

DISTRIBUTED OPERATING SYSTEMS

PROJECT 4.1 : Twitter Simulator

Date: 28th November 2019

GROUP MEMBERS

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WHAT IS WORKING

Run the following commands from the directory containing mix.exs:

- Run *mix deps.get* to build all the dependencies.
- *mix escript.build*
- Run *escript ./project4_1 server* to start the server in command line .
- Run *escript ./proj4 simulate 127.0.0.1 num_user num_msg* to run the simulator in a different command line window.

Where num_user represents the number of users created by the simulator, num_msg represents the number of tweets made by that user.

- Run *escript ./project4_1 client 127.0.0.1* to start the client interface in command line .

[Run either “simulator” or “client” at a given time. “client” provides an interface of the system. All functionalities are implemented within the simulation.]

FUNCTIONALITIES IMPLEMENTED

- We were able to register and delete the account.
- We were able to log in and log out.

- We were able to send the tweets and the tweets included hashtags.
- We were able to subscribe to user's tweets .
- We were able to implement Re-tweets.
- We were able to implement querying tweets subscribed to, tweets with specific hashtags, tweets in which the user is mentioned.
- We were able to deliver the above types of tweets live without querying when user is online. When user is offline the tweets get stored in user's feed.

We were able to implement all the functionalities as mentioned above, the username is supposed to be unique for each and every user , these functionalities simulate the real world implementation of twitter application . The screenshot below can be used as a reference for the performance metrics of the system. The screenshot below can be referred for checking the initialization of tables.

```
19:08:58.298 [debug] Initiating Engine...
19:08:58.302 [debug] occupying the socket
19:08:58.306 [debug] socket connection established
19:08:58.306 [debug] generating tables
19:08:58.306 [debug] generating hashtags table
19:08:58.306 [debug] generating mentions table
19:08:58.306 [debug] generating users table
19:08:58.306 [debug] generating counter record
19:08:58.306 [debug] Ready to accept new connections
19:09:08.319 [info] Twitter-engine (Statistics)
Tweets(per sec): 0.0
Total Users: 0
Online Users: 0
Offline Users: 0
```

The screenshot below can be referred for accessing the functionalities implemented.

```
23:05:45.064 [debug] Starting as Client Interface
Enter username for registration (without @ at start): pulkit
Choose an action:
1. Tweet
2. Hashtag query
3. Mention query
4. Subscribe(Implemented in simulator)
5. Unsubscribe(Implemented in simulator)
6. Login
7. Logout
Enter your choice:
```

The screenshot below can be referenced for verifying the connections and tweets.

```

19:31:28.018 [info] Incoming feed which was accumulated while you were offline
19:31:28.018 [debug] Got poison error for data: {"username":"qrq7p5epiv","tweet":"7ah7axu3xy6z
19:31:28.018 [info] username:ch574nno3u sender: ht3omiiia5 incoming tweet:- 5j1ir7 g gmsm dcp5hs487m49rk ndswwsjon 39q t s5p2r92 7f2d61fdu5cx9 vqp15 dc6v omka6 xb8ozm i0tjtjn4d
19:31:28.018 [info] Tweet: ykga1 hoks 9x7dijvmp oh6y60u s70k tg 4e u6vwjfvscv wkh8n39 mxsoe89bj0u 4 kvvde0b4bet61z2ps5 s 5q06bk
19:31:28.018 [debug] data to be decoded: "{\"username\":\"ofigj35eh5\\\", \"tweet\":\" \" 0q9s6 15p1xs12b a4vlzrnze 86edf qdo9az91yb9sf21z3tpfg2xdd 8k2qxc9x2 f3c8xy5u3m3 n vkdesgnzrrpp\\\", \"sender\":\"izavgc20lp\\\", \"function\":\"tweet\""}
19:31:28.018 [debug] received data at user q35ikqn7b4 data: %{"function" => "tweet", "sender" => "0lr4jbxpim", "tweet" => " 5 t w4c 830m3hksz3p uytz 626 uag ckleurq2qyhvi5 bxw7unz75 6b895ooi1mfbywduza8yjrthv3alz1 hno0r85pc97k", "username" => "q35ikqn7b4"}
19:31:28.018 [info] username:p2bcqhinc0 sender: g01t764eqe incoming tweet:- dc2kigxbura3caeh1z h9n j5t 8h fks3cs7 rqqm 4s8w3 nzkp4isybxy84t08v qx2y otc xva 23pa0r frvvax2bv1
19:31:28.018 [debug] data to be decoded: "{\"username\":\"vc7nm8n6k5\\\", \"tweet\":\"c9s30gngijhsm6enni88yjj4g6 1flyq 3 pg8 vui9x fbiaw ofy 8hfs47pfv2 i6971ee7q0hvr0tmenbiry5k56rhdbov9\\\", \"sender\":\"cilgnbyp78\\\", \"function\":\"tweet\""}
19:31:28.018 [info] username:ebq99bti1a sender: 65u6skhvce incoming tweet:- fd16yuski9r81z1 lv ehdmmybdu63turxpg4a32 h6x nzjyhrh56yq7rpr br klisc0xp124be30rv6deytn54ruc14ca8
19:31:28.018 [info] username:0abmj9rgfq sender: 6yeq6j0b60 incoming tweet:- b9 q3p8w63ex03k2cb7a1h2h2 unrk7 x f358bf1w kvwtsd8jyg6 9ij9y8n058mySudkx2h96aq4m02fywiehp0gmtcv0d2ad
19:31:28.018 [info] username:i7glum6t48 sender: 3ao2o9vtif incoming tweet:- u25k11hgk7el so4emlwdht a3waiqeasgyicn krnhconpgxs1rbtinojj o qr9u5ydcu17bd11h rg s081f fk8f3sxwewt
19:31:28.018 [debug] received data at user xlk2l73t0t data: %{"function" => "tweet", "sender" => "j1fvl81xwz", "tweet" => "u 3bw 9asa zgr4mmdcyu9vfu 3typ 4d9waic mn2y6722wd080xqas oj6054a0wjndkofcx9h47c9rvmpf20 w g3 p7av ", "username" => "xlk2l73t0t"}
19:31:28.018 [debug] data to be decoded: "{\"username\":\"0abmj9rgfq\\\", \"tweet\":\"p4uxu77let8m s3r 6 avo8wc4am d1 y 1sp7u9pcb7w35 lgzdfhp189kmjuz bc4gdm1634 k5gx1krnxgovkk5j3kw4z\\\", \"sender\":\"53jmahgfwz\\\", \"function\":\"tweet\""}
19:31:28.018 [info] username:ocwgiq28in sender: kolgh75wp8 incoming tweet:- kn7qpomunfrags13w6n sqczsadm 8l6q4dy83x1zy0yk6leskuo6yj8h 3j5qb m3icunsqgz hdbhykj16wqfm9s621726nhel
19:31:28.018 [info] username:3gtlhdore sender: 2pqrry4704 incoming tweet:- wx bxomvmkf7b o4ecld51c8a6tmbdakj umj swxuxi0ev8d5tayksw36ksc0wetx66e18l3zx 7qpe2qe emzzvr7 h3u jet
19:31:28.018 [debug] received data at user c6d3ep6v27 data: %{"function" => "tweet", "sender" => "9r769kl5tz", "tweet" => "esav brwn tn5rx c8c8lotv1brs5xcpa7fbyk0 plud 8a81lw2h aioi4f0b3fks3gcv5afscsw0n rl zev9 kemseib 0hun", "username" => "c6d3ep6v27"}

```

The below screenshot can be referenced for verifying the working of simulator and its performance metrics.

```

19:30:07.143 [debug] Ready to accept new connections
19:30:07.145 [debug] Ready to accept new connections

19:30:15.655 [info] Twitter-engine (Statistics)
Tweets(per sec): 1314.5
Total Users: 1000
Online Users: 704
Offline Users: 296

19:30:25.662 [info] Twitter-engine (Statistics)
Tweets(per sec): 1818.1
Total Users: 1000
Online Users: 695
Offline Users: 305

19:30:35.650 [info] Twitter-engine (Statistics)
Tweets(per sec): 1843.7
Total Users: 1000
Online Users: 681
Offline Users: 319

19:30:45.659 [info] Twitter-engine (Statistics)
Tweets(per sec): 1795.3
Total Users: 1000
Online Users: 726
Offline Users: 274

19:30:55.677 [info] Twitter-engine (Statistics)
Tweets(per sec): 1804.8
Total Users: 1000
Online Users: 692
Offline Users: 308

19:31:05.672 [info] Twitter-engine (Statistics)
Tweets(per sec): 1821.7
Total Users: 1000
Online Users: 719
Offline Users: 281

19:31:15.674 [info] Twitter-engine (Statistics)
Tweets(per sec): 1843.0
Total Users: 1000
Online Users: 717
Offline Users: 283

```

We have implemented various tests such as which can be run by executing the following command at the terminal

- Users Counter initialization.
- Tweet Counter initialization.
- Hashtag Queries.
- Offline Counter initialization.
- Registration Success.
- Initializing mentions ets table at the start.
- Initializing Users ets table at the start.
- Online counter initialization.
- Initializing Counter records at the start.
- Initializing hashtag ets table at the start.

PERFORMANCE ANALYSIS

Since we implemented the project with Zipf distribution for subscribers and also periods of connection and disconnection for users we mentioned the performance in the Report-Bonus.pdf