Project Report

CS425-MP1

For this project, we deployed 10 virtual machines and we gave each of them a server and a client. The whole idea is to use rpc over TCP. Given a specific port, the server will keep listening to the clients’ request, and give response back to the clients. In each query, one machine would be considered as the client and receives a regular expression from its user, which would be processed as a query request to all the 10 machines that are considered as servers including itself. These servers would execute this grep command on their own log files(provided at the beginning), then according to the matching result, count the total number of matched line and save the matching result as the response, giving it back to the clients. We use multi-threading and group listener to achieve synchronization of all the clients. At the end of each query request, we will also output the total latency of the match time to indicate the performance of our program.

In order to check the validation of our program, we established UnitTests to check the matched lines. For each virtual machine, we generate them a UnitTest.log file, each file has some repeated known (frequent) lines and some rare appeared lines. Some of the lines appear in all log files while some of them only appear in some or only one of them. By checking the match line numbers of different pattern, we can indicate whether our program works or not.

A screenshot of a cell phone

Description automatically generated

A close up of text on a black background

Description automatically generated

A close up of text on a black background

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A close up of a logo

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For the log files, we use “a” as the request pattern and we got 6614 matched lines from our generated log files of all 10 servers. And for the UnitTest, we put all the patterns and their expected matched lines in a txt file named test.txt. And we only check the first three servers to see if the matched lines equal to what we expected. And the three outputs above relate to “Frequent some” and “Rare some”.