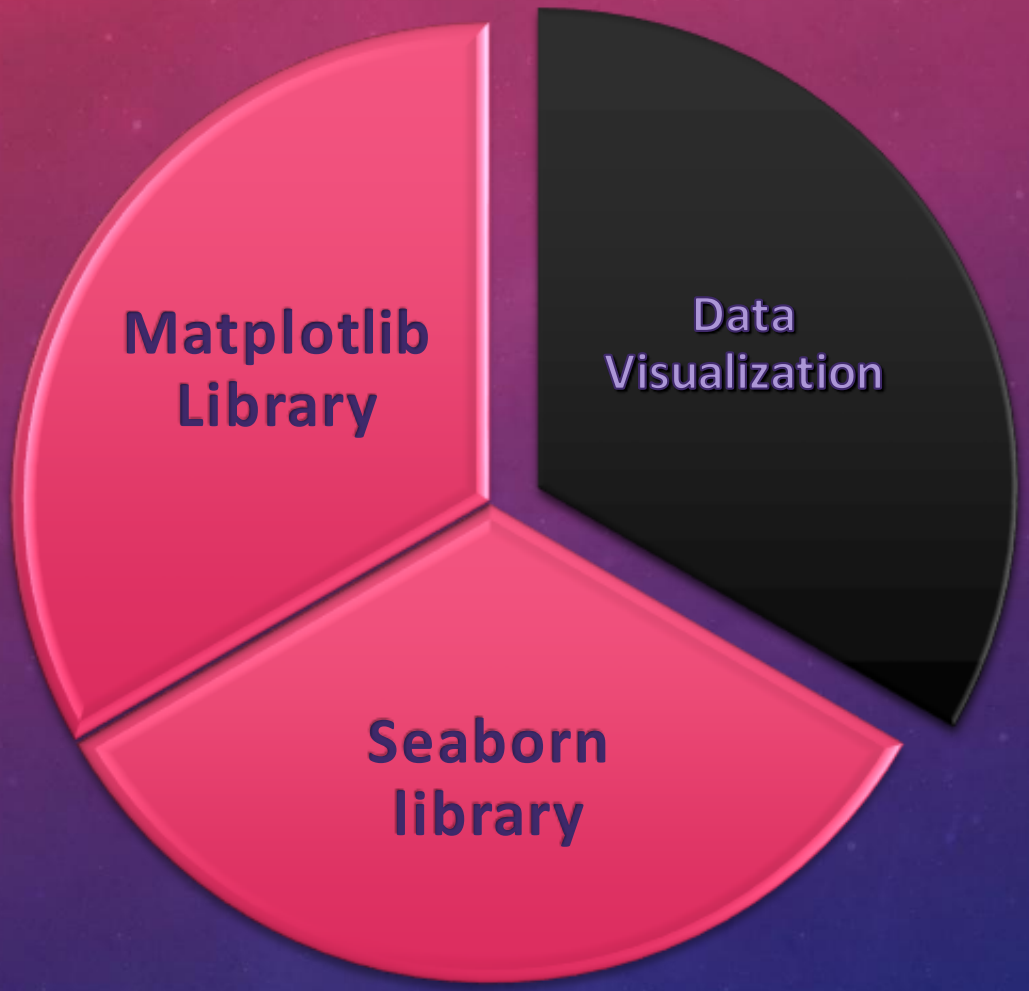
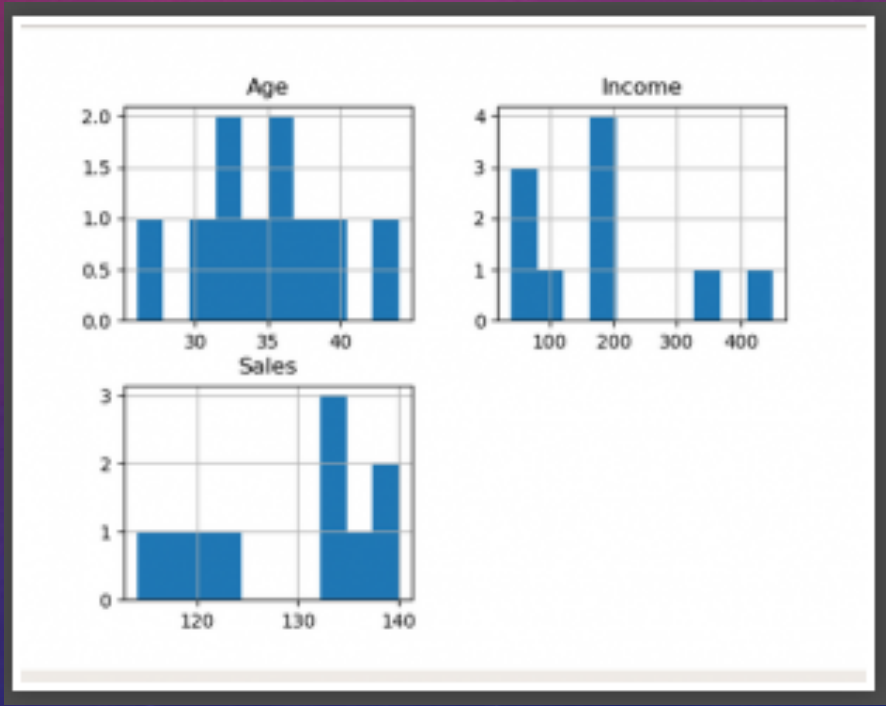

Matplotlib Library
Data Visualization
Seaborn library

Data Visualization with different Charts in Python

Data Visualization is the presentation of data in graphical format. It helps people understand the significance of data by summarizing and presenting huge amount of data in a simple and easy-to-understand format and helps communicate information clearly and effectively.

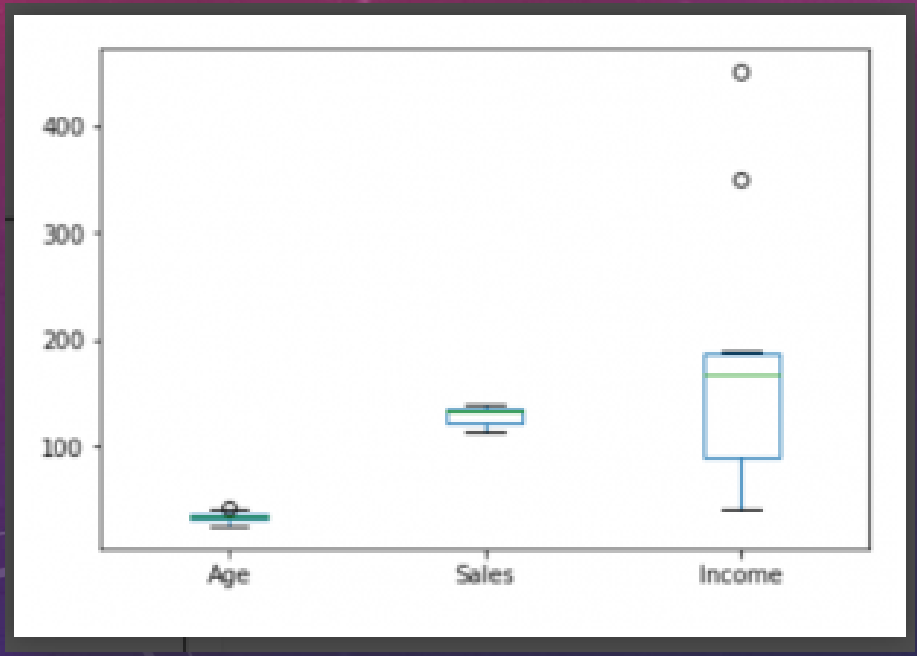
Histogram, Scatter Plot, Column Chart, Box Plot Chart, Pie-plot chart, etc.

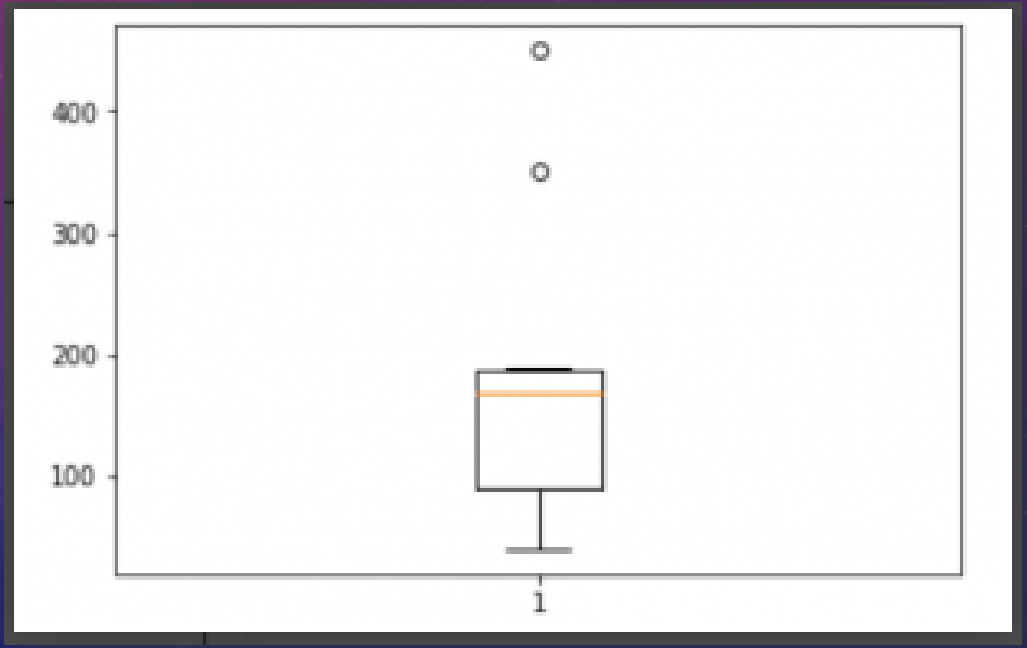
Histogram:
The histogram represents the frequency of occurrence of specific phenomena which lie within a specific range of values and arranged in consecutive and fixed intervals.



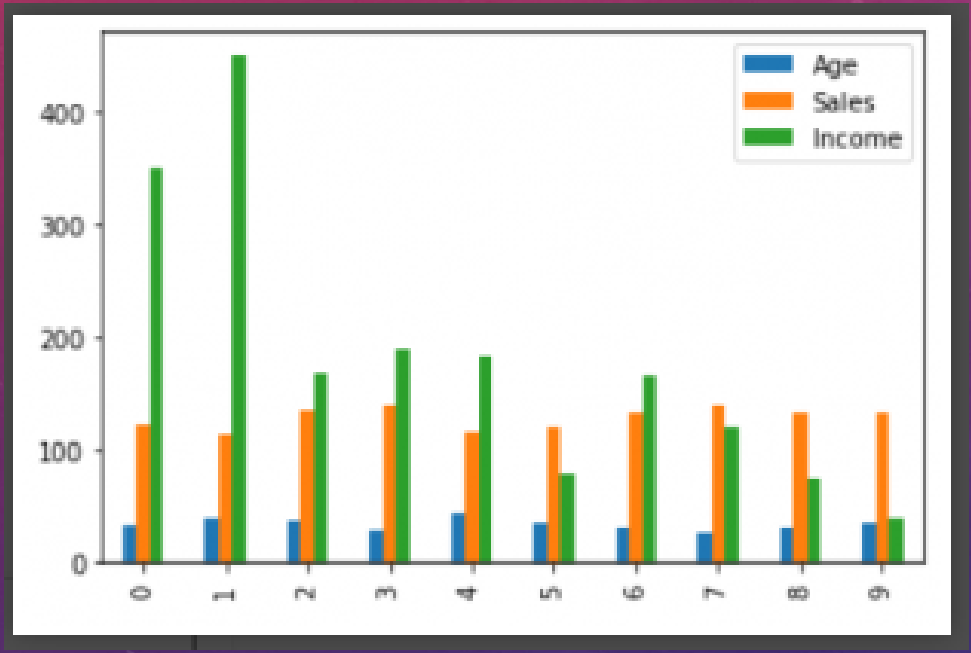
Box Plot Chart:
A box plot is a graphical representation of statistical data based on the minimum, first quartile, median, third quartile, and maximum. The term “box plot” comes from the fact that the graph looks like a rectangle with lines extending from the top and bottom. Because of the extending lines, this type of graph is sometimes called a box-and-whisker plot.

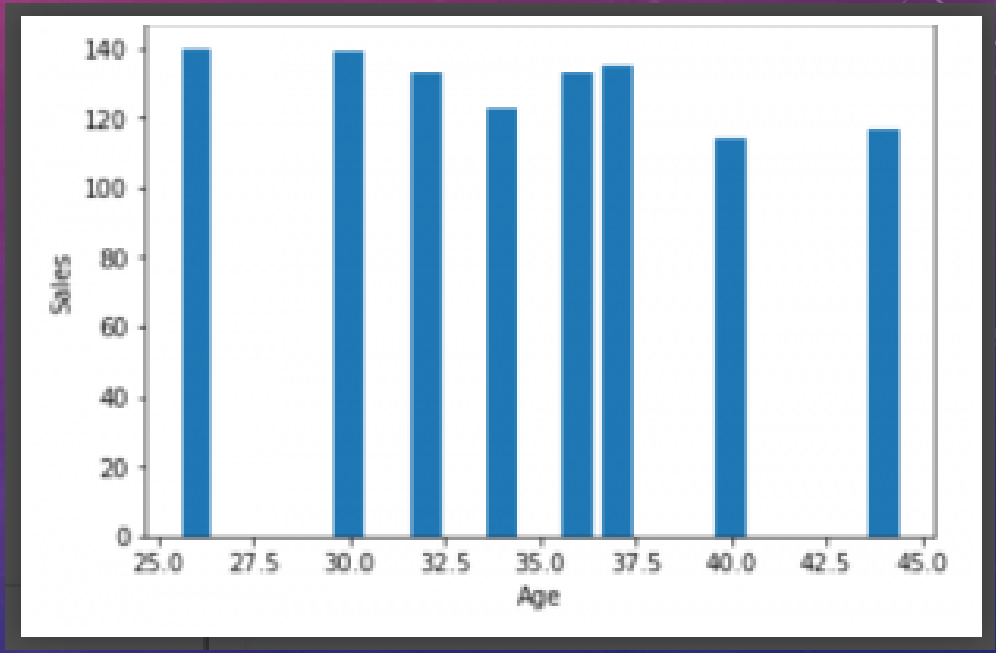
The **quantiles** are values which divide the distribution such that there is a given proportion of observations below the quantile.

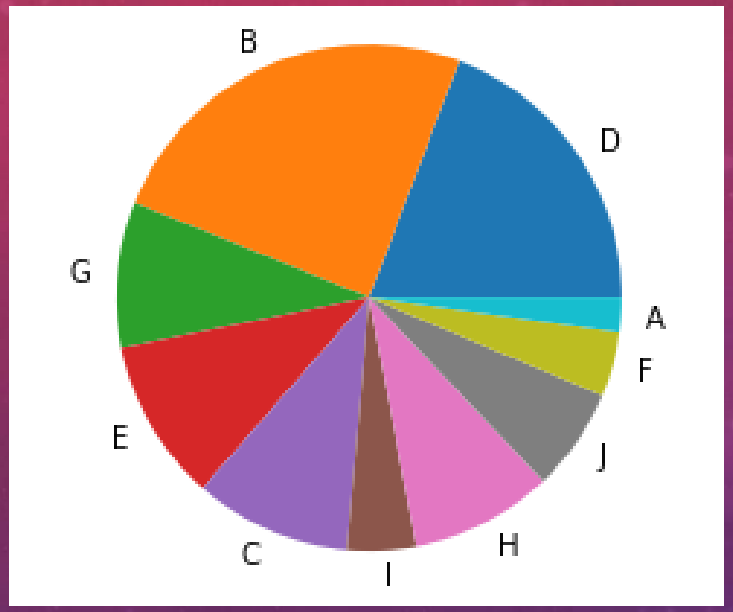


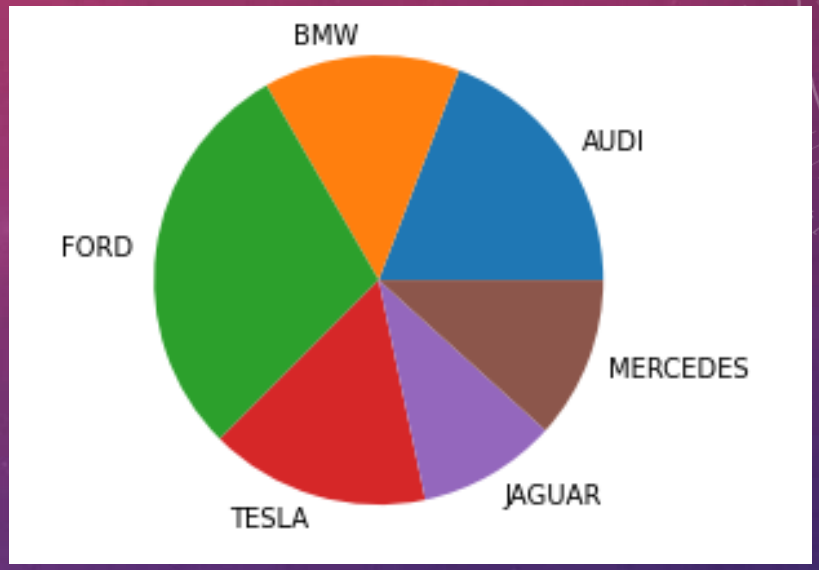


Column Chart:
A column chart is used to show a comparison among different attributes, or it can show a comparison of items over time.





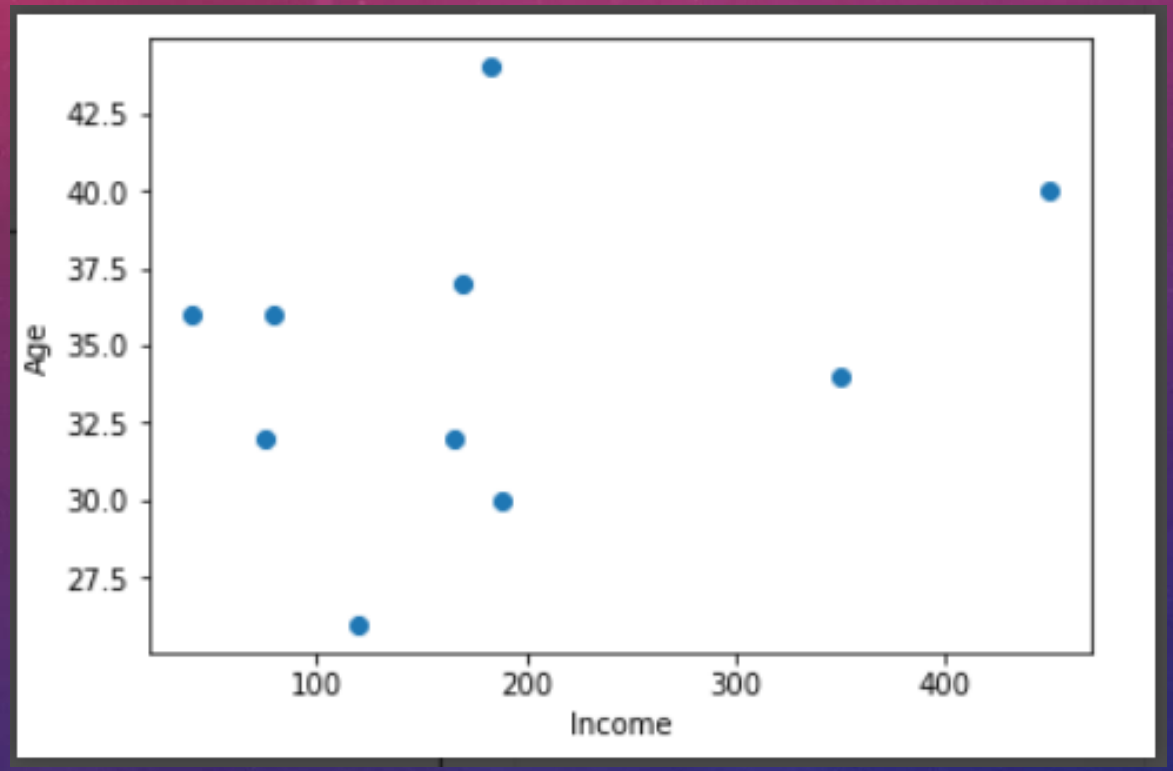




Pie Chart:

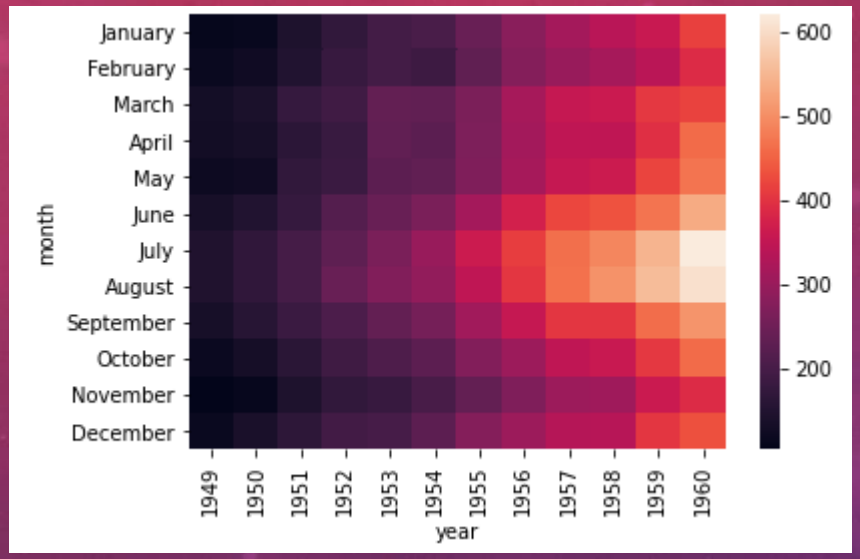
A pie chart shows a static number and how categories represent part of a whole the composition of something. A pie chart represents numbers in percentages, and the total sum of all segments needs to equal 100%.

Scatter Plot:
A scatter chart shows the relationship between two different variables and it can reveal the distribution trends. It should be used when there are many different data points, and you want to highlight similarities in the data set. This is useful when looking for outliers and for understanding the distribution of your data.

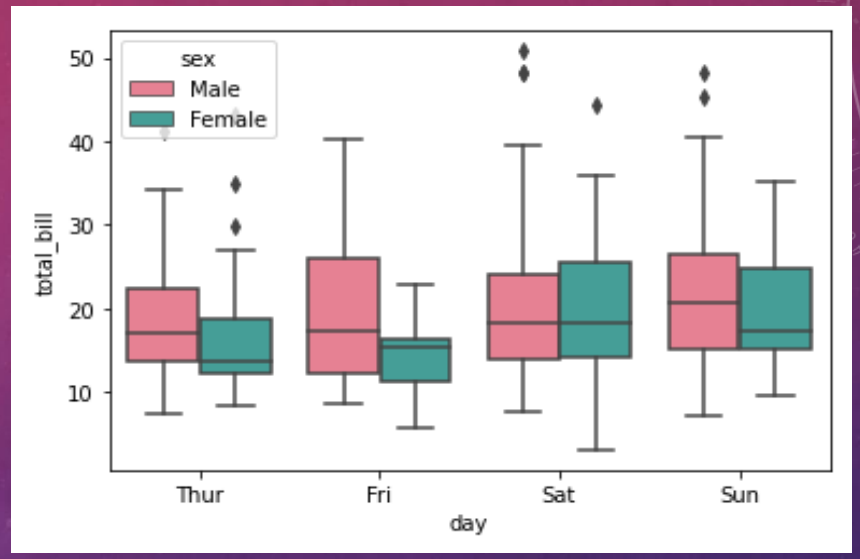


Advance Plots in Python

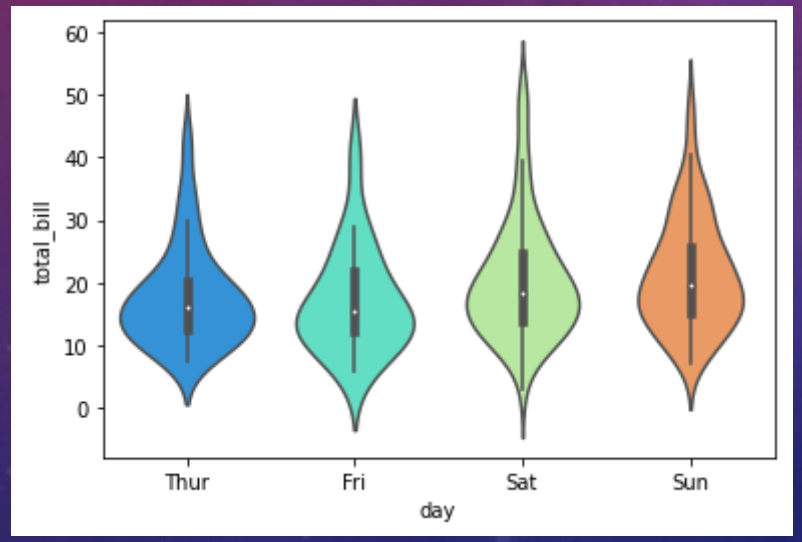
Heatmap

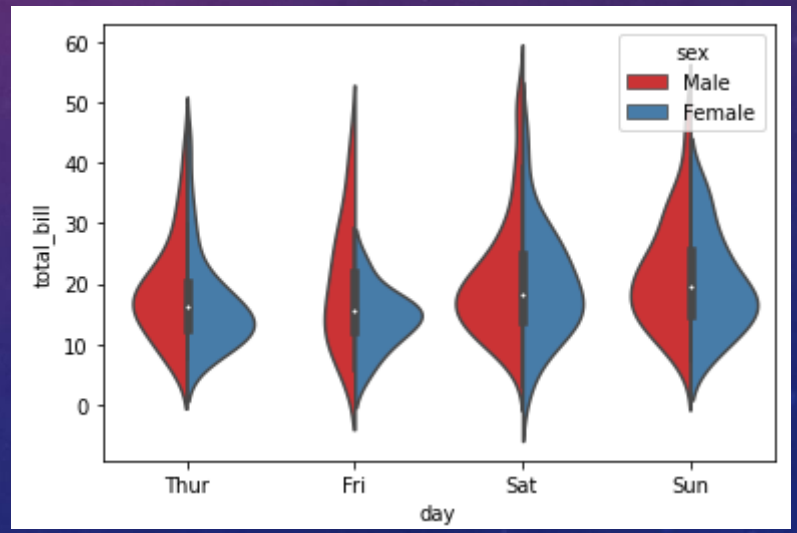


Count Plot

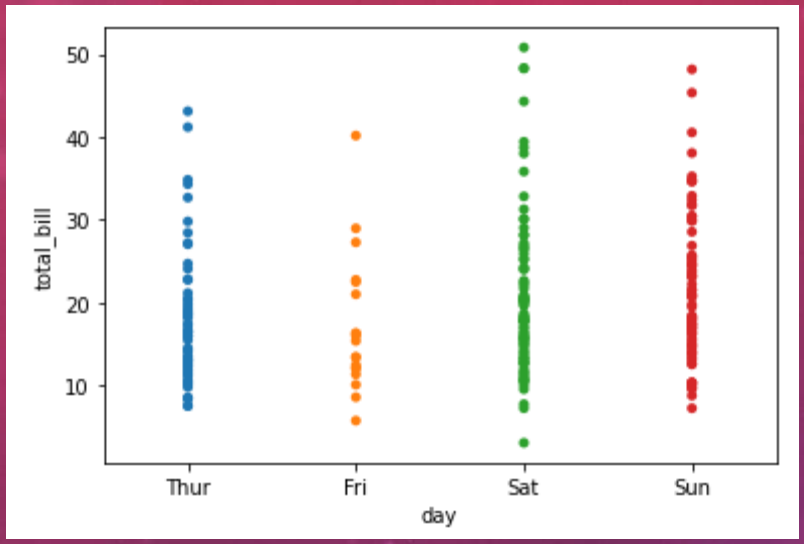


Violin Plot

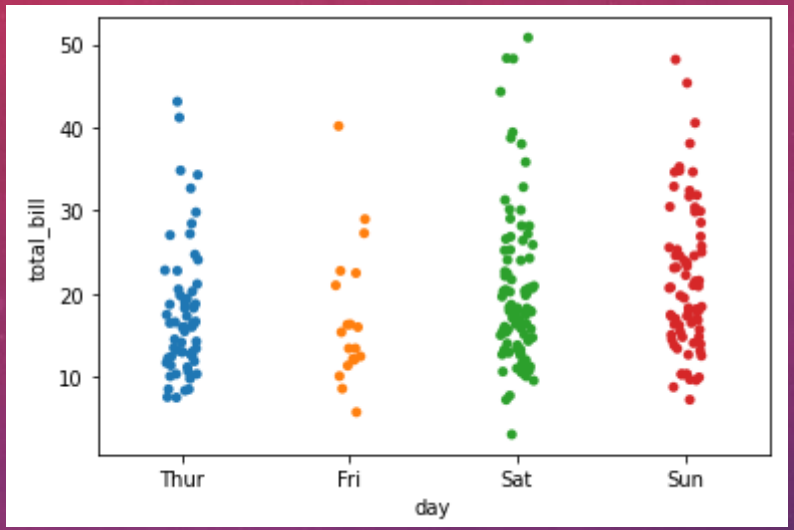




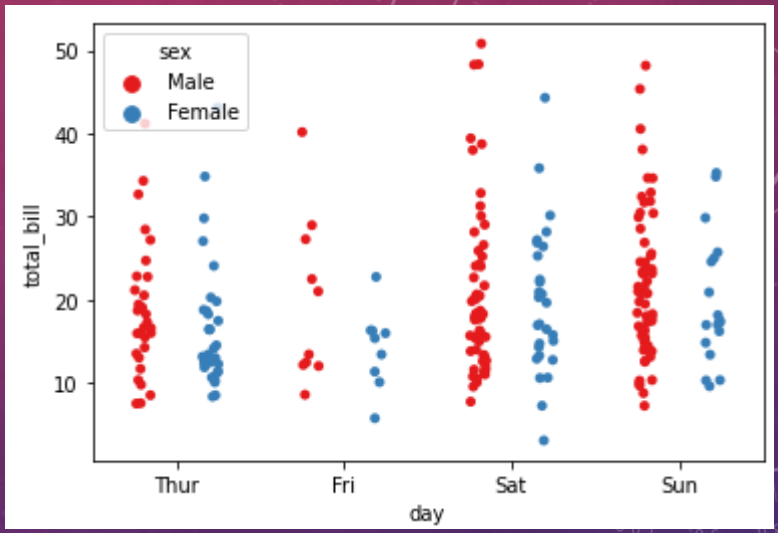
Strip Plot



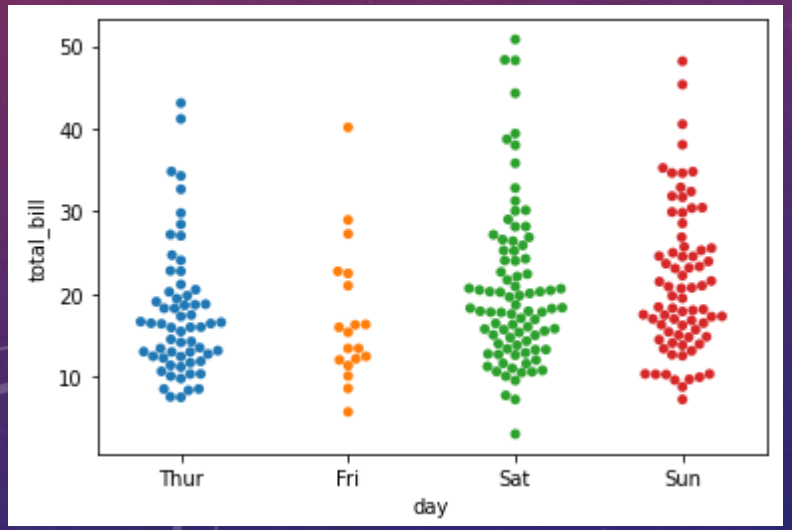
Strip Plot



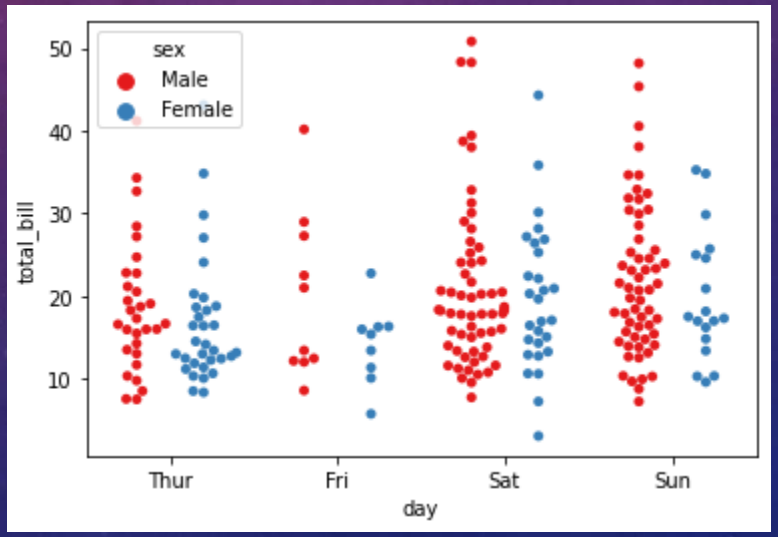
Strip Plot



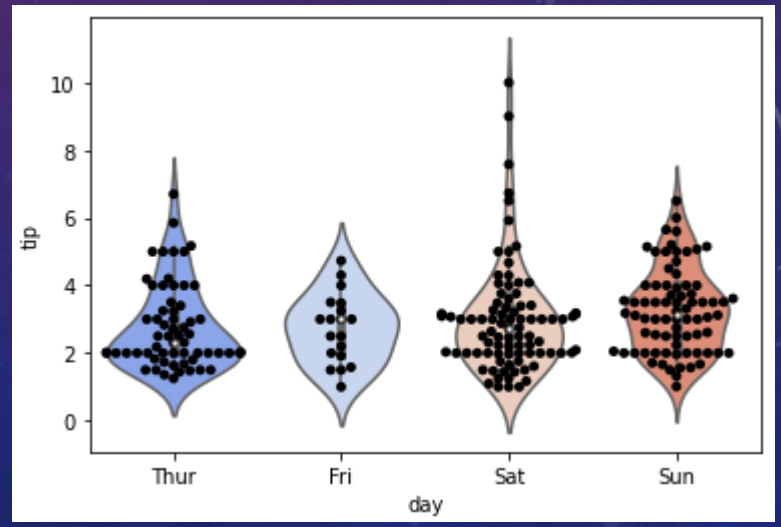
Swarm Plot



Swarm Plot



Swarm Plot



Python Plots Practice Examples

```
import pandas as pd
import matplotlib.pyplot as plt

data = [['E001', 'M', 34, 123, 'Normal', 350],
        ['E002', 'F', 40, 114, 'Overweight', 450],
        ['E003', 'F', 37, 135, 'Obesity', 169],
        ['E004', 'M', 30, 139, 'Underweight', 189],
        ['E005', 'F', 44, 117, 'Underweight', 183],
        ['E006', 'M', 36, 121, 'Normal', 80],
        ['E007', 'M', 32, 133, 'Obesity', 166],
        ['E008', 'F', 26, 140, 'Normal', 120],
        ['E009', 'M', 32, 133, 'Normal', 75],
        ['E010', 'M', 36, 133, 'Underweight', 40] ]

df = pd.DataFrame(data, columns = ['EMPID', 'Gender',
                                   'Age', 'Sales',
                                   'BMI', 'Income'] )
```

Histogram:

```
df.hist()
plt.show()
```

Box plot Chart:

```
df.plot.box()

plt.boxplot(df[“Income”]
plt.show()
```

Column plot Chart:

```
df.plot.bar()

plt.bar(df[“Age”],df[“Sales”])
plt.xlabel(“Age”)
plt.ylabel(“Sales”)
plt.show()
```

Pie Chart Plot:

```
plt.pie(df[“Age”],labels={“A”,”B”,
”C”,”D”,”E”,”F”,”G”,”H”,”J”})
plt.show()
```