DISTRIBUTED OPERATING SYSTEMS

COP5615 – Fall 2020

PROJECT REPORT: Twitter Clone

Members:

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System Information:

- MacBook Air early 2015 model
- Processor: 1.6 GHz Dual-Core Intel Core i5
- 8 Gb RAM

Execution:

- Run Server in a terminal using the command
  dotnet fsi "--langversion:preview" Server.fsx
- Run Client simultaneously in a terminal using the command
  dotnet fsi "--langversion:preview" Client.fsx NumofUsers
- NumofUsers - Number of users simulated

Project Description:

Implementing a Twitter Clone Engine which allows functionalities like Registering a User, Sending a Tweet, Subscribing to Someone's tweet and Retweeting, and Querying using Hashtags and Mentions.

Results:

What is working:

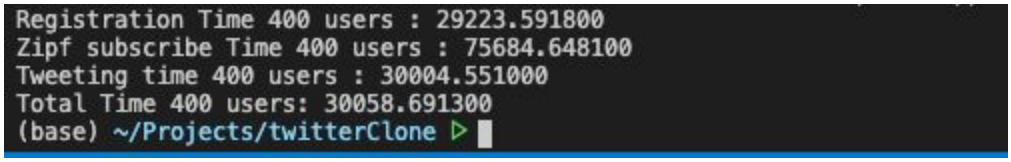
We have 4 files -

- Server.fsx
- Operations.fsx
- Client.fsx
- Report.pdf

The Server file starts the server and contains all the business logic to register a user, and subscribing,tweeting and querying. The Operations file contains the logic to keep a log of all the processes done through the Twitter Engine. The Client file contains the simulation logic and Client actor logic where each Client corresponds to a single user and performs all the functions for a user. Both the files together help run the Twitter Simulation based on the number of clients input by the user, and all the functionalities are working in this simulation to find the performance of the application.

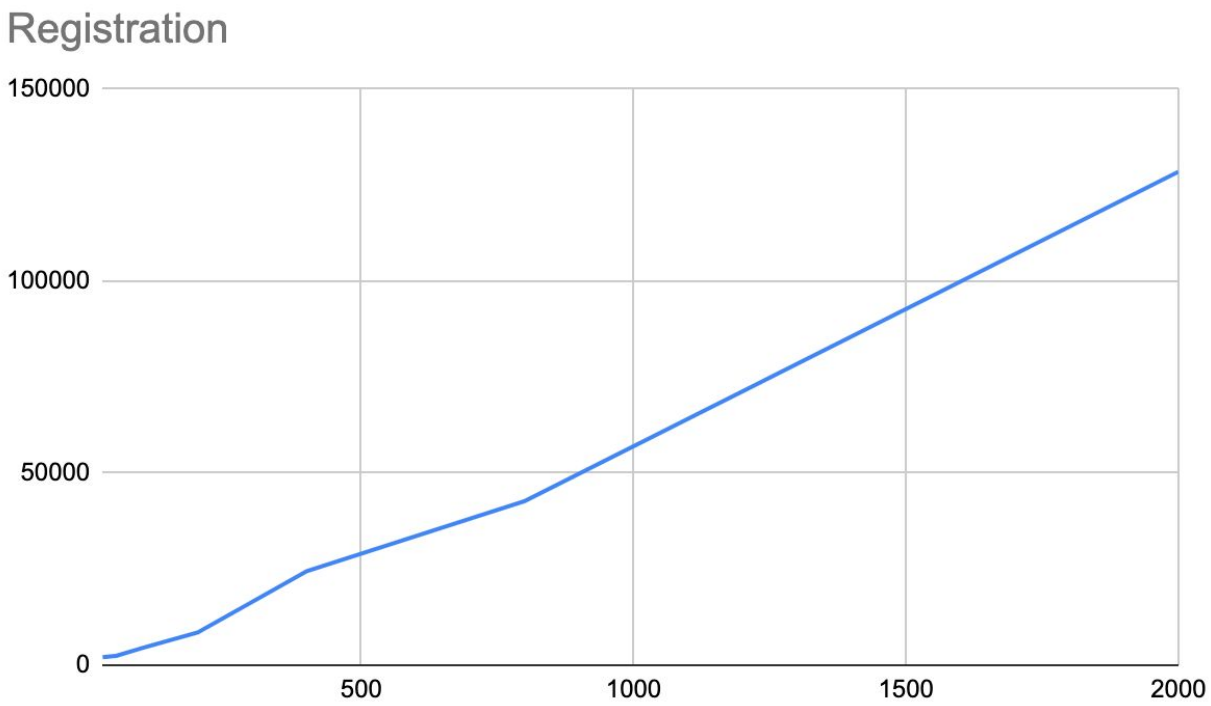
Performance Simulation:

We tried to simulate registration of users/clients based on the number provided through the input. Each client has subscribing followers based on zipf distribution. The simulator runs random operations like tweeting, retweeting, and querying using hashtags and mention). The maximum number of clients that we checked was for 2000 clients, after which it took a long time to process, so we did not try.



Registration of Users

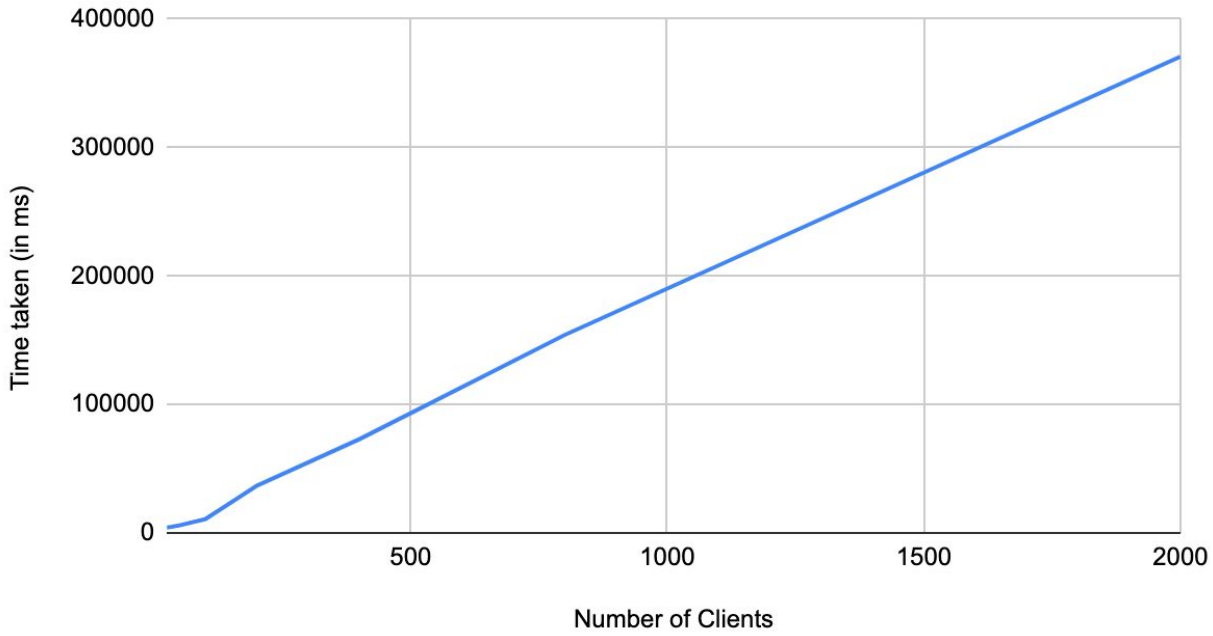
Number of Clients	Time taken (in ms)
25	2042.8
50	2425.9
100	4541.0
200	8513.3
400	24490.7
800	42703.3
2000	128450.7



Subscribe

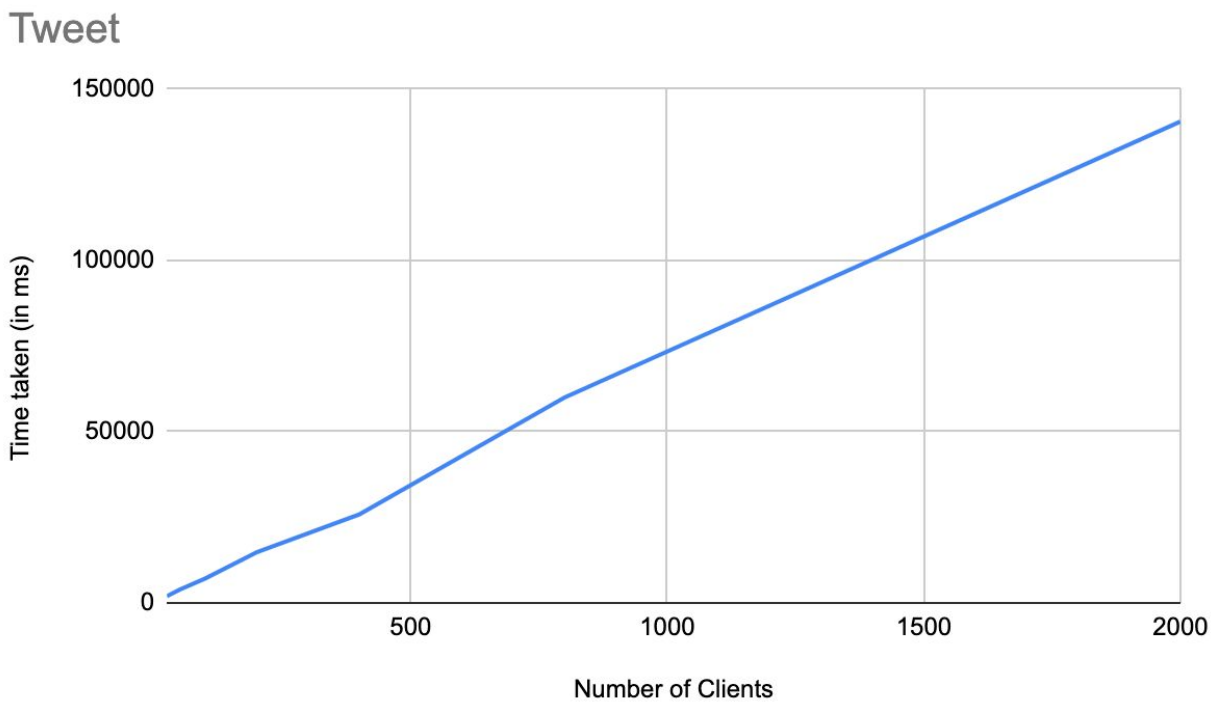
Number of Clients	Time taken (in ms)
25	4070.7
50	5892.7
100	10688.9
200	36711.8
400	72883.2
800	154052.0
2000	370756.7

Subscribe



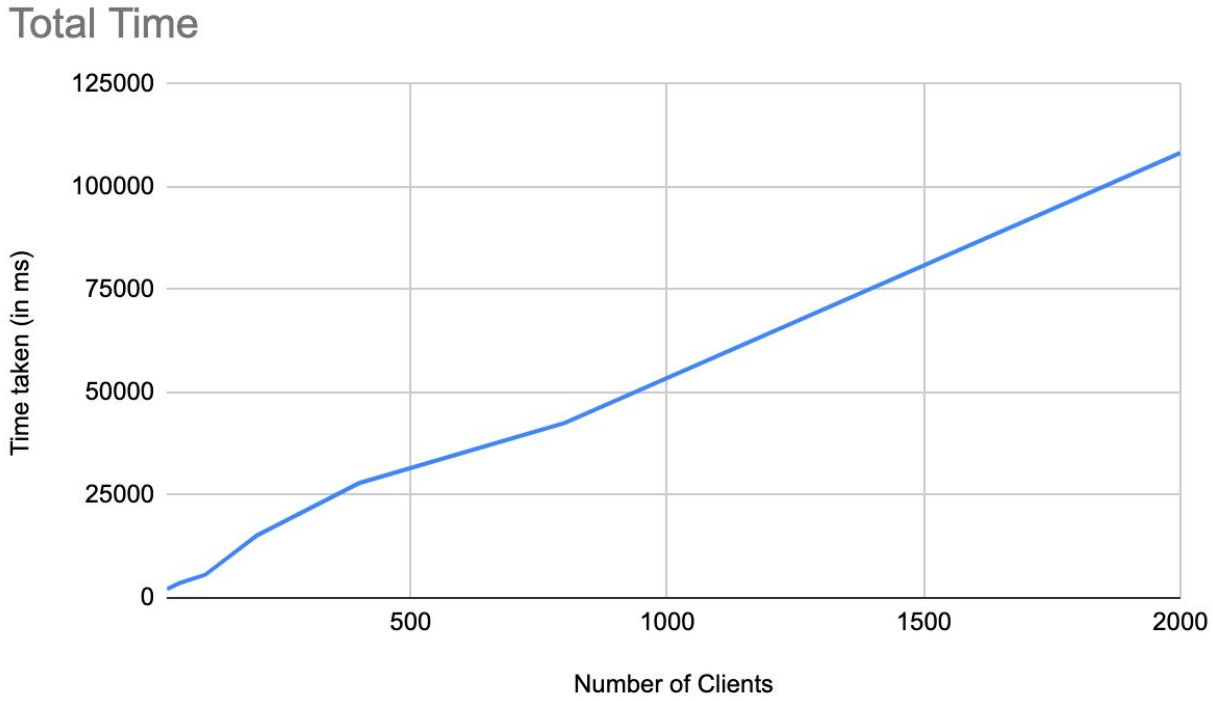
Time to Tweet

Number of Clients	Time taken (in ms)
25	1932.09
50	3868.2
100	7119.0
200	14802.2
400	25805.3
800	59950.4
2000	140518.2



Total Time:

Number of Clients	Time taken (in ms)
25	2112.1
50	3625.0
100	5638.9
200	15172.6
400	27942.2
800	42535.1
2000	108244.4


Total Time
125000
100000
75000
50000
25000
0
Time taken (in ms)
500
1000
1500
2000
Number of Clients