**ANALYSIS REPORT**

.

.

.

.

.

.

.

.

.

.

.

.

.

.

.

.

|  |  |
| --- | --- |
| **Version:** | **1.2** |
| **Status:** | Draft |
| **Approver:** | Ngô Thái Bình  Nguyễn Thị Diễm Trang |
| **Author:** | Quách Hoàng Minh  Nguyễn Vũ Anh Thư Nguyễn Bảo Nguyên |
|  |  |



**Document history**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Date | Author | Status | Remarks |
| 1.0 | 24-02-2022 | Nguyễn Bảo Nguyên | Draft |  |
| 1.1 | 02-05-2022 | Nguyễn Vũ Anh Thư Quách Hoàng Minh | Draft | Edit |
| 1.2 | 12-05-2022 | Nguyễn Bảo Nguyên | Draft | Reviewed and add a table to compare results between experiments. |

**References**

|  |  |  |  |
| --- | --- | --- | --- |
| Reference | Title | Author | Version |
|  |  |  |  |

Table of contents

[1. Problems 4](#_Toc103253141)

[2. Experiments and Results 4](#_Toc103253142)

[2.1 Delay time when prediction 4](#_Toc103253143)

[a. One stock at a time 4](#_Toc103253144)

[b. Sequential two stocks 4](#_Toc103253145)

[c. Sequential two stocks with interval and release resources 4](#_Toc103253146)

[ Interval = 5 4](#_Toc103253147)

[ Interval = 15 4](#_Toc103253148)

[2. Conclusion 5](#_Toc103253149)

# Problems

The primary objective of this report is to examine the server's performance in predicting stock prices. When the script to forecast the price of 300 shares was run consecutively on the server, the CPU got stuck, leading the server to crash.

We executed some experiments to collect statistics regarding server performance, and analyzed them to determine, from there, we can make the decision to set up a cronjob's configuration to run scripts appropriately.

# Experiments and Results

### One stock at a time

* Peak memory usage is 386.58MB
* Peak CPU utilization is 92.9 %
* Execution time is 29.82s



Figure 1: Memory Usage when run one stock at a time

### Sequential two stocks

* Peak memory usage is 460.82MB
* Peak CPU utilization is 100.0 %
* Execution time is 51.0s



Figure 2: Memory usage when run sequentially 2 stocks

### Sequential two stocks with interval and release resources

### Interval = 5

* Peak memory usage is 490.76MB
* Peak CPU utilization is 93.9 %
* Execution time is 61.09s



Figure 3: Memory usage when run sequentially 2 stocks with interval =5 and release resources

### Interval = 15

* Peak memory usage is 490.92MB
* Peak CPU utilization is 98.9 %
* Execution time is 81.46s



Figure 4: Memory usage when run sequentially 2 stocks with interval = 15 and release resources

We have run those experiments sometimes and obtained the average values in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **One stock at a time** | **Sequential two stocks** | **Sequential two stocks with interval and release resources** | |
| **Interval = 5** | **Interval = 15** |
| **Peak memory usage** | 386.58MB | 460.82MB | 490.76MB | 490.92MB |
| **Peak CPU utilization** | 92.9% | 100.0% | 93.9% | 98.9 % |
| **Execution time** | 29.82s | 51.0s | 61.09s | 81.46s |

# Conclusion

* Based on the results of the previous attempts, we decided to run stocks sequentially, releasing resources after completing one stock and sleeping for 5 seconds after running the next.
* We tried to run 300 stocks continuously, however as we reached roughly 83 stocks, the server crashed. To avoid CPU overloading, we divided the 300-stock list into six smaller lists, each with 50 stocks.
* And since each stock costs between 35 and 50 seconds (including sleeping 5s), a total of 50 stocks will cost around 2500 seconds.
* In conclusion, we depend on the results to set up a cronjob to execute the script automatically, with each list (50 stocks) running 1 hour 30 minutes apart to avoid CPU overloading.