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Aim: **Experiment Design for Creating Visualizations using D3.js on a Finance Dataset**
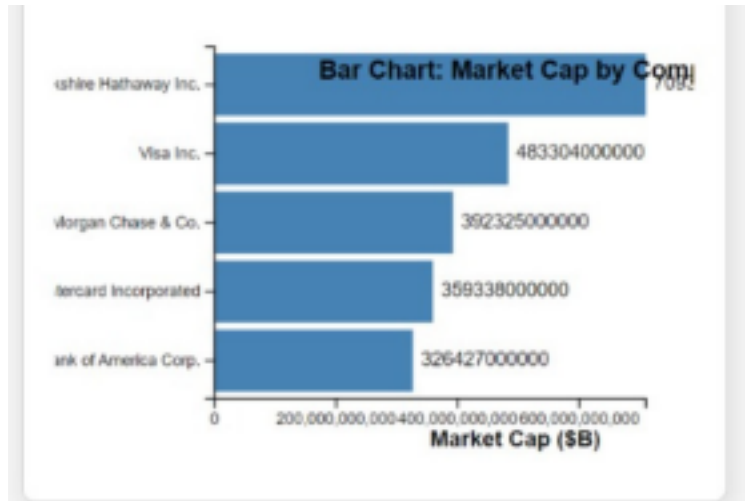
· **Dataset Link:**

https://www.kaggle.com/datasets/saurabhshahane/efinance
research-dataset-19812019

· **Dataset Description:**

The dataset contains financial data for major companies in the finance, banking, and insurance sectors, including key metrics such as company name, market capitalization (in billions), stock price, P/E ratio, and earnings per share (EPS). These attributes provide insights into each company's market performance, profitability, and valuation. The dataset is useful for comparing companies across these dimensions, making it an essential resource for investment analysis, portfolio management, and understanding sector-wide trends.

· **Graphs and Explanation:**

1. Bar Chart: Market Cap by Company

- **Description**: This bar chart displays the market capitalization (in billions of dollars) of several major companies in the finance and banking sectors.
- **Insights**:
  - Berkshire Hathaway Inc. has the highest market cap, significantly leading the other companies.
  - Visa Inc. and JPMorgan Chase & Co. follow as prominent players in the market, with substantial market capitalizations.
  - Companies like Bank of America Corp. and Mastercard Incorporated show lower market caps, indicating their smaller size in comparison to industry leaders.
- **Dataset Relation:** The chart highlights the relative size and market presence of these companies, which is crucial for understanding their influence in the financial industry.
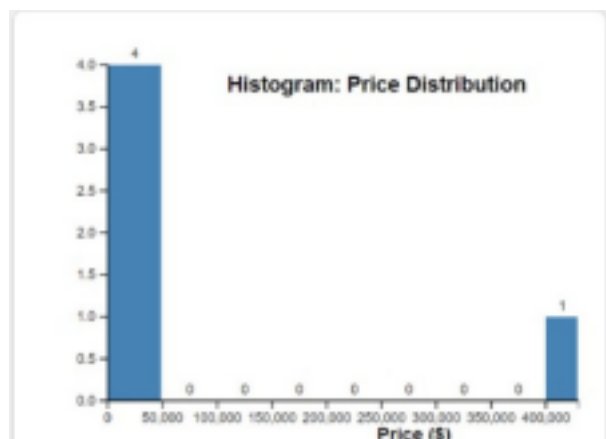
2. Pie Chart: Market Share

Description: The pie chart shows the market share of each company based on their market capitalization.

Insights:

- Berkshire Hathaway Inc. dominates with a large share, highlighting its market leadership.
- Visa Inc. and JPMorgan Chase & Co. also hold significant portions, underscoring their market importance.
- Smaller slices for Mastercard and Bank of America indicate they have less market share compared to the top players.

Dataset Relation: This chart visually illustrates how market capitalization is distributed, offering insight into competitive dynamics within the sector.

3. Histogram: Price Distribution

Description: The histogram shows the distribution of stock prices across the companies in the dataset.

Insights:

- Most companies have stock prices clustered around lower values, with only a few stocks priced higher.
- A peak at around $400 indicates a small group of high-priced stocks, with a frequency of 4, compared to the larger number of lower-priced stocks.

Dataset Relation: This visualization highlights how stock prices are distributed, revealing whether the market is more heavily weighted towards lower or higher-priced stocks.

4. Scatter Plot: Price vs. Market Cap

Description: The scatter plot shows the relationship between stock prices and market capitalizations of companies.

Insights:

- Each point represents a company, revealing how stock price correlates with market cap.
- Generally, higher stock prices are associated with larger market caps, indicating greater investor confidence in these companies.
- For instance, Visa Inc. and JPMorgan Chase have higher stock prices and market caps, while Bank of America and Mastercard show lower values.

Dataset Relation: This plot helps investors assess the link between stock valuation and company size, which is crucial for shaping investment strategies.

·**Conclusion**:

The visualizations—bar chart, pie chart, histogram, and scatter plot—offer a clear overview of company performance across the finance, banking, and insurance sectors. The bar chart compares market capitalization, while the pie chart shows market share distribution. The histogram analyzes stock price distribution, and the scatter plot explores the relationship between stock price and P/E

ratio, revealing insights into valuation and profitability. Together, these visualizations provide valuable insights for informed investment decisions and strategic planning in a competitive market.