

## HW2: University Comparison Visualizer

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### About the Visualization

In this analysis, I examined the volatility of stock prices from 2000 to 2021. Each record provides details about a stock price event, including the date, symbol, opening and closing prices, highest and lowest prices, and more. This data was sourced from Kaggle by Vopani (<https://kaggle.com/datasets/rohanrao/nifty50-stock-market-data>). The primary goal of this visualization is to display the daily price difference between the highest and lowest prices for various stock events. Users have the option to choose the stock and the year range for filtering.

### Interesting Findings

Surprisingly, there is no standardized pattern or identifiable situation in the upper and lower price limits of all stocks. While analyzing specific periods or subsets, occasional instances of patterns such as sharp inclines or declines were observed. However, when observing the entire graph, significant volatility and lack of stability are evident. Additionally, some stocks did not exist at the starting point in 2000 and appeared only a few years later.

### Interface Creation Process

I utilized Kaggle's dataset 'NIFTY-50 Stock Market Data (2000 - 2021)'. I randomly selected 10 stocks from the dataset. Although there was extensive information available about each stock's daily prices, I used filters for dates, symbols (names of stocks), and their highest and lowest prices. I performed two different filtering operations: by stock and by year. I designed the interface to be coherent, user-friendly, and complete with useful information. The original dataset contained daily stock data, which made visualizing it challenging. Thus, I transformed the data into monthly data and used it plot\_ly. It made my graph zooming in and showing the date yearly, monthly and even daily. I noticed that using vibrant colors in the dynamic graph caused eye strain. Therefore, I opted to change the graph's colors to sky blue and pink. I referenced actual stock graphs, marking high points in pink and low points in sky blue. While examining the entire graph, these differences may not be immediately noticeable, but I aimed to provide a sense of the overall directional movement of the graph.

### Reactive Graph

The reactive graph is designed to be intuitive and user-friendly. Users can easily navigate through the data by selecting different stocks and adjusting the year range. The graph dynamically updates based on user input, providing real-time insights into the volatility of stock prices. The application's responsive architecture incorporates a year-filtering slider, a dropdown menu for filtering stock symbols, and a brush object to facilitate precise "zooming in" on specific segments of the line chart. These reactive features enable effortless filtering of stock data based on selected year ranges and stock symbols, facilitating the extraction of pertinent information.

Such elements effectively enhance interactivity within the application, empowering users to draw insights and delve deeper into the dataset with ease. By incorporating this reactive graph, users can explore the data more effectively, gaining valuable insights into the behavior of various stocks over the specified time period.