PROJECT 4

Twitter Clone

This project aims at creating an engine which provides basic Twitter like features. The project uses Concache to store all the data which is a wrapper over ETS. These features include:

1. Registration/Signup of new user.
2. Login of registered user
3. Force login if the user is already logged in from somewhere else.
4. Tweet by logged in user
5. Following/Subscribing a registered user.
6. Retweet
7. Logout
8. Query tweets subscribed to.
9. Query to find all the registered user.
10. Query to find all the tweets with a mention of given user.
11. Query to find all the tweets with a given hash tag.
12. Delivers the tweet/retweet to the followers immediately, if they are logged in.
13. Delivers the tweet to the user mentioned in the tweet immediately, if the user is logged in.

Each feature is described below:

1. **Registration/Signup**

   User can register by executing below command:

   register username,password

```
register username,password
Registration successful. Please try login
```

2. **Login**

   A registered user can login using the username and password. The command to login is:

   login username,password

```
login shesh,abc123
Login successful
```

3. **Forced Login**

   If a user is already logged in and tries to create a different session, he needs to quit from the old session. This feature allows user to invalidate the old user session and create new session. The command to login forcefully is:

   login username,password,force

```
login shesh,abc123,force
Login successful
```

4. **Tweet**

   A logged in user can tweet, which will be delivered to all his/her followers. Tweet can contain mentions of registered users and if the mentioned user is logged in, he/she will receive the tweet immediately. Tweet can also contain hash tags. The command to tweet is:

   tweet message

```
tweet This is ample tweet
You tweeted (Tweet Id: 1)
 This is ample tweet
```

5. **Following a registered user**

   A user can subscribe to the tweets of existing users using this feature. This will allow user to receive the tweets from the registered user to be received immediately if logged on or can be queried later to fetch the tweet subscribed to. The command to subscribe a user is:

   subscribe username

```
subscribe shesh
Subscribed to shesh
```

6. **Retweet**

   This feature allows user to retweet the existing tweets. The command for retweet is:

   retweet tweet_id

```
retweet 2
You Retweeted (Tweet Id: 2)
 @shesh how are you? #feeling happy
```

7. **Logout**

   This feature allows user to logout from the existing session. User can use below command to logout:

   logout

```
logout
Logout Successful
```

8. **Query tweets subscribed to.**

   This feature allows user to fetch the tweets from the users which he/she is subscribed to. If the user does not have any tweets, it will display blank. The command for the same is:

   fetchtweets

```
fetchtweets
hey

tweet from sshesh
```

9. **Query to find all the registered user.**

   This feature allows user to fetch list of all registered users. The command for this is below:

   fetchusers

```
fetchusers
shesh,username
```

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10. **Query to find all the tweets with a mention of given user.**
    This feature returns all the tweets where the given user was mentioned. The command is below:

    fetchmention username

```
fetchmention shesh
@shesh how are you? #feeling happy
```

11. **Query to find all the tweets with a given hash tag.**
    This feature returns all the tweets containing the given hashtag. The command is below:
    fetchtag hashtag

```
fetchtag feeling
@shesh how are you? #feeling happy
```

12. **Delivers the tweet/retweet to the followers immediately, if they are logged in.**

```
New tweet from (Tweet Id: 3) shesh
 hey
```

```
Retweet from (Tweet Id: 3) shesh
 hey
```

13. **Delivers the tweet to the user mentioned in the tweet immediately, if the user is logged in.**

```
You were mentioned in New tweet from (Tweet Id: 2) username
 @shesh how are you? #feeling happy
```

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Test Simulator

The project is divided into two parts client and server. The default port for client and server is 4040. While the server starts on the mentioned port, client uses it to connect. The server can be started on different port by setting “PORT” environmental variable.

Note: Make sure the port for both the client and server are set to same value. Default for both is 4040

Running the Simulator:

1. Server

- Enter into / twitter_prototype/apps/twitter_server/ folder
- Run the below command:

  mix run --no-halt

This will start the server on the specified port, if mentioned else on 4040.

```
E:\DOS\test\twitter_prototype\apps\twitter_server>mix run --no-halt
Environment variable PORT not set. Starting server on default port

21:42:19.518 [info]  Accepting connections on port 4040
```

2. Client

- Enter into /twitter_prototype/apps/twitter_client/
- Run the below command:

  mix run --no-halt

```
E:\DOS\test\twitter_prototype\apps\twitter_client>mix run --no-halt
Connection Successful

Registration successful. Please try login

Login successful

You tweeted (Tweet Id: 1)
 User Id: 1: Number of Tweets by current user:1

You tweeted (Tweet Id: 2)
 User Id: 1: Number of Tweets by current user:2
```

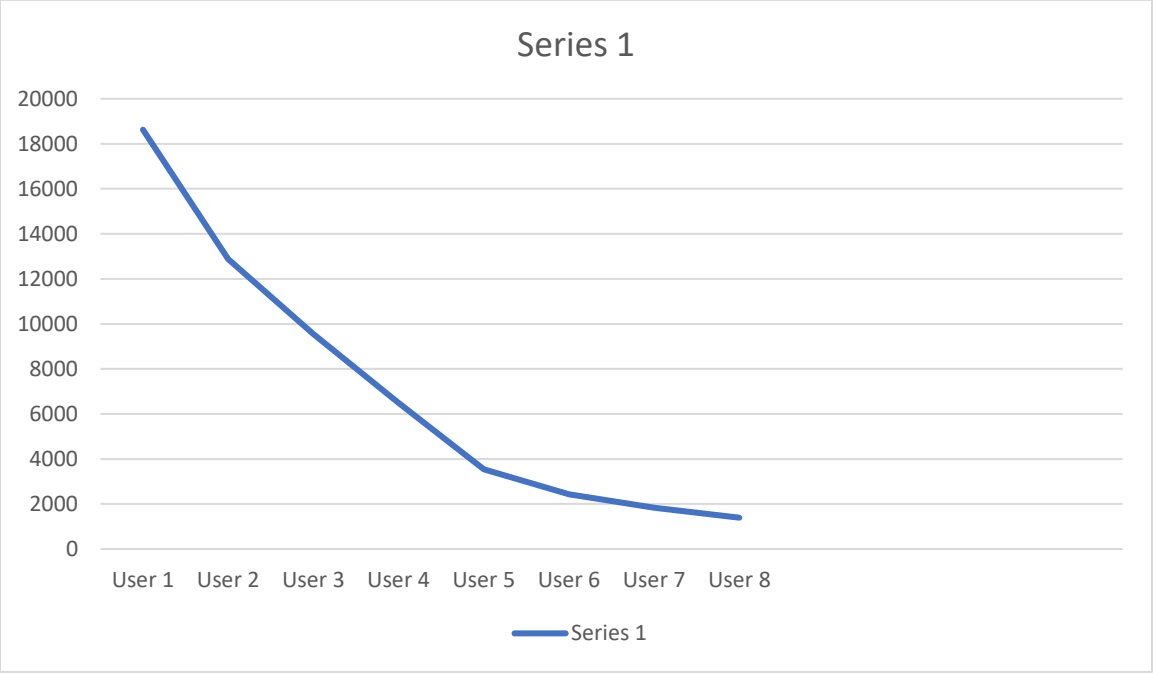
3. **The server can also be connected using telnet. Once the client is connected using telnet, the client can access any of the feature described in above section. Below is the command for accessing the server using telnet:**

   telnet 127.0.0.1 4040

4. Zipf Distribution

The simulator assigns each user an id starting from 1. Each user register and login. To attain Zipf distribution, i.e. to make one user more popular than other, the client uses mathematical relation between the user id's. User A with id "a" follows user B with id "b" if the remainder when a is divided by b i.e. a%b=0. Since, all the client id's is divisible by 1, all user subscribes to user with id 1, similarly all user with even ids subscribe to 2 and so on which makes user 1 most popular, user 2 second most popular and so on.

User Id	Tweet Count
1	18625
2	12872
3	9556
4	6491
5	3542
6	2437
7	1832
8	1391



We verified the simulator with maximum concurrent logged user count =7000 with over 300,000 tweets.

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```
 User Id: 3: Number of Tweets by current user:1324
New tweet from (Tweet Id: 27724) 1
 User Id: 1: Number of Tweets by current user:2641
New tweet from (Tweet Id: 27738) 95
 User Id: 95: Number of Tweets by current user:43
New tweet from (Tweet Id: 27737) 1
 User Id: 1: Number of Tweets by current user:2642
New tweet from (Tweet Id: 27746) 3
 User Id: 3: Number of Tweets by current user:1325
New tweet from (Tweet Id: 27749) 5
 User Id: 5: Number of Tweets by current user:758
New tweet from (Tweet Id: 27745) 1
 User Id: 1: Number of Tweets by current user:2643
New tweet from (Tweet Id: 27761) 9
 User Id: 9: Number of Tweets by current user:444
New tweet from (Tweet Id: 27760) 1
 User Id: 1: Number of Tweets by current user:2644
New tweet from (Tweet Id: 27773) 3
 User Id: 3: Number of Tweets by current user:1326
New tweet from (Tweet Id: 27772) 1
 User Id: 1: Number of Tweets by current user:
You tweeted (Tweet Id: 233913)
 User Id: 5: Number of Tweets by current user:5109
New tweet from (Tweet Id: 233920) 1
 User Id: 1: Number of Tweets by current user:17414
New tweet from (Tweet Id: 233934) 1
 User Id: 1: Number of Tweets by current user:17415
New tweet from (Tweet Id: 233952) 1
 User Id: 1: Number of Tweets by current user:17416

New tweet from (Tweet Id: 233934) 1
 User Id: 1: Number of Tweets by current user:17415
You tweeted (Tweet Id: 233940)
 User Id: 3: Number of Tweets by current user:8896
New tweet from (Tweet Id: 233952) 1
 User Id: 1: Number of Tweets by current user:17416

You tweeted (Tweet Id: 220312)
 User Id: 2144: Number of Tweets by current user:11
New tweet from (Tweet Id: 225744) 1072
 User Id: 1072: Number of Tweets by current user:26

You tweeted (Tweet Id: 232441)
 User Id: 180: Number of Tweets by current user:159
New tweet from (Tweet Id: 232489) 90
 User Id: 90: Number of Tweets by current user:316
New tweet from (Tweet Id: 233226) 90
 User Id: 90: Number of Tweets by current user:317

Login successful

You tweeted (Tweet Id: 233969)
 User Id: 6200: Number of Tweets by current user:1
```