Report for Back-end exam project at Crypto Arsenal

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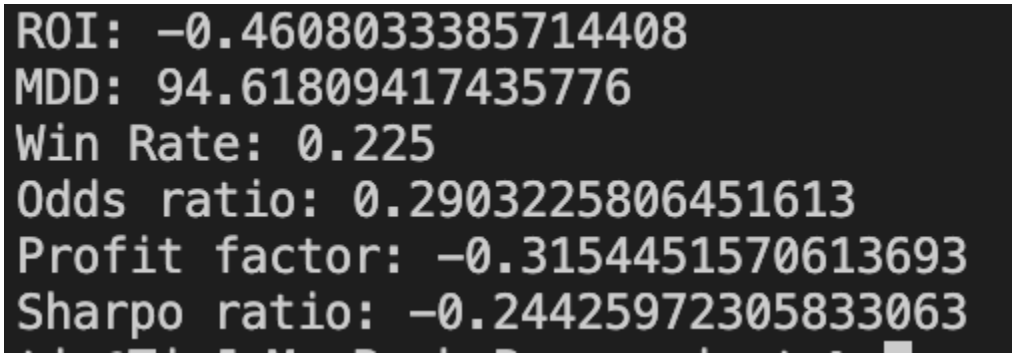
計算結果:



程式碼說明文件:

1. 在 npm version 10.2.4 以及 node version v21.6.2 的環境下運行
2. 使用 npm install express 及 npm install axios 安裝dependencies
3. 使用 npm start 運行 server，使用 node client.js 運行 client
4. 最終獲取結果
5. 程式詳細說明請見README

績效指標公式參考來源:

ROI:

https://www.investopedia.com/articles/basics/10/guide-to-calculating-roi.asp

$$\text{ROI} = \frac{\text{FVI} - \text{IVI}}{\text{Cost of Investment}} \times 100\%$$

where:

$$\text{FVI} = \text{Final value of investment}$$

$$\text{IVI} = \text{Initial value of investment}$$

FVI-IVI = final pnl
Cost of investment = 8000
ROI = final pnl / 8000

MDD:

https://www.investopedia.com/terms/m/maximum-drawdown-mdd.asp

The Formula for Maximum Drawdown Is

$$MDD = \frac{Trough\ Value - Peak\ Value}{Peak\ Value}$$

Calculate the drawdown from the peak value to all the values after it and keep the maximum one. Here I use dynamic programming to make the time cost as O(n)

Win Rate:

https://www.klipfolio.com/resources/kpi-examples/sales/win-rate

The formula is:

Win Rate% = (Number of deals you win / Number of deals you pursue) x 100%

Odds Ratio:

https://statisticseasily.com/odds-ratio/

$$\text{Odds} = \frac{\text{Number of Positive Outcomes}}{\text{Number of Negative Outcomes}}$$

Here I divide the number of positive pnl by the number of negative pnl.

Profit factor:

https://www.quantifiedstrategies.com/profit-factor/

Profit Factor = Gross Profit / Gross Loss

Here I divide the total profit by the total loss, which the quantity of positive pnl / the quantity of negative pnl.

Sharpo ratio:

https://www.investopedia.com/terms/s/sharperatio.asp

$$Sharpe\ Ratio = \frac{R_p - R_f}{\sigma_p}$$

where:

$R_p = \text{return of portfolio}$

$R_f = \text{risk-free rate}$

$\sigma_p = \text{standard deviation of the portfolio's excess return}$

According to the website, The numerator's total return differential versus a benchmark (Rp - Rf) is calculated as the average of the return differentials in each of the incremental time periods making up the total.