Project 1 Performance Results Document
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Evaluation and Measurement

To evaluate the scalability of the multiuser concurrent banking system, the number of clients connecting to the server and the number of transactions performed by each client were varied, with the rate of transaction request constant at 0.1 second per transaction.

For the instance where a single client connected to a client, the number of transactions were increased from 100 to 1,000 to 5,000 to 10,000 to 50,000 to 100,000.

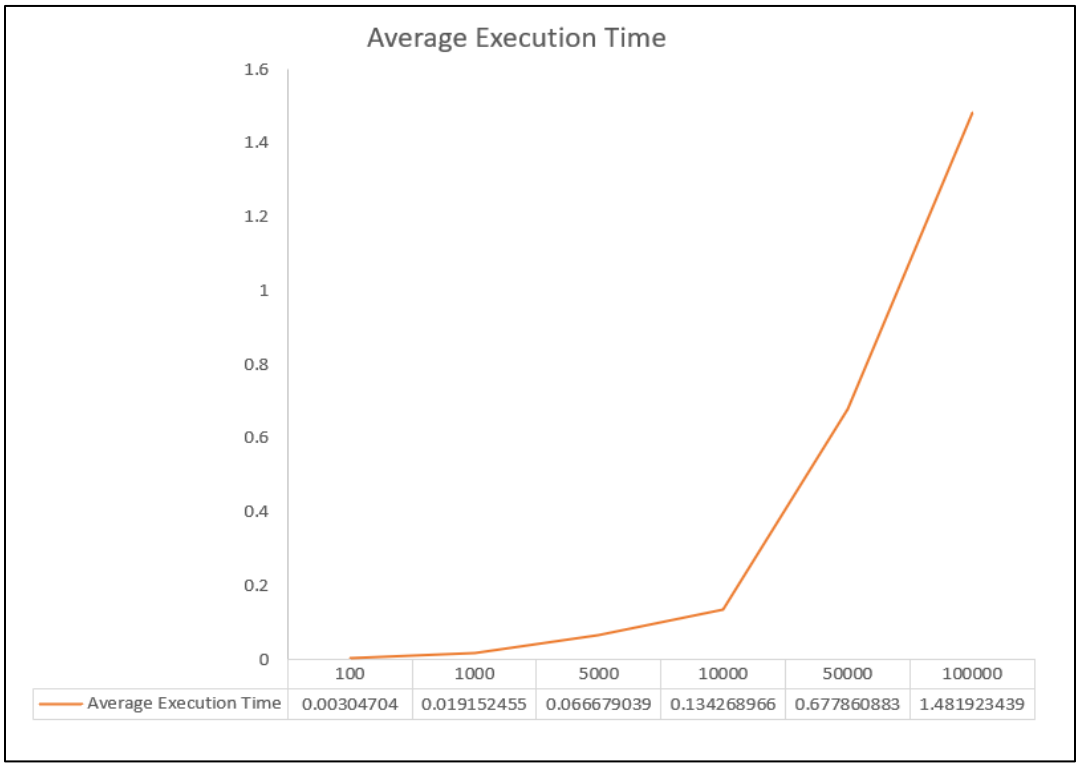


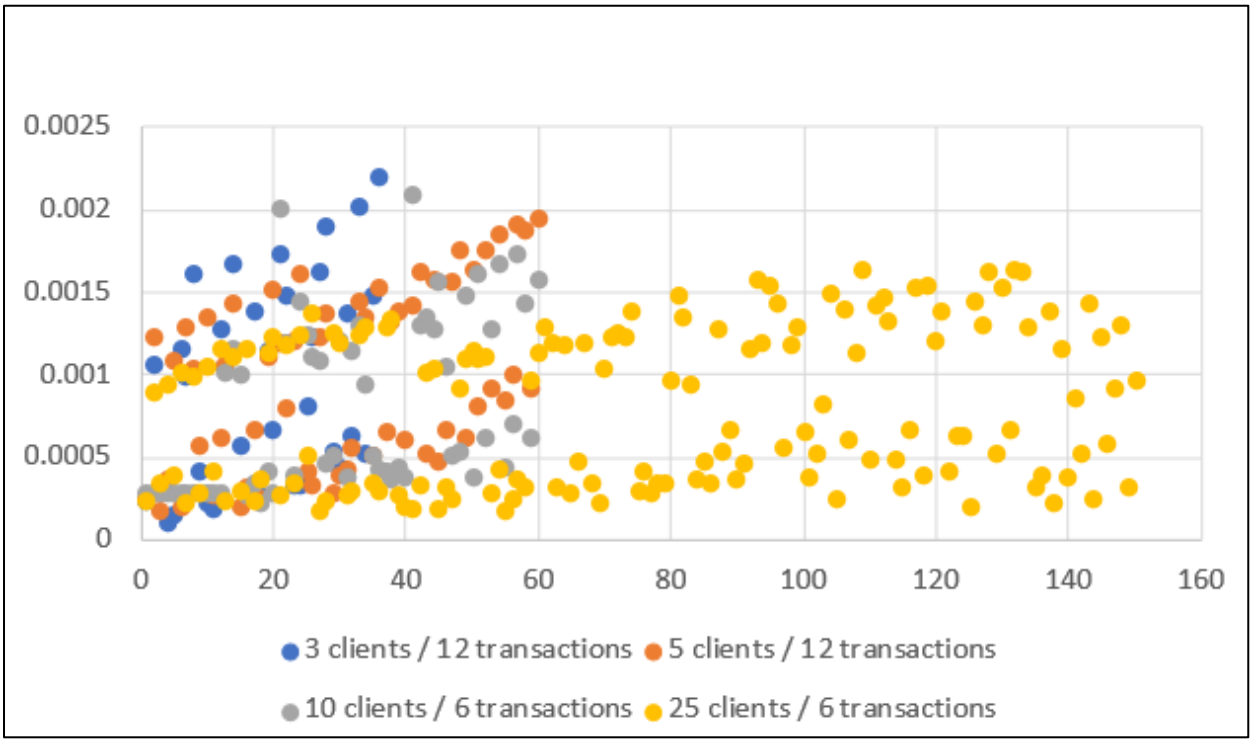
Fig: Average execution time of transactions for a client with **100**, **1,000**, **5,000**, **10,0000**, **50,000**, **1,00,000** transactions.

Observations from the graph:

The average time taken to execute a transaction shows a positive linear relationship with the number of transactions executed. As the number of transactions increased drastically, the average time taken to perform the transactions also increased; from 0.003seconds to 1.48seconds on average as the transactions increased.

Below is a graph depicting the time taken for each transaction for multiple clients where each client performs the same fixed number of transactions.

- 3 clients connected to the server, where each perform 12 transactions, a total of 36 transactions.
- 5 clients connected to the server, where each perform 12 transactions, a total of 60 transactions.
- 10 clients connected to the server, where each perform 6 transactions, a total of 60 transactions.
- 25 clients connected to the server, where each perform 6 transactions, a total of 150 transactions.



It can be inferred from the above scatterplot, for 3 clients executing 12 transactions each, the time taken to execute each transaction has a steeper time fluctuation compared to when the number of clients is increased to 5. When the number of clients is increased to 25, it is similar to the pattern with 3 clients.

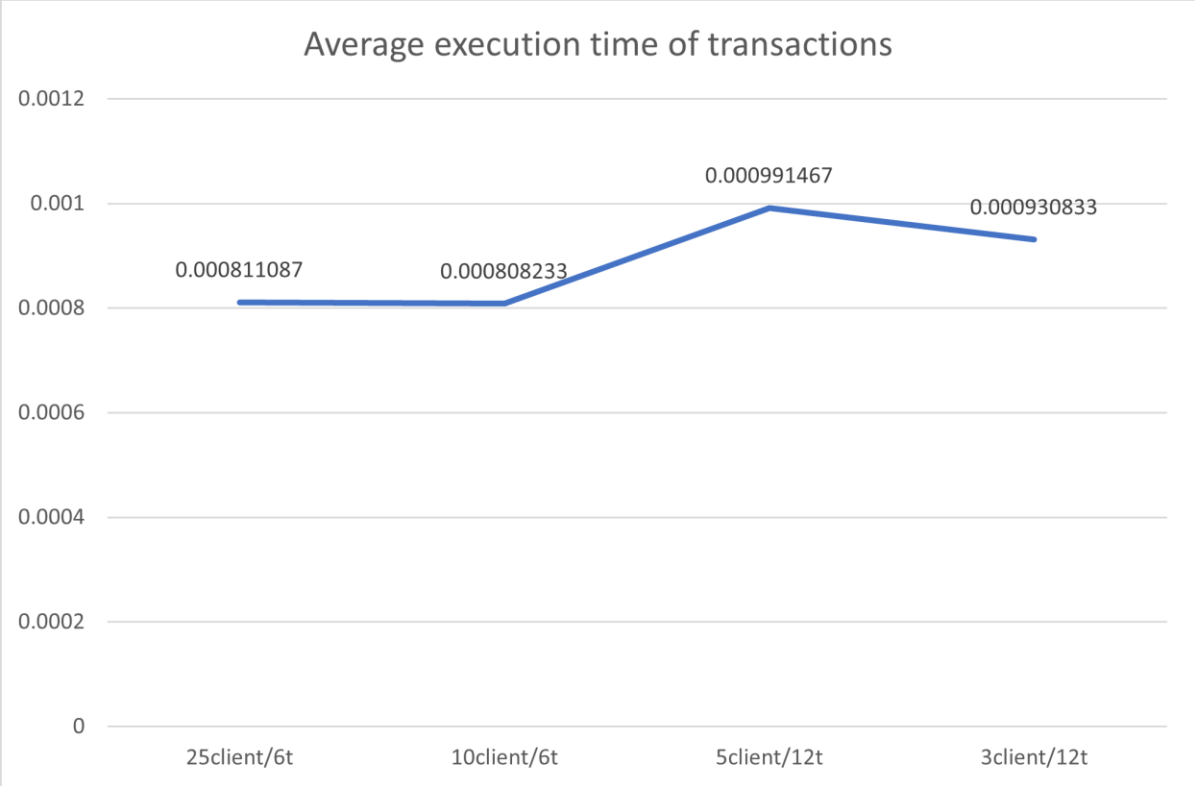


Fig: Average execution time of transactions for 25 clients with 6 transactions performed by each client, 10 clients/6 transactions each, 5 clients/12 transactions each, 3 clients/12 transactions each.