Requirements

* Calculating key metrics like **Return on Investment (ROI)** and **volatility** (risk) to understand how each stock has performed historically
* Choose stocks that have a **high ROI** and **low volatility** to ensure a balance between **risk and reward**.
* Calculate the **future value**

Basic Process

* Looking at whether this data has any null values or not: (If there are any using forward fill for consistency)

Return on Investment

* Setting first row price as the initial price and last as final price
* ROI = ((final\_price - initial\_prices) / initial\_prices) \* 100

Volatility

* To check Volatility of a stock I used STD as a measure more the STD more volatile the stock and vice versa

The goal is to find companies that offer a **high return on investment (ROI)** but with **low volatility** to minimize risk.

* **Defined ROI median and Volatility median as crieteria Thresholds**
* Rank all companies based on their ROI and volatility scores.

To balance the investment between companies I used **inverse volatility ratio** for allocation. Companies with lower volatility will get a higher weight. Let’s calculate the weight for each company:

**Inverse volatility = 1/STD**

**Calculating Expected Returns**

Now, let’s calculate the expected returns a person will get from our mutual fund if he/she invests ₹10000 every month.

To calculate the expected value a person will accumulate over**1 year**, **3 years**, **5 years**, and**10 years** through the mutual fund plan.

1. Assume the person is investing **1000 rupees every month**.
2. Use the **expected ROI** from the mutual fund companies to simulate the growth over time.
3. Compute the **compounded value** of the investments for each period (1y, 3y, 5y, and 10y).
4. Visualize the accumulated value over these periods.