Social Networking System

DBMS Assignment 4

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Contents

Chapter 1

User Interface Design for Front End

1.1 Language Choice

The front end of the application was created in Python via Streamlit. PyMongo was used in order to connect the created frontend to the existing MongoDB database, while ngrok and SimpleHTTPServer were used for deployment across machines.

1.2 Dependencies Installed

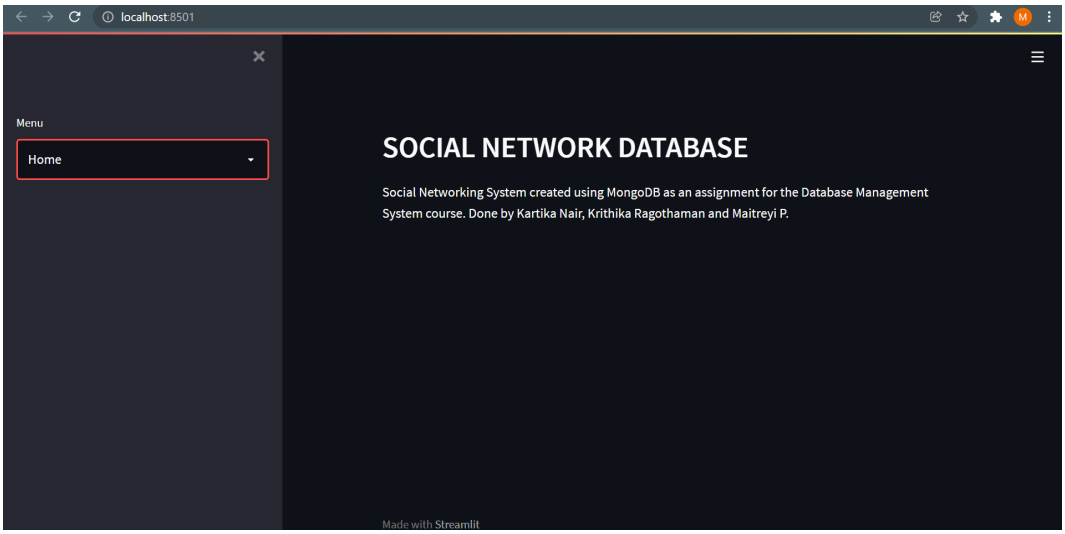
The prerequisite installations for this application include,

- MongoDB Compass
- ngrok
- PyMongo 3.12.1
- Python 3.9
- SimpleHTTPServer
- Streamlit

1.3 Statements executed from front end

1.3.1 Landing Page

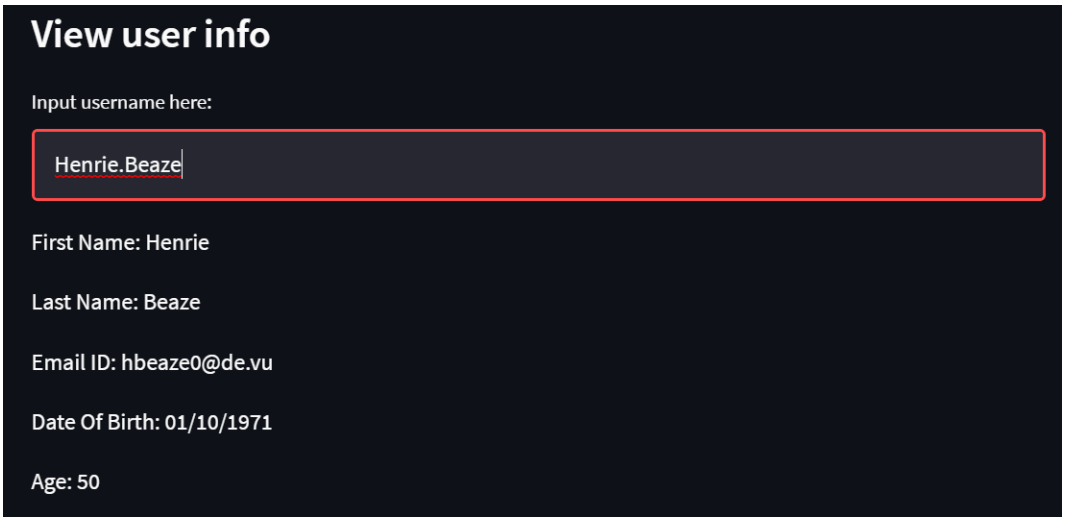
The landing page of the website,



1.3.2 User

View all users,

View a user's information,



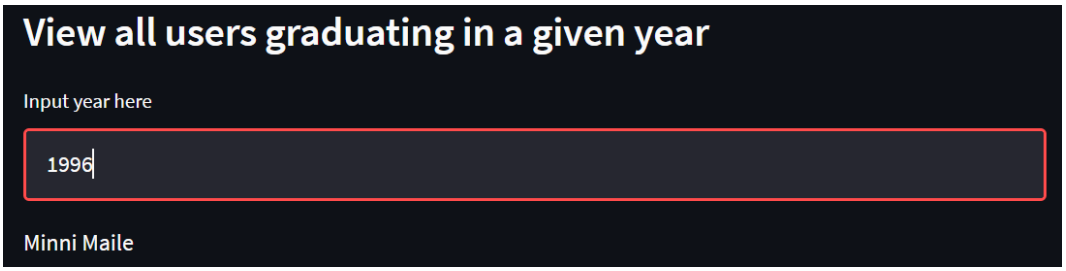
View all users under a certain age,

1.3.3 User Home

View all users in a certain country,

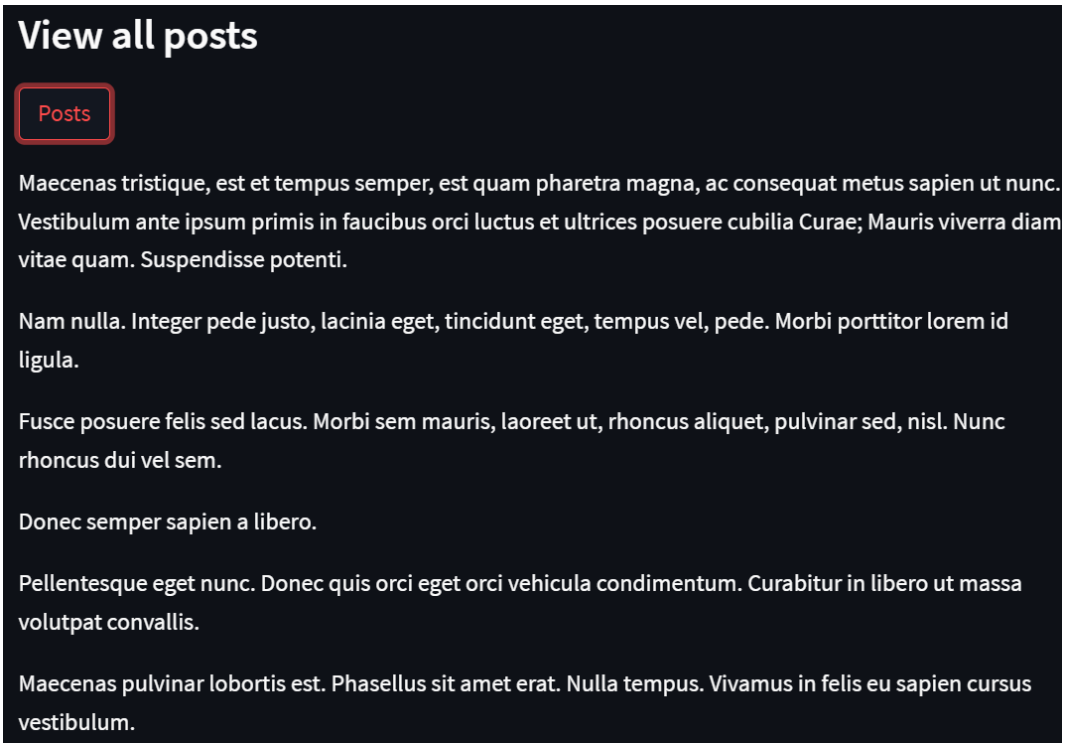
1.3.4 Education

View all users who graduated in a certain year,

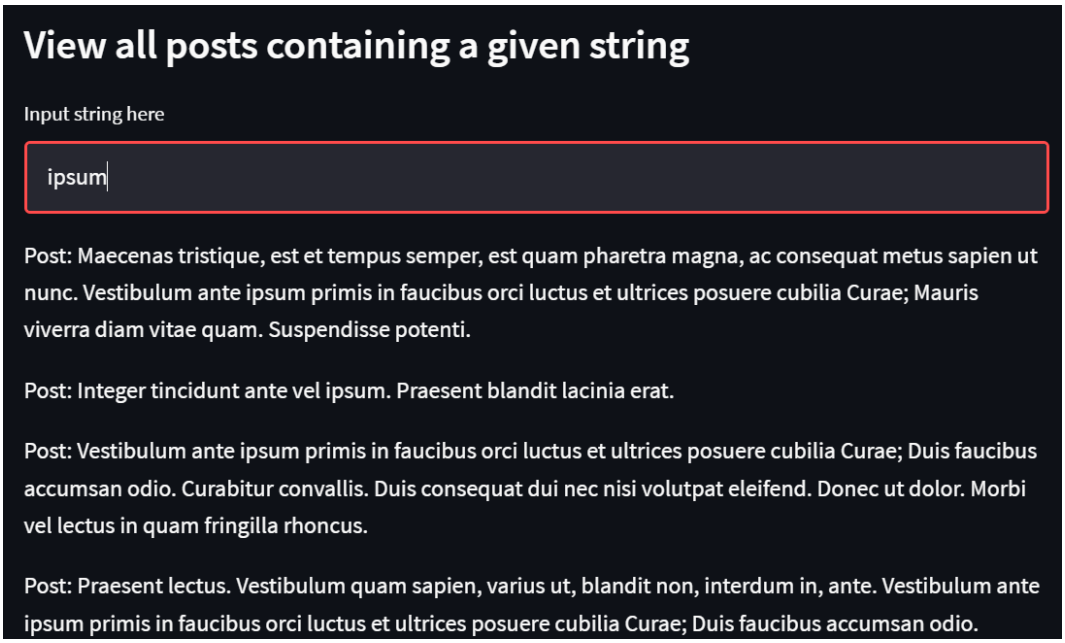


1.3.5 Posts

View all posts,

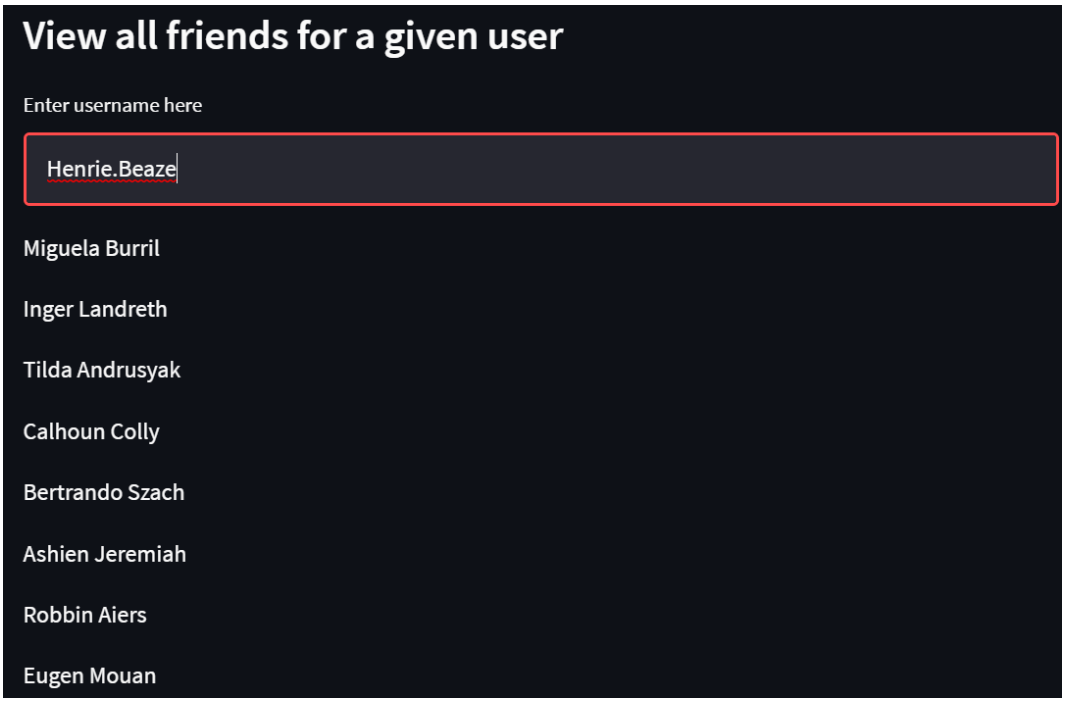


View all posts containing a certain substring,



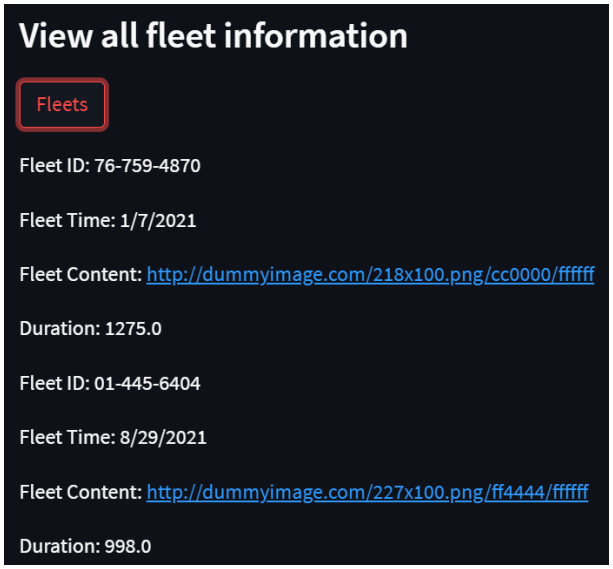
1.3.6 Friends

View all friends for a user,

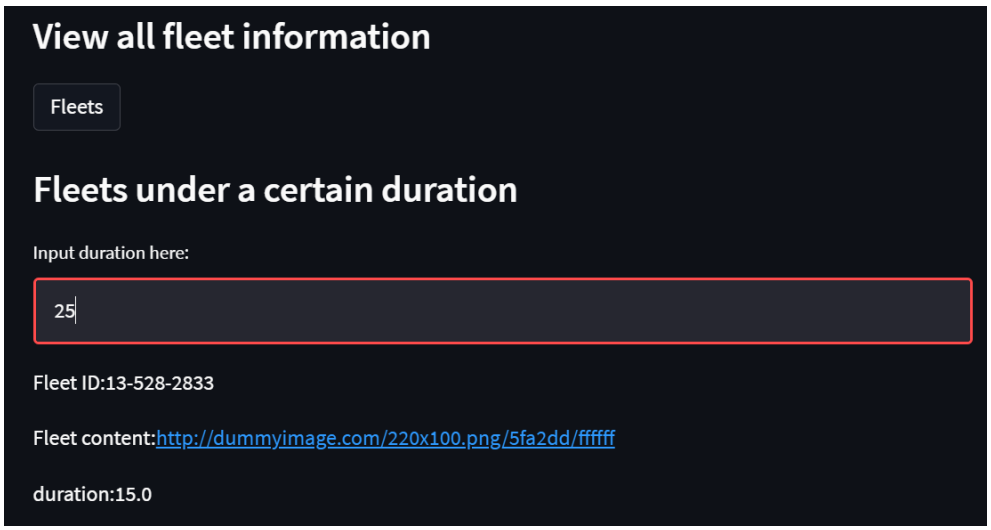


1.3.7 Fleets

View all fleets,



View all fleets under a certain duration,



Chapter 2

Additional queries

2.1 Changes in constraints and schema

The following changes can be made to the existing schema and constraints,

- Make 'Education' a composite attribute under 'User Home', in place of a separate entity
- Instead of including a user's friends as a separate external relationship, assign a list of friends to each user
- Make 'Post Likes' a composite attribute under 'Posts', in place of a separate entity
- Make 'Reply Likes' a composite attribute under 'Replies', in place of a separate entity

2.2 Schema change statements

Making 'Education' a composite attribute under 'User Home',

```
C:\Users\User\Desktop\DBMS>db.User_Home.update({"_id" : ObjectID("617398d4ce3cd7dfabac3326")}),
 {$set : {"Education":1}}
```

Dropping entity 'Education',

```
C:\Users\User\Desktop\DBMS>db.Education.drop()
```

Making 'Post Likes' a composite attribute under 'Posts',

```
C:\Users\User\Desktop\DBMS>db.Posts.update({"_id" : ObjectID("617398d4ce3cd7dfabac3327")}),
 {$set : {"Post_Likes":1}}
```

Dropping entity 'Post Likes',

```
C:\Users\User\Desktop\DBMS>db.Post_Likes.drop()
```

Making 'Reply Likes' a composite attribute under 'Replies',

```
C:\Users\User\Desktop\DBMS>db.Replies.update({"_id" : ObjectID("617398d4ce3cd7dfabac3327")}
), {$set : {"Reply_Likes":1}}
```

Dropping entity 'Reply Likes',

```
C:\Users\User\Desktop\DBMS>db.Reply_Likes.drop()
```

Chapter 3

Database Migration and Support

3.1 Changes in Application or Expansion

The schema may need to be altered in the following ways owing to expansion of use of the application,

- Include all users in a mapped format rather than individually include each user in the 'Friends' entity
- Include a provision for time-out of fleets

The application may need to be altered in the following ways owing to expansion of use of the application,

- Provision for logging in and logging out
- Allow users to add or remove friends
- Allow users to add or remove posts

3.2 Migration to alternative DBMS

3.2.1 NoSQL

Another NoSQL variety, such as **Neo4j**, may be chosen for the following reasons,

- Graphical representation of entities
- Allows for mapping of users
- Allows for evaluation of hops between users

3.2.2 Relational DBMS

A relational DBMS, such as **MySQL**, may be chosen for the following reasons,

- More structure for the application
- Supports many one-to-one and one-to-many relationships
- Easier to edit existence of records

Chapter 4

Contributions

1. Kartika Nair - PES1UG19CS213
    - User Interface Design for Front End, Additional queries and Database Migration and Support, Report
    - Hours Spent - 9
2. Krithika Ragothaman - PES1UG19CS231
    - User Interface Design for Front End, Additional queries and Database Migration and Support
    - Hours Spent - 9
3. Maitreyi P - PES1UG19CS254
    - User Interface Design for Front End, Additional queries and Database Migration and Support
    - Hours Spent - 9