Algothon 2023 - BlackRock

At BlackRock, we are a fiduciary to our clients. Our clients' interests come first. This fiduciary mindset is the bedrock of our identity and is what inspires us to come to work every day and help people build better futures. As such, we hold ourselves and each other to the highest standard of excellence to ensure our clients get the best results.

Challenge

A client comes to you asking you to help them construct a portfolio that's most suitable for them. After initial discussions about their risk profile, they said that they would like a portfolio with a good risk-adjusted return profile. The client initially mentioned that they wanted a portfolio with a high Sharpe ratio, but then you suggested another alternative, the Sortino ratio, which looks at the downside deviation instead of the whole standard deviation. The client felt that this ratio would be more suitable for them and needs your help building a portfolio.

For this challenge, we would like you to construct a portfolio that maximizes the Sortino ratio, which is a variation of the Sharpe ratio and is a measure of risk-adjusted returns.

The portfolio **must adhere** to the following rules:

1. Consists **only** of assets from the provided universe
2. The weight of each asset must be at most 3 decimal places (e.g. 51.253%)
3. The total weight of assets must strictly equal 100

The universe consisting of all investable assets can be found here:
https://github.com/JavierMakmuri/Algothon2023 (universe.zip)

Judging

You must submit your code showing your methodology and also a portfolio in a CSV format consisting of ticker, and weight.

Portfolio CSV format:
Ticker1,Weight1
Ticker2,Weight2
Ticker3,Weight3

*note Do **NOT** put % sign on the weights

You can find an example portfolio submission here:
https://github.com/JavierMakmuri/Algothon2023 (example_portfolio.csv)

Submissions will be assessed primarily based on the Sortino ratio. The team that constructs a portfolio with the highest Sortino ratio will be the winner. In the event of a tied ratio for 2 portfolios, we will look at other measures such as VaR, CVaR, and historical cumulative returns.