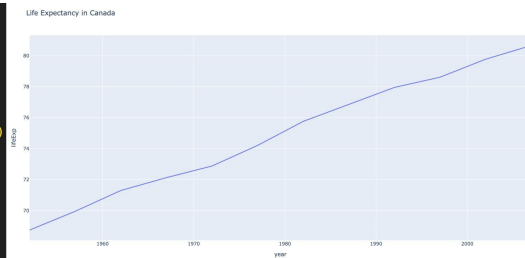
Plotly stands out as a versatile and powerful library that transforms static charts into dynamic, interactive visualizations. It helps users to explore data through features like zooming, additional details and clicking for deeper insights.

### Example:

```

1 import plotly.express as px
2 import webbrowser
3 import tempfile
4 import os
5
6 # Load data
7 df = px.data.gapminder().query("country == 'Canada'")
8 fig = px.line(df, x="year", y="lifeExp", title="Life Expectancy in Canada")
9
10 # Create a temporary HTML file
11 tmp_file = tempfile.NamedTemporaryFile(delete=False, suffix='.html')
12 fig.write_html(tmp_file.name)
13
14 # Open in default browser
15 webbrowser.open('file://' + os.path.realpath(tmp_file.name))

```



```

1 import plotly.express as px
2 import webbrowser
3 import tempfile
4 import os
5
6 # Load data
7 df = px.data.stocks()
8 fig = px.line(df, x="date", y="GOOG", title="Stock Price Of Google")
9
10 # Create a temporary HTML file
11 tmp_file = tempfile.NamedTemporaryFile(delete=False, suffix='.html')
12 fig.write_html(tmp_file.name)
13
14 # Open in default browser
15 webbrowser.open('file://' + os.path.realpath(tmp_file.name))
16

```

