CO5615 Project 4: Part 2

WebSocket Interface to Twitter Simulator using Erlang

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Problem Statement:

Use WebSharper framework to implement a WebSocket for Twitter simulator. Twitter simulator has functionalities like account registration, sending tweets, hashtags, re-tweets, querying tweets.

Compile and Run:

1. Compile server and client files
   a. c(client).
   b. c(server).
2. In the server terminal: Start the server
   a. server: start ().
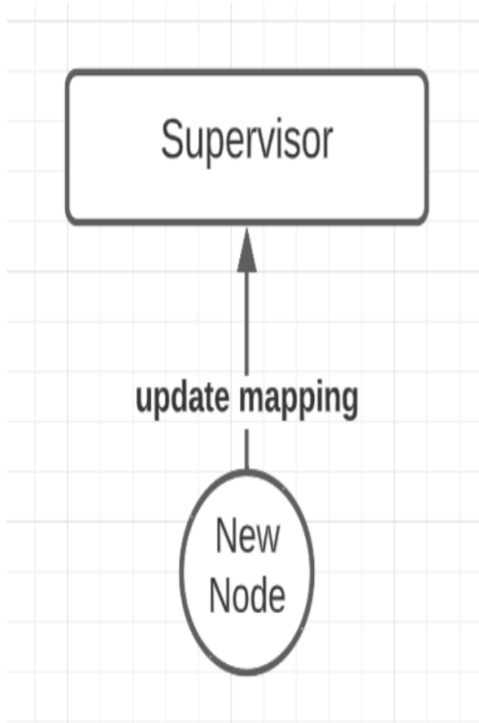3. In the client terminal: start the client
   a. client: start ().
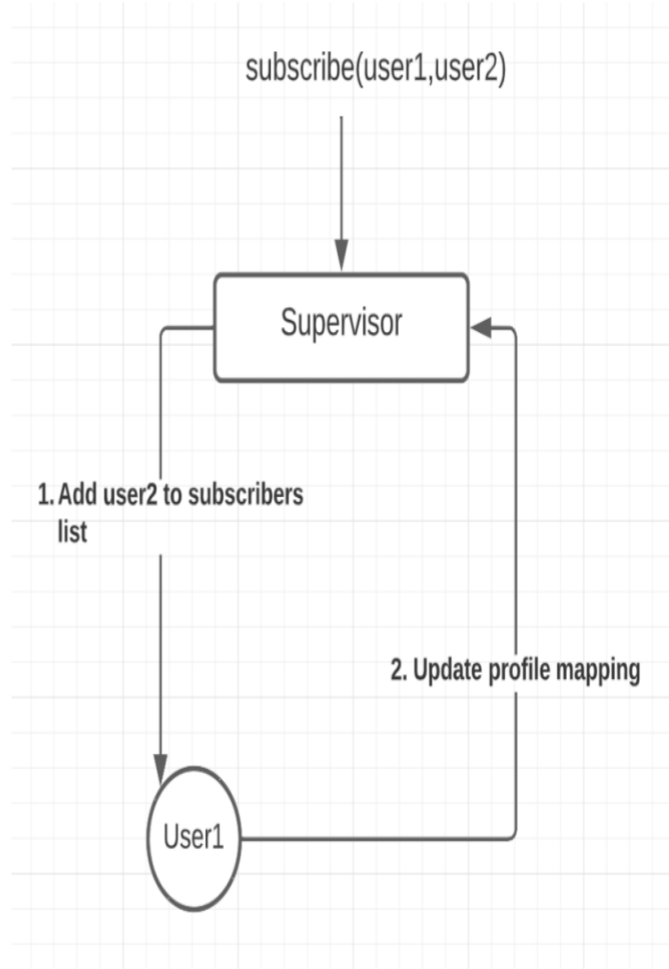

Implementation details:

<u>Services:</u>

1. Registration of the user
2. Login the user
3. Logout the user
4. Post a tweet
5. Subscribe to a user
6. Get tweets of a user
7. Get tweets with hashtag
8. Get tweets with mentions
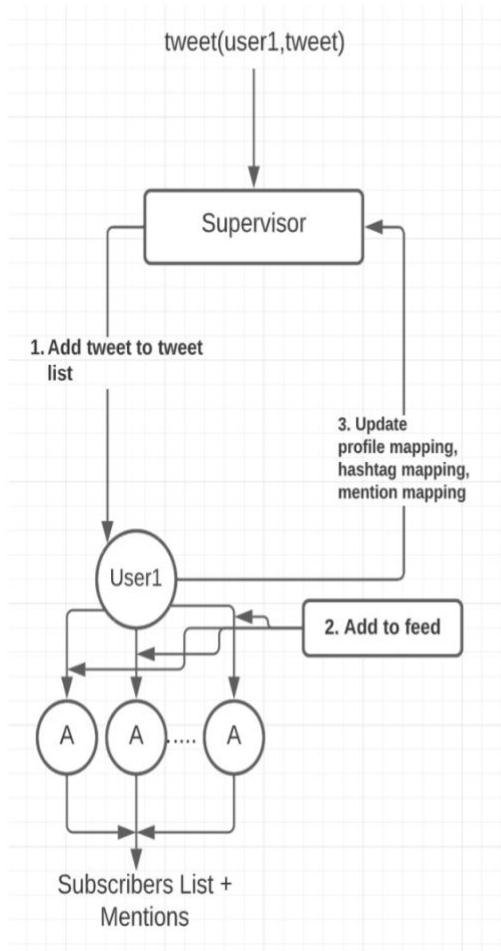9. Display search query results

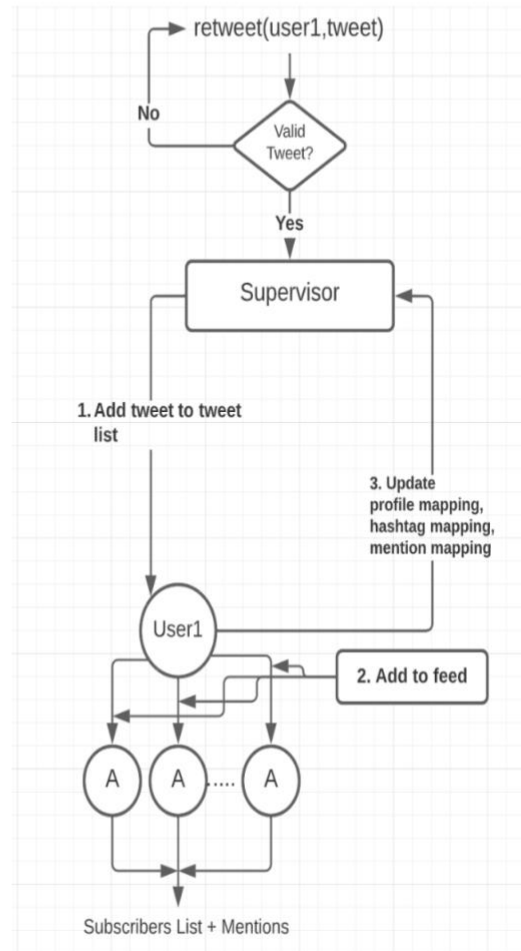Architecture and control flow:

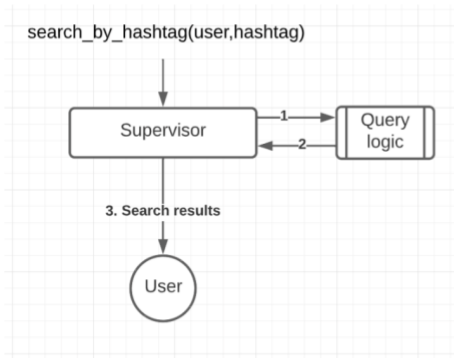# Architecture

Register

Subscribe

Tweet

tweet(user1,tweet)

Supervisor

1. Add tweet to tweet list

3. Update profile mapping, hashtag mapping, mention mapping

User1

2. Add to feed

A   A ..... A

Subscribers List + Mentions

Retweet

retweet(user1,tweet)

No

Valid Tweet?

Yes

Supervisor

1. Add tweet to tweet list

3. Update profile mapping, hashtag mapping, mention mapping

User1

2. Add to feed

A   A ..... A

Subscribers List + Mentions

Query Tweet by hashtag

search_by_hashtag(user,hashtag)

```
Supervisor ──1──▶ Query
           ◀──2── logic

3. Search results
        │
        ▼
      User
```

Query Tweet by hashtag

search_by_mention(user,mention)

```
Supervisor ──1──▶ Query
           ◀──2── logic

3. Query results
        │
        ▼
      User
```

Query Tweet of subscribed user

search_by_subscribe(user,tweet)

```
         ┌──────────────┐
   No────┤ is tweet     │
         │ valid??      │
         └──────────────┘
              Yes
               │
               ▼
        Supervisor ──1──▶ Query
                   ◀──2── logic

        3. Query results
               │
               ▼
             User
```
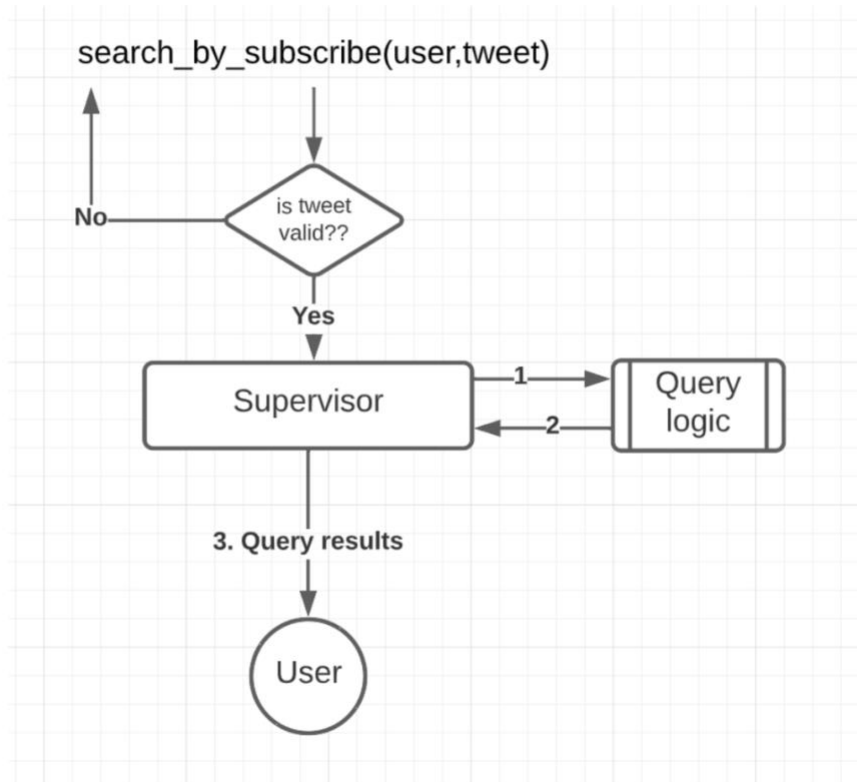
Output:

Terminal Shell Edit View Window Help   Thu Dec 15 9:10 PM

project-4-2 — beam.smp -- -root /opt/homebrew/Cellar/erlang/25.0.4/lib/erlang -bindir /opt/h...
```
TYPE: "query"

 Query: The current username is -> "ronaldo"
Hashtag Search
Sub_UserName: "mbappe"
Word to be searched: "#portugal"
Current Row key: "mbappe"
CurrentTweets: []
FilteredTweets: []
Word to be searched: "#portugal"
Current Row key: "messi"
CurrentTweets: []
FilteredTweets: []
Word to be searched: "#portugal"
Current Row key: "ronaldo"
CurrentTweets: ["welcome\n","worldcup is cooking\n","hi @messi\n",
                "worldcup #portugal\n"]
FilteredTweets: ["worldcup #portugal\n"]
Word to be searched: "#portugal"
Found tweets: ["worldcup #portugal\n"]

 "ronaldo" wants to queryDo Receive
```

project-4-2 — beam.smp -- -root /opt/homebrew/Cellar/erlang/25.0.4/lib/erlang -bin...
```
Your tweet is now posted
Your tweet is now posted
Server processed tweet

Enter the command: query
query
 Querying Options:

  1. My Mentions

  2. Hashtag Search

  3. Tweets of Subscribers

Select a task to perform: 2

Enter the hahstag you want to search: portugal

Received message from server

worldcup #portugal

Enter the command:
```

project-4-2 — beam.smp -- -root /opt/homebrew/Cellar/erlang/25.0.4/lib/erlang -bi...
```
ronaldo:hi @messi

Enter the command: query
query
 Querying Options:

  1. My Mentions

  2. Hashtag Search

  3. Tweets of Subscribers

Select a task to perform: 1

Received message from server

hi @messi

Received message from server

New tweet received! from
ronaldo:worldcup #portugal

Enter the command:
```

project-4-2 — beam.smp -- -root /opt/homebrew/Cellar/erlang/25.0.4/lib/erlang -bindir /opt/ho...
```
subscribe
Enter the user you want to subscribe?:ronaldo

Subscribed!

Received message from server

Subscribed!
Received message from server

New tweet received! from
ronaldo:worldcup is cooking

Received message from server

New tweet received! from
ronaldo:hi @messi

Received message from server

New tweet received! from
ronaldo:worldcup #portugal

Enter the command:
```

Terminal Shell Edit View Window Help   Thu Dec 15 9:07 PM

project-4-2 — beam.smp -- -root /opt/homebrew/Cellar/erlang/25.0.4/lib/erlang -bindir /opt/h...
```
{"mbappe",[{"followers",[]},{"tweets",[]}]}Good to go, Key is not in database
Do Receive


DATA: [<<"tweet">>,<<"ronaldo">>,<<"welcome\n">>]


TYPE: "tweet"

 "ronaldo" sent the following tweet: "welcome\n"Output: [{"ronaldo",[{"followers",[]},{"tweets",[]
}]}]
["welcome\n"]

Output after tweeting: [{"ronaldo",
                        [{"followers",[]},{"tweets",["welcome\n"]}]}]

No followers!
Send message!
Do Receive
```

project-4-2 — beam.smp -- -root /opt/homebrew/Cellar/erlang/25.0.4/lib/erlang -bin...
```
Account Registration done

Received message from server

User registration succesfull
Enter the command: login
login
Enter the User Name: ronaldo
SELF: <0.84.0>

Signed in!

Enter the command: tweet
tweet
What's on your mind?:welcome

Tweet posted

Received message from server

Server processed tweet

Enter the command:
```

project-4-2 — beam.smp -- -root /opt/homebrew/Cellar/erlang/25.0.4/lib/erlang -bi...
```
 Just sent my request to the server


Received message from server

YIP
Enter the command: register
register
Enter the User Name: messi
SELF: <0.84.0>

Account Registration done

Received message from server

User registration succesfull
Enter the command: login
login
Enter the User Name: messi
SELF: <0.84.0>

Signed in!

Enter the command:
```

project-4-2 — beam.smp -- -root /opt/homebrew/Cellar/erlang/25.0.4/lib/erlang -bindir /opt/ho...
```
 Just sent my request to the server


Received message from server

YIP
Enter the command: register
register
Enter the User Name: mbappe
SELF: <0.84.0>

Account Registration done

Received message from server

User registration succesfull
Enter the command: login
login
Enter the User Name: mbappe
SELF: <0.84.0>

Signed in!

Enter the command:
```

Conclusion:

Twitter like engine is successfully implemented using actor model in erlang. The architecture is partly p2p and partly server-client model.

Link for demo video:

https://youtu.be/qKDoWGd-AAA