

## Plotly Assignment:

1. **Comparative Bar Chart:** Plot a bar chart comparing the annual revenue of five companies for two different years in a grouped format.

**Dataset:**

```
data = {
  'Company': ['Apple', 'Microsoft', 'Amazon', 'Google', 'Facebook'],
  'Revenue_2022': [394, 198, 513, 280, 117], # Revenue in billion dollars
  'Revenue_2023': [420, 215, 540, 310, 130] # Revenue in billion dollars
}
```

2. **Styled Scatter Plot:** Generate a scatter plot showing the relationship between advertising budget and sales revenue. Customize colors, markers, and sizes.

**Dataset:**

```
data = {
  'Advertising Budget': [10, 20, 30, 40, 50, 60, 70, 80, 90, 100], # in thousand dollars
  'Sales Revenue': [15, 25, 40, 50, 65, 80, 85, 100, 120, 140] # in thousand dollars
}
```

3. **Pie Chart with Hover Data:** Create a pie chart showing the market share of different smartphone brands. Display percentage values on hover.

**Dataset:**

```
data = {
  'Brand': ['Apple', 'Samsung', 'Xiaomi', 'Oppo', 'Vivo'],
  'Market Share': [30, 28, 17, 12, 13] # Percentage of total market
}
```

4. **Box Plot for Salary Analysis:** Create a box plot comparing the salary distribution across different job sectors. Highlight outliers.

**Dataset:**

```
data = {
  'Job Sector': ['IT', 'Finance', 'Healthcare', 'Education', 'Retail'] * 5,
  'Salary': [75000, 85000, 62000, 48000, 40000, 77000, 90000, 65000, 50000, 42000,
             78000, 87000, 67000, 52000, 43000, 80000, 89000, 69000, 54000, 45000,
             82000, 91000, 71000, 56000, 47000] # Salary in USD
}
```

5. **Heatmap for Correlation Matrix:** Use a dataset of financial indicators (e.g., GDP, inflation, unemployment) and generate a heatmap showing correlations.

**Dataset:**

GDP	Inflation	Unemployment	Interest Rate
19352.46582	0.592630224	10.34223474	6.467903667
47585.00101	4.864594335	4.673926328	2.534717113
36867.70315	4.245991884	6.505735782	1.585464337
30334.26573	1.455525998	7.39634212	9.539969835
8644.913382	1.318212352	8.472839811	9.690688298
8643.731496	1.325320294	12.42211154	8.275576133

3846.096996	1.869090093	5.396085386	3.741523923
43442.63114	2.861403942	9.170813261	1.879049026
30454.63558	2.443752584	10.10897483	7.158097239
35695.55631	1.810531131	3.557404953	4.961372444

6. **Subplots with Different Charts:** Create a figure with 2-3 subplots displaying different types of visualizations (e.g., line, bar, scatter) related to a dataset of your choice.

Dataset:

```
data = {
    'Month': ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun'],
    'Product A Sales': [500, 600, 700, 800, 750, 780],
    'Product B Sales': [400, 450, 470, 490, 520, 550],
    'Profit': [50, 80, 100, 120, 110, 130] # Profit in thousand dollars
}
```

7. **Animated Scatter Plot (Economic Growth Visualization):** Create an animated scatter plot where the size of points represents GDP, the x-axis is population, and the y-axis is life expectancy, with animation over different years.

Dataset:

```
data = {
    'Country': ['USA', 'China', 'India', 'Germany', 'Brazil'] * 3,
    'Year': [2000, 2000, 2000, 2000, 2000, 2010, 2010, 2010, 2010, 2010, 2020, 2020, 2020, 2020, 2020],
    'GDP': [10, 5, 2, 3, 1, 15, 9, 5, 4, 2, 22, 14, 7, 5, 3], # GDP in trillion dollars
    'Population': [280, 1260, 1000, 83, 175, 310, 1350, 1200, 82, 190, 331, 1440, 1380, 80, 210], # in million
    'Life Expectancy': [77, 71, 65, 80, 68, 79, 74, 69, 82, 72, 81, 76, 72, 83, 75] # in years
}
```

8. **Network Graph Visualization:** Generate a network graph using Plotly to represent connections between companies, social media users, or scientific collaborations.

Dataset:

```
data = {
    'User A': ['Alice', 'Alice', 'Bob', 'Charlie', 'David', 'Eve', 'Frank', 'Grace', 'Hannah', 'Ivan'],
    'User B': ['Bob', 'Charlie', 'David', 'Eve', 'Frank', 'Grace', 'Hannah', 'Ivan', 'Alice', 'Bob'],
    'Connection Strength': [1, 2, 3, 1, 4, 5, 2, 3, 4, 5] # Represents the strength of the relationship
}
```

9. **Stock Price Prediction with Regression Line:** Use real-world stock market data, plot the historical stock prices, and fit a regression line to predict future trends.

Dataset:

Date	Stock Price
01-01-2024	102.4836
02-01-2024	100.3188

03-01-2024	105.2586
04-01-2024	110.6455
05-01-2024	102.8696
06-01-2024	103.8798
07-01-2024	113.9567
08-01-2024	110.9079
09-01-2024	105.7334
10-01-2024	111.8037
11-01-2024	107.7839
12-01-2024	108.7825
13-01-2024	113.331
14-01-2024	103.5649
15-01-2024	105.5168
16-01-2024	112.3401
17-01-2024	111.0975
18-01-2024	118.743
19-01-2024	113.6417
20-01-2024	112.1304
21-01-2024	127.5303
22-01-2024	120.0832
23-01-2024	122.5599
24-01-2024	116.1086
25-01-2024	121.5205
26-01-2024	125.8071
27-01-2024	120.5077
28-01-2024	129.1512
29-01-2024	125.2796
30-01-2024	127.8345
31-01-2024	127.2945
01-02-2024	140.5745
02-02-2024	132.2557
03-02-2024	128.0448
04-02-2024	138.4562
05-02-2024	129.2493
06-02-2024	137.408
07-02-2024	127.5754
08-02-2024	131.7429
09-02-2024	140.3782
10-02-2024	144.0964
11-02-2024	142.271
12-02-2024	141.846
13-02-2024	141.9288
14-02-2024	137.0518
15-02-2024	141.8553
16-02-2024	144.1615
17-02-2024	152.7604
18-02-2024	150.2029
19-02-2024	140.6797

20-02-2024	152.1255
21-02-2024	149.5897
22-02-2024	149.1406
23-02-2024	156.5937
24-02-2024	159.7005
25-02-2024	160.212
26-02-2024	152.3696
27-02-2024	156.0297
28-02-2024	160.2422
29-02-2024	164.4737
01-03-2024	158.2102
02-03-2024	160.6879
03-03-2024	157.0946
04-03-2024	157.6553
05-03-2024	168.7091
06-03-2024	172.4378
07-03-2024	166.3066
08-03-2024	172.6944
09-03-2024	170.495
10-03-2024	166.4714
11-03-2024	172.514
12-03-2024	179.4074
13-03-2024	172.5481
14-03-2024	181.5606
15-03-2024	161.6487
16-03-2024	179.8671
17-03-2024	177.2029
18-03-2024	176.2827
19-03-2024	179.2467
20-03-2024	169.8601
21-03-2024	179.7097
22-03-2024	183.6037
23-03-2024	190.2178
24-03-2024	181.247
25-03-2024	180.806
26-03-2024	183.3498
27-03-2024	191.4457
28-03-2024	189.5225
29-03-2024	186.2401
30-03-2024	192.4653
31-03-2024	191.3945
01-04-2024	196.7624
02-04-2024	189.419
03-04-2024	192.3011
04-04-2024	192.989
05-04-2024	188.642
06-04-2024	198.4503
07-04-2024	199.2851

08-04-2024 199.0155

09-04-2024 198.8271

10. Implement Plots using Plotly libraries on Iris Dataset:

Dataset:

<https://www.kaggle.com/code/dgomonov/advanced-iris-analysis-with-plotly/input?select=Iris.csv>