

COP5615 PROJECT 4 PART 1 REPORT

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To compile and run the code:

- Enter into the erl mode by using command `erl -sname mainservice`
- Now compile all the modules by using the commands
 - `c(twitterMain).`
 - `c(register).`
 - `c(messages).`
- To start the twitter use the command `twitterMain:startingTheTwitter().`
- To register or signin use the command `twitterMain:registerAndSignin().`
- To register type R and to signin type S

Register account:

- Enter a username, password and email address

Sign in account:

- Enter the registered username and password.

To send tweet:

- First sign in to the account using the registered username and password
- Use the command `twitterMain:sendTweet().`
- Then enter the tweet which can contain hashtag(#) and mentions(@)

To subscribe to the user's tweets:

- First sign in to the account using the registered username and password
- Use the command `twitterMain:subscribeTheTweet().`
- Enter the username you wish to subscribe to.

getUsersList(): To get all the active users

myMentionsList(): To get all the mentions of the user in various tweets

query_Hash_Tag(): To get all the tweets with the same hashtag

get_Subscribed_Tweets(): To get all the tweets that a user has subscribed to.

sendMessageToAllSubscribers(): Send the tweet to all the subscribers

signOutUser(): To signout from the session.

twitterMain module:

- It is used to provide the user with features such as register, sign in, signout, subscribe, tweet/retweet, hashtags, mentions and querying.
- Each activity is handled by different actors and there is a request handler which redirects the requests to respective actors.
- We store all the subscribers list, tweets/retweets, hashtags and mentions in a central server.

Twitter Client Simulator:

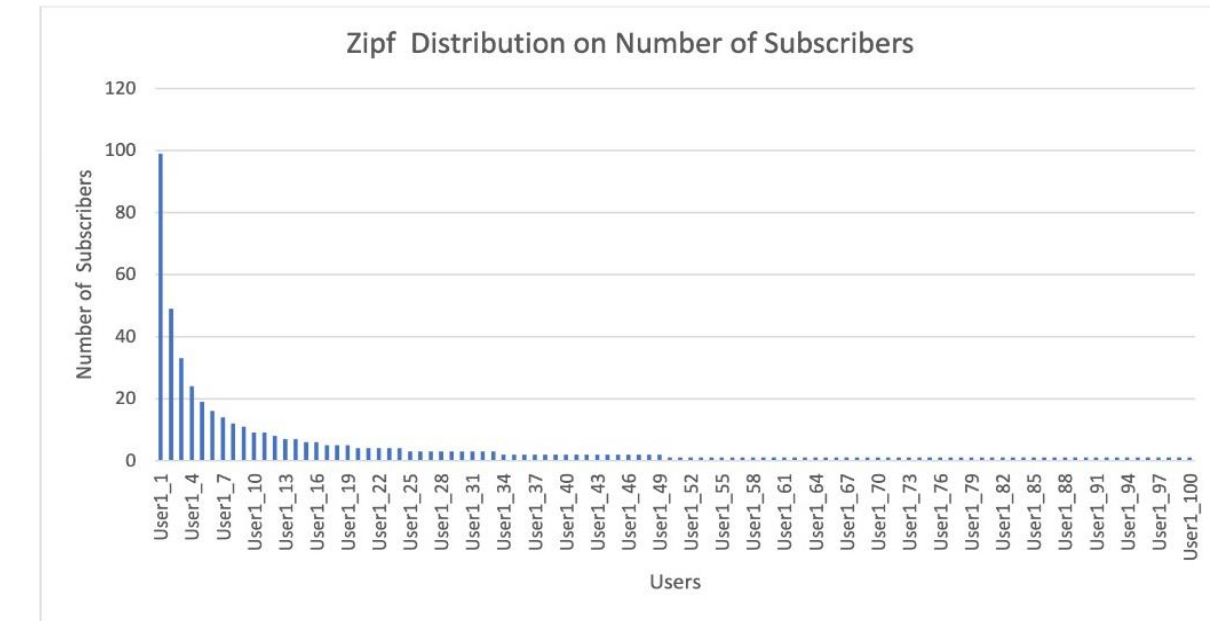
- The first step performed by twitter client is spawning the number of users provided. Every user is registered and the perform random actions such as tweet, subscribe etc.
- For tweeting and retweeting we provide some hashtags and tweet messages at client side.
- User randomly picks any hashtag or tweet for performing actions.
- Different clients are involved in simulating different users and each client has unique starting ID.

Zipf Distribution:

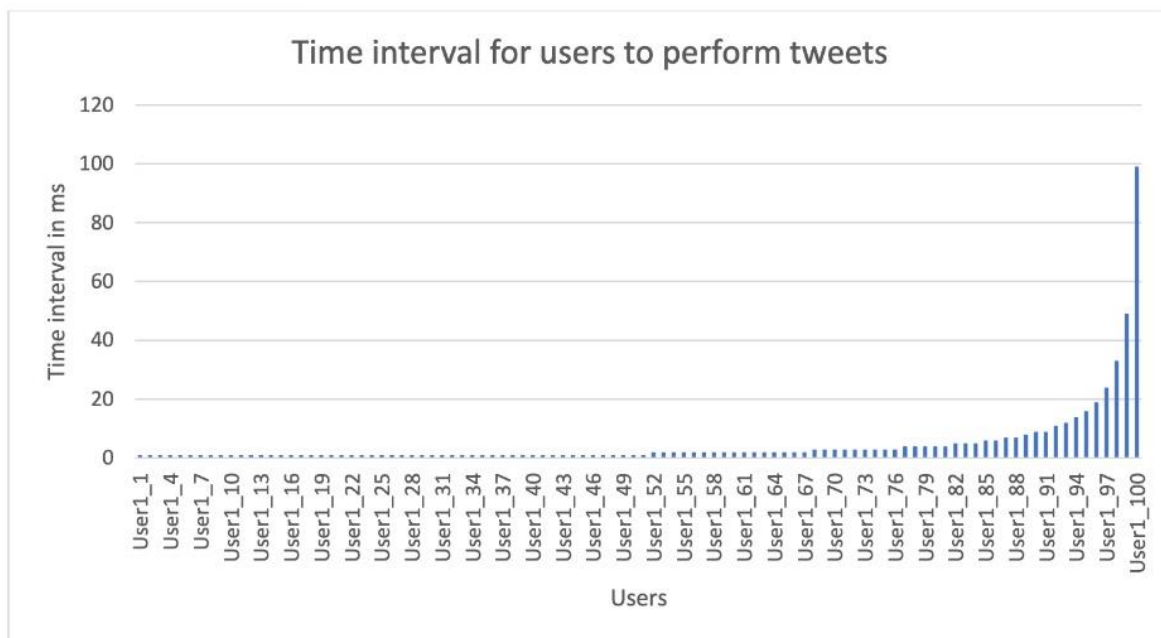
- A zipf distribution is performed on the number of subscribers which is based on the rank of the user. And in our case it is the unique ID of the users.
- Suppose there are 100 users then the first user will have 99 subscribers, second user will have 49 subscribers and the third users will have 33 subscribers and so on.
- If there are 50 clients connected and each had simulated 1000 users then there would be 50 users for each rank with same count of the subscribers which follows zipf distribution.
- The user with the most subscribers will have very small interval and least number of subscriber will have the largest interval and in case of action frequency performed by every user we have assigned time intervals similar to zipf distribution. Example user having 99 subscribers will have 1 millisecond time interval and user with 1 subscriber will have 99 milliseconds time interval because the user with most subscriber performs more number of actions.

Zipf distribution on count of subscribers:

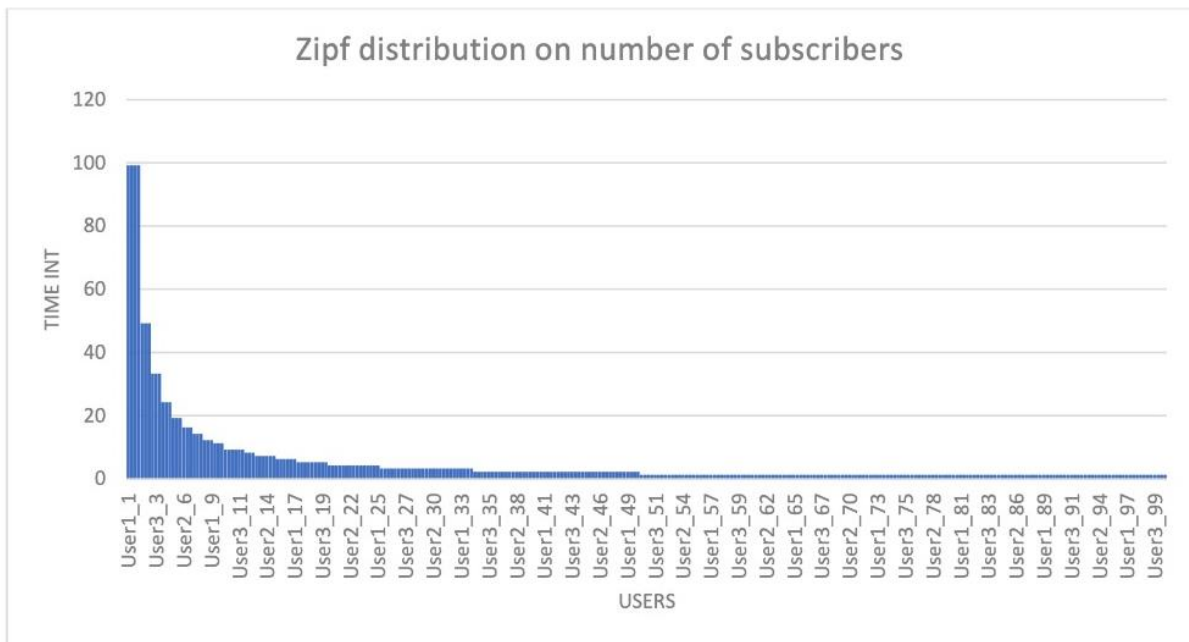
Zipf distribution on the number of subscribers for every user between 1 and 100(with 1 client and 100 users)



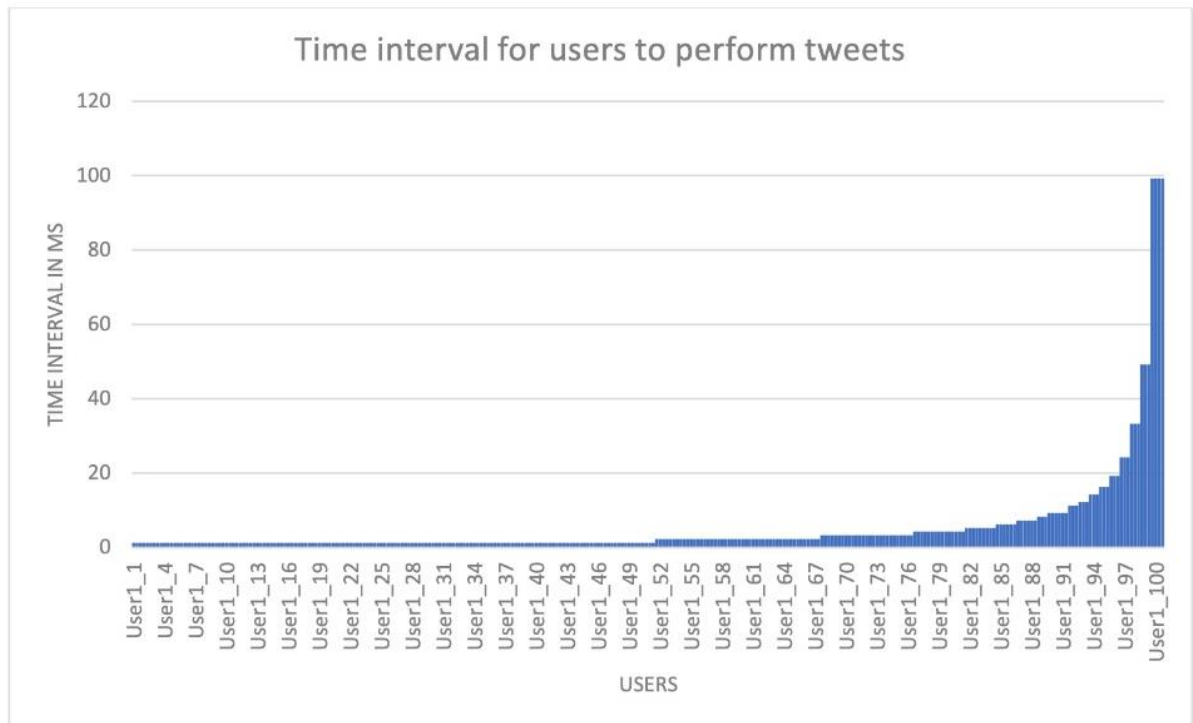
Time intervals for performing tweets for users between 1 to 100(with 1 client 100 users):



Zipf distribution number of subscribers for every user between 1 and 100(with 3 clients and 300 users):



Time intervals for performing tweets for users between 1 to 100(with 3 client 300 users):



Performance Evaluation:

Average time for each service in ms				
<u>No of Users</u>	<u>Tweets</u>	<u>Retweets</u>	<u>Query Hashtags</u>	<u>Query Mentions</u>
100	16.411	17.714	16.387	17.382
500	20.589	21.245	22.058	21.318
1000	19.295	19.600	23.013	17.763
2000	141.582	184.211	164.365	163.965
5000	533.265	233.345	612.324	563.232
8000	893.876	212.653	845.231	414.242

Observation:

We were able to simulate the total of 55000 of users with multiple clients where first client handling 15000 users, second and third handling 21000 and 19000 users respectively.

CONCLUSION:

As per the project guidelines we were able to implement twitter clone and client simulator performing various actions such as register, sign in, signout, subscribe, tweet/retweet, hashtags, mentions and querying. We also simulated 55000 users, simulated periods of live connection and disconnection for users and zipf distribution on the count of subscribers.