Mathematical Trading Strategies

Assignment 1

Indices-->	DJI	DAX	SPX	HSI	DJT
Net CR	220.21 %	18.29 %	3.08 %	1926098.36 %	269.39 %
Avg CR	0.000 %	0.042 %	0.019 %	0.024 %	0.014 %
Net Return	$ 561.00	$ 27.81	$ 0.13	$ 7499.44	$ 1400.84
Daily Vol	0.22 %	0.86 %	5.88 %	1.85 %	0.72 %
Annual Vol	3.54 %	13.64 %	93.41 %	29.42 %	11.40 %
Overall Vol	11.99 %	39.86 %	264.22 %	99.32 %	29.06 %
Max DD	5.09 %	10.63 %	60.00 %	31.91 %	5.00 %
Max DD2	73.68 %	51.98 %	99.34 %	100.00 %	77.14 %
Sharpe Ratio	0.00	0.06	0.01	0.03	0.01
An. Sh.R.	0.06	0.90	0.18	0.43	0.22
Overall Sh.R.	0.19	2.63	0.50	1.46	0.55
Sortino Ratio	0.00	0.07	0.01	0.01	0.01
An. Sort.R.	0.02	1.17	0.15	0.21	0.21
OverAll Sort.R.	0.05	3.42	0.43	0.70	0.53

Equities-->	MSFT	TSLA	GOOGL	META	AAPL
Net CR	909.05 %	13161.58 %	648.98 %	456.03 %	2163.96 %
Avg CR	0.043 %	0.021 %	0.009 %	0.024 %	0.037 %
Net Return	$ 123.21	$ 120.01	$ 38.35	$ 144.57	$ 126.47
Daily Vol	1.26 %	2.98 %	1.29 %	1.83 %	1.40 %
Annual Vol	20.06 %	47.31 %	20.52 %	29.04 %	22.22 %
Overall Vol	73.28 %	169.66 %	74.97 %	96.18 %	81.18 %
Max DD	13.08 %	29.84 %	11.11 %	15.56 %	22.85 %
Max DD2	93.50 %	99.76 %	92.84 %	95.43 %	96.29 %
Sharpe Ratio	0.02	0.01	0.01	0.02	0.03
An. Sh.R.	0.29	0.15	0.20	0.29	0.51
Overall Sh.R.	1.05	0.54	0.72	0.95	1.87
Sortino Ratio	0.02	0.01	0.01	0.02	0.04
An. Sort.R.	0.33	0.16	0.24	0.37	0.60
Overall Sort.R.	1.22	0.56	0.87	1.23	2.19

Terminologies and calculations

`Net CR:` Net cumulative return if, bought on `2010-01-01` and sold on `2023-05-13`

`Avg CR:` Average cumulative return, this is the average cumulative return of every day in the period

`Net Return:` Net return in dollars if the stock was bought at open price and sold at close price for the whole period

`Daily Vol:` Daily volatility of the stock

`Annual Vo:` Volatility of the stock over an year (Daily Volatility x Square root of 252)

`Overall Vol:` Volatility of the stock for the whole period (Daily Volatility x Square root of total working days in the period)

`Max DD:` Maximum of daily Maximum drawdown i.e. if the stock traded daily at open and close prices

`Max DD2:` Maximum drawdown if the stock was bought at the start and sold at the end of the period

`Sharpe Ratio:` Daily sharpe ratio for the stock

`An. Sh.R.:` Annual sharpe ratio

`Overall Sh.R.:` Overall sharpe ratio for the whole period

`Sortino Ratio:` Daily sortino ratio for the stock

`An. Sort.R.:` Annual sortino ratio

`Overall Sort.R.:` Overall sortino ratio for the whole period