

Social Networking System

DBMS Assignment 4

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Database Management Systems (UE19CS301)

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Contents

1	User Interface Design for Front End	2
1.1	Language Choice	2
1.2	Dependencies Installed	2
1.3	Statements executed from front end	3
1.3.1	Landing Page	3
1.3.2	User	4
1.3.3	User Home	6
1.3.4	Education	7
1.3.5	Posts	7
1.3.6	Friends	9
1.3.7	Fleets	10
2	Additional Queries	11
2.1	Changes in constraints and schema	11
2.2	Schema change statements	11
3	Database Migration and Support	14
3.1	Changes in Application or Expansion	14
3.2	Migration to alternative DBMS	15
3.2.1	NoSQL	15
3.2.2	Relational DBMS	15
4	Contributions	16

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

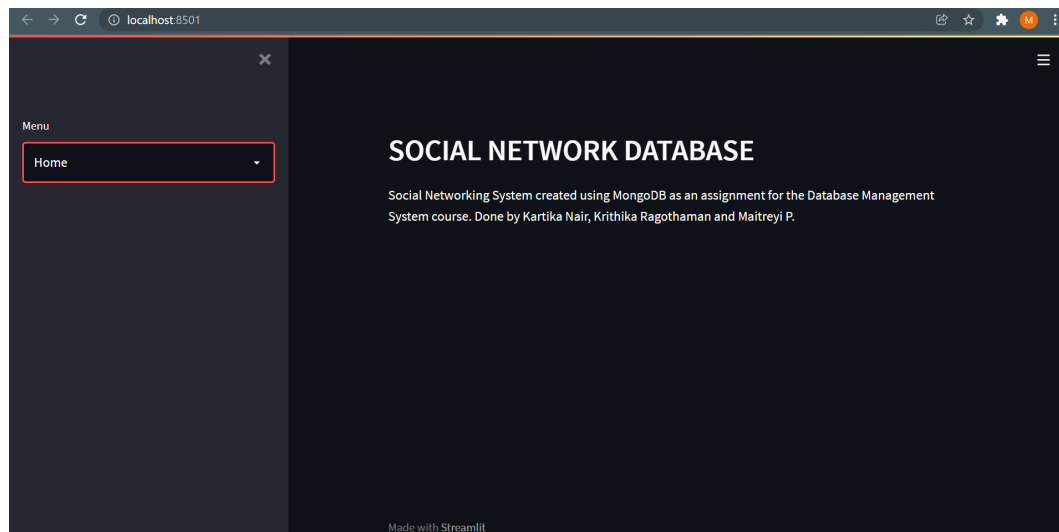
The prerequisite installations for this application include,

- 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 user info

Input username here:

First Name: Henrie

Last Name: Beaze

Email ID: hbeaze0@de.vu

Date Of Birth: 01/10/1971

Age: 50

View all users under a certain age,

Users under a certain age

Input age here:

Robbin Aiers

Stoddard Anersen

Phelia Lapley

Murielle Stook

Winnah Steffan

Jon Arnatt

Ferne Dulling

Kristofer Ghiriardelli

Remy MacCafferty

1.3.3 User Home

View all users in a certain country,

View users in a given country

Input country here:

User ID: DBRef('User', ObjectId('617398d4ce3cd7dfabac332c'))

User ID: DBRef('User', ObjectId('618a355891e3d5b41c6c55e6'))

1.3.4 Education

View all users who graduated in a certain year,

View all users graduating in a given year

Input year here

Minni Maile

1.3.5 Posts

View all posts,

View all posts

Posts

Maecenas tristique, est et tempus semper, est quam pharetra magna, ac consequat metus sapien ut nunc. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Mauris viverra diam vitae quam. Suspendisse potenti.

Nam nulla. Integer pede justo, lacinia eget, tincidunt eget, tempus vel, pede. Morbi porttitor lorem id ligula.

Fusce posuere felis sed lacus. Morbi sem mauris, laoreet ut, rhoncus aliquet, pulvinar sed, nisl. Nunc rhoncus dui vel sem.

Donec semper sapien a libero.

Pellentesque eget nunc. Donec quis orci eget orci vehicula condimentum. Curabitur in libero ut massa volutpat convallis.

Maecenas pulvinar lobortis est. Phasellus sit amet erat. Nulla tempus. Vivamus in felis eu sapien cursus vestibulum.

View all posts containing a certain substring,

View all posts containing a given string

Input string here

Post: Maecenas tristique, est et tempus semper, est quam pharetra magna, ac consequat metus sapien ut nunc. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Mauris viverra diam vitae quam. Suspendisse potenti.

Post: Integer tincidunt ante vel ipsum. Praesent blandit lacinia erat.

Post: Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Duis faucibus accumsan odio. Curabitur convallis. Duis consequat dui nec nisi volutpat eleifend. Donec ut dolor. Morbi vel lectus in quam fringilla rhoncus.

Post: Praesent lectus. Vestibulum quam sapien, varius ut, blandit non, interdum in, ante. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Duis faucibus accumsan odio.

1.3.6 Friends

View all friends for a user,

View all friends for a given user

Enter username here

Henrie.Beaze

Miguela Burril

Inger Landreth

Tilda Andrusyak

Calhoun Colly

Bertrando Szach

Ashien Jeremiah

Robbin Aiers

Eugen Mouan

1.3.7 Fleets

View all fleets,

View all fleet information

Fleets

Fleet ID: 76-759-4870

Fleet Time: 1/7/2021

Fleet Content: <http://dummyimage.com/218x100.png/cc0000/ffffff>

Duration: 1275.0

Fleet ID: 01-445-6404

Fleet Time: 8/29/2021

Fleet Content: <http://dummyimage.com/227x100.png/ff4444/ffffff>

Duration: 998.0

View all fleets under a certain duration,

View all fleet information

Fleets

Fleets under a certain duration

Input duration here:

25

Fleet ID:13-528-2833

Fleet content:<http://dummyimage.com/220x100.png/5fa2dd/ffffff>

duration:15.0

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',

```
MongoDB Enterprise > db.User_Home.updateOne({"_id" : ObjectId("61758d2bf1ab2720ac217128")}, {$set : {"grad_year" :1993, "institute":"PESU"}})
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
MongoDB Enterprise > _
```

Dropping entity 'Education',

```
MongoDB Enterprise > db.Education.drop()
true
MongoDB Enterprise > show collections
Fleets
Friends
Post_Likes
Posts
Replies
Reply_Likes
User
User_Home
MongoDB Enterprise >
```

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

```
MongoDB Enterprise > db.Posts.updateOne({"_id" : ObjectId("6173bbf3ce3cd7dfabac333c")}, {$set : {"liker_id":["617398d4ce3cd7dfabac332e","617398d4ce3cd7dfabac332d","617398d4ce3cd7dfabac332c"],"post_likes":3}})
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
MongoDB Enterprise >
```

Dropping entity 'Post Likes',

```
MongoDB Enterprise > db.Post_Likes.drop()
true
MongoDB Enterprise > show collections
Education
Fleets
Friends
Posts
Replies
Reply_Likes
User
User_Home
MongoDB Enterprise > _
```

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

```
MongoDB Enterprise > db.Replies.updateOne({"_id" : ObjectId("61756d3df1ab2720ac21710a")}, {$set : {"liker_id":["617398d4ce3cd7dfabac332e","617398d4ce3cd7dfabac332d","617398d4ce3cd7dfabac332c"],"reply_likes":3}})
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
MongoDB Enterprise >
```

Dropping entity 'Reply Likes',

```
MongoDB Enterprise > db.Reply_Likes.drop()
true
MongoDB Enterprise > show collections
Education
Fleets
Friends
Posts
Replies
User
User_Home
MongoDB Enterprise > _
```

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, 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