**DOS COP5615 Project 4**

Key Functionalities:

- Register account
- Send a tweet. Tweets can have hashtags and mentions.
- Subscribe to user's tweets
- Re-tweets
- Query tweets subscribed to, tweets with specific hashtags, tweets in which the user is mentioned
- If the user is connected, the tweets are delivered live (without querying)

Simulator Functionalities:

- The simulator simulates as many users as the input provided
- Periodically, the simulator connects & disconnects users randomly
- The number of subscribers to users are assigned based on zipf distribution. The user with more subscribers tweets more frequently. The frequency is directly proportional to the user's subscribers.

Other Considerations:
- The client part (send/receive tweets) and the engine (distribute tweets) run on separate processes.

RUNNING INSTRUCTIONS:

Go to \Twitter Clone\Twitter Clone

1. Run the Server.fsx file as: dotnet fsi --langversion:preview ServerPerformance.fsx
2. Run the Client.fsx file as: dotnet fsi --langversion:preview ClientPerformance.fsx <no_of_clients> <no_of_requests> eg. dotnet fsi --langversion:preview ClientPerformance.fsx 2000 2000

Performance:

| No of Clients | No of requests | Average time per tweet(ms) | Average time per mention query(ms) | Average time per subscribed query(ms) | Average time per hashtag query(ms) |
|---|---|---|---|---|---|
| 500 | 500 | 4.244939 | 11.994253 | 4.244939 | 13.303797 |
| 1000 | 1000 | 6.867560 | 18.934156 | 6.867560 | 17.837209 |
| 2000 | 2000 | 145.804178 | 431.713918 | 145.804178 | 452.716216 |