**The RevStox is a data engineering project aiming to provide users with valuable insights into historical stock market data for informed decision-making. The project will leverage a dataset containing various stock-related attributes, including date, symbol, open, close, high, low prices, trading volume, and more to deliver a robust, scalable, and user-friendly solution for stock analysis and decision-making.**

**1. Name of Project:**

# StockXplorer

**2. Tech Stack:**

- **Backend:**
  - Python
  - SQLite (Database)
- **Data Processing:**
  - Pandas (for Data manipulation)
  - Numpy
  - Matplotlib, seaborn (for Data Visualization)
- **Version Control:**
  - Git

## 3. Purpose of Project:

**StockXplorer** is an application that provides users with insights into historical stock market data and predict future stock behavior.

The main goals of the project are to:

- Enable CRUD operations to manage user portfolios.
- Display interactive charts and graphs for stock analysis.
- Allow users to search and retrieve historical stock data for specific symbols and time periods.

**And the following questions along the way:**

1.) What was the change in price of the stock over time?

2.) What was the daily return of the stock on average?

3.) What was the moving average of the various stocks?

4.) What was the correlation between different stocks'?

## Data :

My Data includes the entities like Ticker, Date, Open, High, Low, Close, Adj Close, Volume:

- **Ticker Symbol (Ticker):**

  - Identifies the stock uniquely. Like "AAPL" for Apple Inc. [ AAPL,MSFT,NFLX,GOOG]

- **Date:**

  - Represents the specific trading days for which the stock market data is recorded.

- **Stock Prices:**

  - Various prices associated with the stock on a given trading day:

    - Open Price (Open): The initial price when the market opens.
    - High Price (High): The highest price reached during the trading day.
    - Low Price (Low): The lowest price reached during the trading day.
    - Close Price (Close): The final price when the market closes.
    - Adjusted Close Price (Adj Close): The closing price adjusted for corporate actions like dividends and stock splits.

- **Volume:**

  - Represents the total number of shares traded on that particular trading day. Indicates market activity.

Example Interpretation:

-Ticker: MSFT

- Date: 07-02-2023

  - Open Price: $150.64
  - High Price: $155.23
  - Low Price: $150.64
  - Close Price: $154.65

- Adjusted Close Price: $154.41
- Volume: 83,322,600 shares

This data allows analysts and investors to understand how the stock performed on a given day. It's commonly used for trend analysis, identifying potential investment opportunities, and gaining insights into market behavior.

**4. Functionalities like CRUD Operations and Constraints:**

## CRUD Operations:

**1. Create:**

- Admin can create new stock entries:

Admin input details such as the stock symbol, date, open price, high price, low price, close price, adjusted close price, and volume.

- Upon submission, the system adds the new stock entry to the `Stock_Data` table in the `stock.db` database.

- The uniqueness constraint ensures that entries with the same stock symbol and date are not duplicated.

**2. Read:**

- Admins and Users can read historical stock data:

- Users input the stock symbol and end date to retrieve historical data.

- The system queries the `Stock_Data` table in the `stock.db` database and presents the relevant historical data.

**3. Update:**

- Admins can update existing stock entries:

- Admin input the stock symbol and date for the entry they want to update.

- They choose the column they want to update (e.g., open, high, low, close, adj close, volume).

- The system updates the selected column for the specified stock entry.

**4. Delete:**

- Admin can delete specific stock entries:

- Admin input the stock symbol and date for the entry they want to delete.

- The system removes the selected stock entry from the `Stock_Data` table in the `stock.db` database.

## Constraints:

- Data Integrity:

- Ensure that stock entries have valid and consistent data, including date, symbol, open, close, high, low prices, and volume.

- Admin Authentication:

- Implement admin authentication to ensure that only authorized admins can perform CRUD operations.

-User Authentication:

- Implement user login to fetch the information regarding the stocks.

- Unique Constraints:

- Avoid duplicate entries for the same stock symbol and date.

This project aims to provide a user-friendly platform for exploring historical stock market data, making informed decisions, and managing personalized stock portfolios.

## 5) Dates of first phase and second phase:

1ST Review: 12/01/2024

2nd Review: 18/01/2024