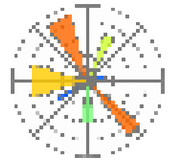
Data Visualization

Cheat Sheet



Importing Libraries

```
import matplotlib.pyplot as plt
import seaborn as sns
```

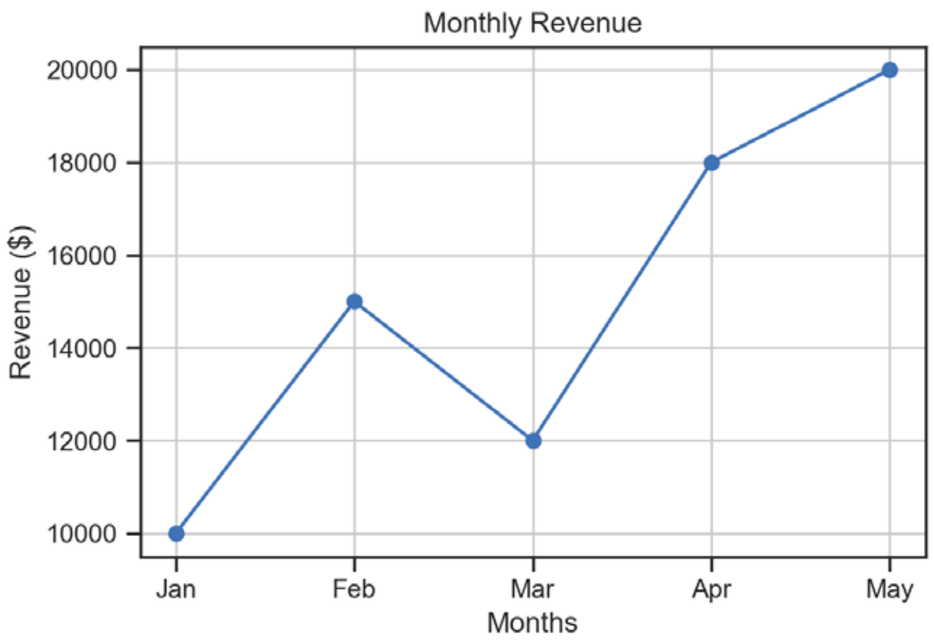
01

Basic Line Plot

```
plt.plot(x, y, linestyle = '-', color = 'b')
plt.xlabel('X-axis label')
plt.ylabel('Y-axis label')
plt.title('Title')
plt.show()
```

Example

```
# Sample dataset
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May']
revenue = [10000, 15000, 12000, 18000, 20000]

# Create the line plot
plt.plot(months, revenue, marker='o', linestyle='-', color='b')
plt.xlabel('Months')
plt.ylabel('Revenue ($)')
plt.title('Monthly Revenue')
plt.grid(True)
plt.show()
```



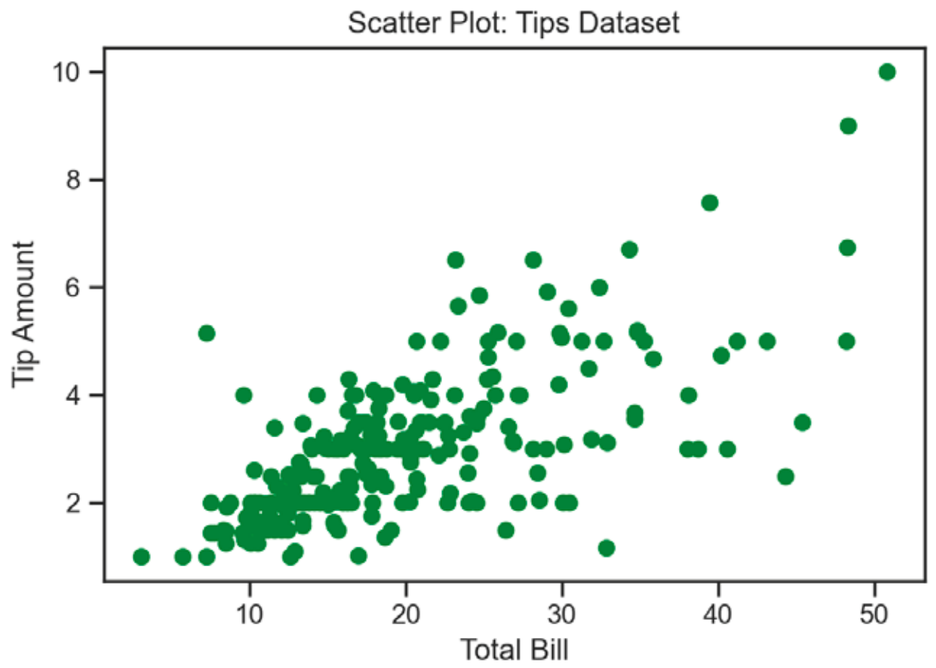
02

Scatter Plot

```
plt.scatter(x, y, c='color')
plt.xlabel('X-axis label')
plt.ylabel('Y-axis label')
plt.title('Title')
plt.show()
```

Example

```
# Load the tips dataset
df = sns.load_dataset("tips")

# Extract the total bill and tip amounts
total_bill = df["total_bill"].values
tip_amount = df["tip"].values

# Create a scatter plot
plt.scatter(total_bill, tip_amount, c='green')
plt.xlabel('Total Bill')
plt.ylabel('Tip Amount')
plt.title('Scatter Plot: Tips Dataset')
plt.show()
```

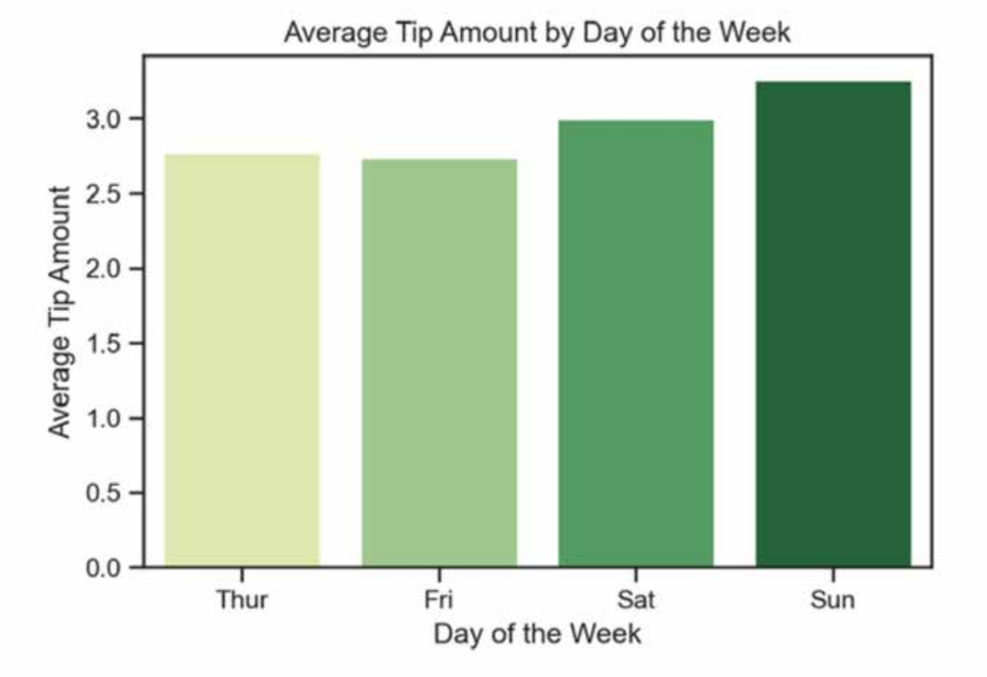


Bar Plot

```
plt.bar(x, y, color = 'b', width = 0.5, height = 0.3)
plt.xlabel('X-axis label')
plt.ylabel('Y-axis label')
plt.title('Title')
plt.show()

# Horizontal bar
plt.barh(x, y)
plt.show()
```

Example

```
# Load the 'tip' dataset from seaborn
tips = sns.load_dataset('tips')

# Calculate the average tip amount for each day of the week
avg_tip_by_day = tips.groupby('day')['tip'].mean()

# Create the bar plot
sns.barplot(x=avg_tip_by_day.index, y=avg_tip_by_day.values)
plt.xlabel('Day of the Week')
plt.ylabel('Average Tip Amount')
plt.title('Average Tip Amount by Day of the Week')
plt.show()
```

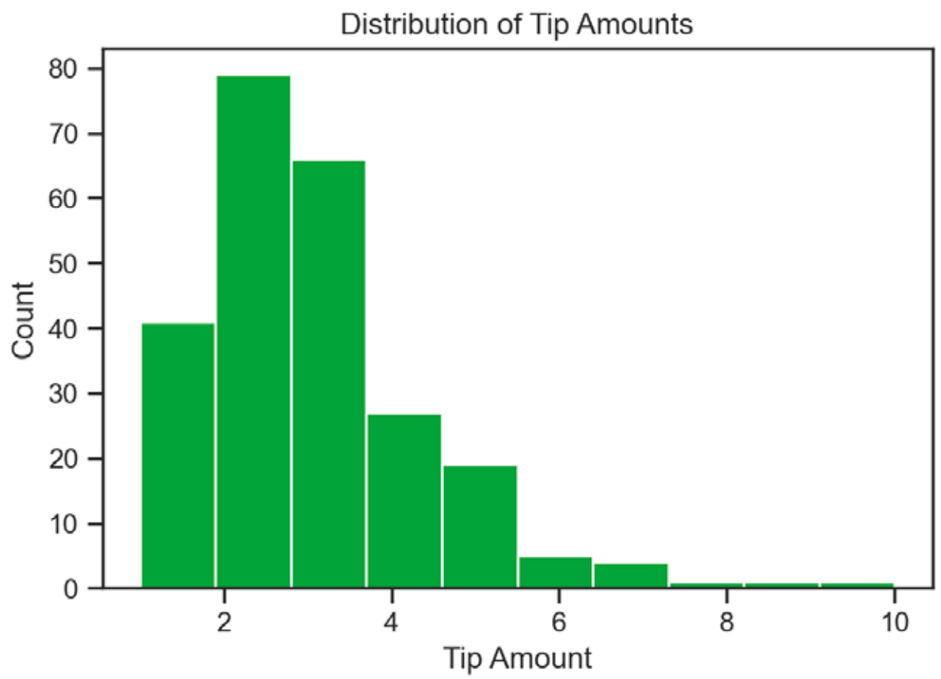


Histogram

```
plt.hist(data, bins=10)
plt.xlabel('X-axis label')
plt.ylabel('Y-axis label')
plt.title('Title')
plt.show()
```

Example

```
# Load the 'tip' dataset from seaborn
tips = sns.load_dataset('tips')

# Create the histogram
sns.histplot(data=tips, x='tip', bins=10, color='green')
plt.xlabel('Tip Amount')
plt.ylabel('Count')
plt.title('Distribution of Tip Amounts')
plt.show()
```



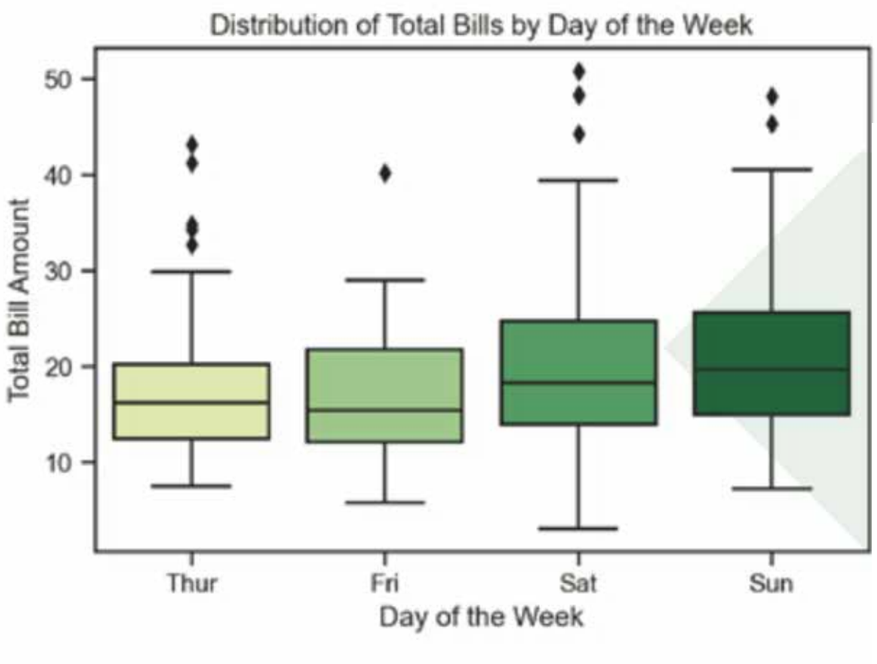
05

Box Plot

```
sns.boxplot(data, x, y, color)
plt.xlabel('X-axis label')
plt.ylabel('Y-axis label')
plt.title('Title')
plt.show()
```

Example

```
# Load the 'tip' dataset from seaborn
tips = sns.load_dataset('tips')

# Create the box plot with a different color
sns.boxplot(data=tips, x='day', y='total_bill', color='green')
plt.xlabel('Day of the Week')
plt.ylabel('Total Bill Amount')
plt.title('Distribution of Total Bills by Day of the Week')
plt.show()
```



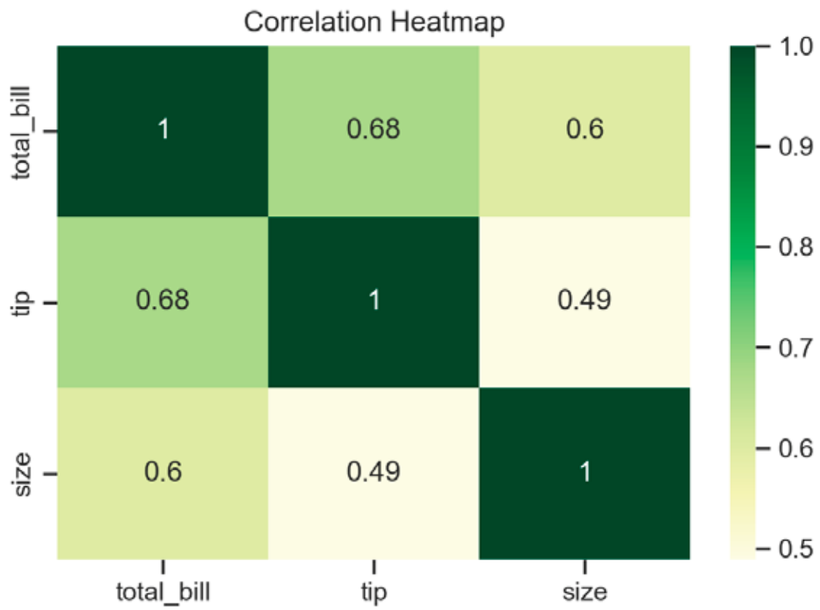
06

Heatmap

```
sns.heatmap(data, annot=True)
plt.xlabel('X-axis label')
plt.ylabel('Y-axis label')
plt.title('Title')
plt.show()
```

Example

```
# Load the 'tip' dataset from seaborn
tips = sns.load_dataset('tips')

# Calculate the correlation matrix
correlation_matrix = tips.corr()

# Create the heatmap
sns.heatmap(correlation_matrix, annot=True, cmap='YlGn')
plt.title('Correlation Heatmap')
plt.show()
```



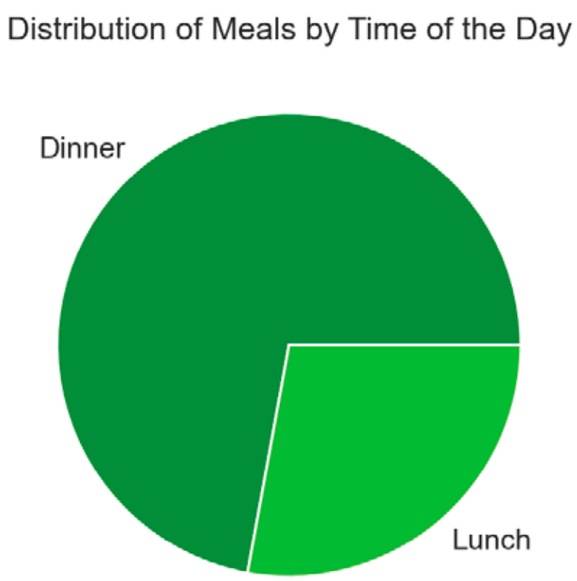
07

Pie Chart

```
plt.pie(y, labels=labels, colors=[colors])
plt.title('Title')
plt.show()
```

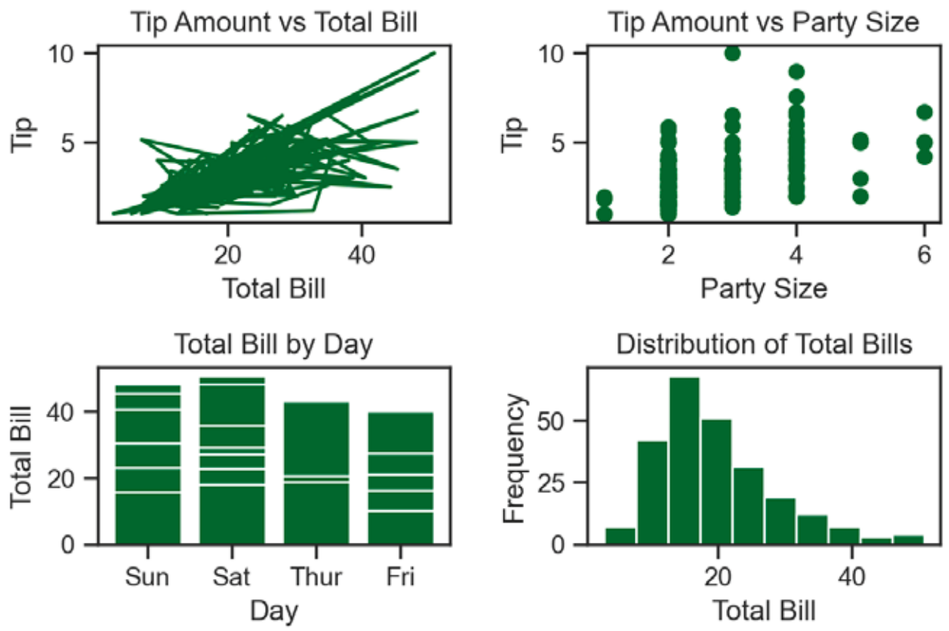
Example

```
# Load the 'tip' dataset from seaborn
tips = sns.load_dataset('tips')

# Calculate the count of meals for each time of the day
meal_counts = tips['time'].value_counts()

# Specify custom labels and colors
labels = meal_counts.index
colors = ['darkgreen', 'aquamarine']

# Create the pie chart
plt.pie(meal_counts, labels=labels, colors=colors)
plt.title('Distribution of Meals by Time of the Day')
plt.show()
```



08

Multiple Subplots




```
fig, axs = plt.subplots(2, 2)
axs[0, 0].plot(x1, y1)
axs[0, 1].scatter(x2, y2)
axs[1, 0].bar(x3, height3)
axs[1, 1].hist(data4, bins=10)
plt.show()

# Load the 'tips' dataset from seaborn
tips = sns.load_dataset('tips')

# Prepare the data for plotting
x1 = tips['total_bill']
y1 = tips['tip']
x2 = tips['size']
y2 = tips['tip']
x3 = tips['day']
height3 = tips['total_bill']
data4 = tips['total_bill']


# Create the subplots
fig, axs = plt.subplots(2, 2)

# Plot 1: Line plot
axs[0, 0].plot(x1, y1)
axs[0, 0].set_xlabel('Total Bill')
axs[0, 0].set_ylabel('Tip')
axs[0, 0].set_title('Tip Amount vs Total Bill')
```

08.01 Multiple Subplots

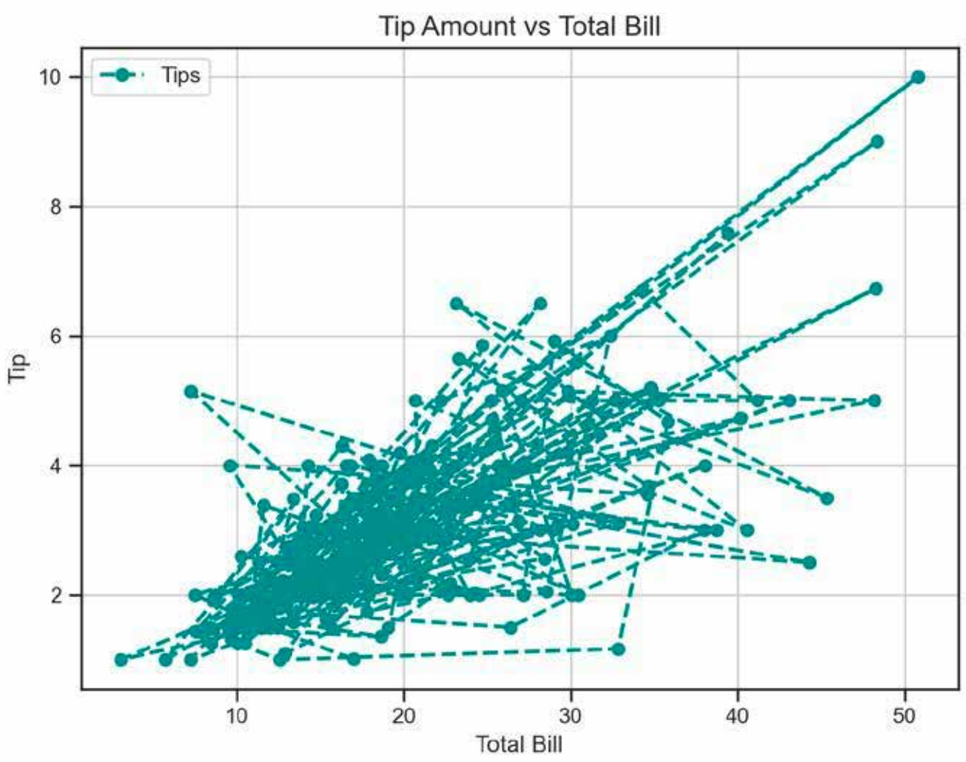
```
# Plot 2: Scatter plot
axs[0, 1].scatter(x2, y2)
axs[0, 1].set_xlabel('Party Size')
axs[0, 1].set_ylabel('Tip')
axs[0, 1].set_title('Tip Amount vs Party Size')

# Plot 3: Bar plot
axs[1, 0].bar(x3, height3)
axs[1, 0].set_xlabel('Day')
axs[1, 0].set_ylabel('Total Bill')
axs[1, 0].set_title('Total Bill by Day')

# Plot 4: Histogram
axs[1, 1].hist(data4, bins=10)
axs[1, 1].set_xlabel('Total Bill')
axs[1, 1].set_ylabel('Frequency')
axs[1, 1].set_title('Distribution of Total Bills')

# Adjust the layout and spacing
fig.tight_layout()

# Display the plot
plt.show()
```

09

Customizing Plots

```
plt.figure(figsize=(8, 6))
plt.plot(x, y, color='red', linestyle='--',
linewidth=2, marker='o', markersize=6)
plt.xlabel('X-axis label', fontsize=12)
plt.ylabel('Y-axis label', fontsize=12)
plt.title('Title', fontsize=14)
plt.legend(['Legend'])
plt.grid(True)
plt.show()
```

Example




```
# Load the 'tip' dataset from seaborn
tips = sns.load_dataset('tips')

# Prepare the data for plotting
x = tips['total_bill']
y = tips['tip']

# Create the plot
plt.figure(figsize=(8, 6))
plt.plot(x, y, color='red', linestyle='--', linewidth=2,
marker='o', markersize=6)
plt.xlabel('Total Bill', fontsize=12)
plt.ylabel('Tip', fontsize=12)
plt.title('Tip Amount vs Total Bill', fontsize=14)
plt.legend(['Tips'])
plt.grid(True)
plt.show()
```