## **Project Report : OINGO**

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## **Introduction**

Oingo is a system of textual notes that are visible at a certain location for a certain time range. Every user can create these notes for a certain audience (class) like friends, everyone, or self. These notes can be advertisements, reminders for future or notification notes for friends nearby etc. Every note is associated with certain tags that convey the essence of the note like #shopping, #me or #mustvisit.

The audience gets to decide which notes will they see by uploading filters on location, time, state, class and tags. A single user can upload several filters like the following:

- 1. Show me notes with tag #fitness from anyone when I am at New York Gym, everyday from 6am to 7am.
- 2. Show me notes with tag #food from friends when my state is 'lunch break'
- 3. Show me a reminder note of visiting hospital for a check-up on 28th December, 2018.

We have created a relational schema that can manage such a system.

### **Relational Schema**

note(noteid,text,commentenabled,time,uid,lid,sid,note\_radius,class)

noteTag(noteid,tag)

**userFilter**(<u>fid</u>,uid,lid,rad,sid,class,tag,state)

friendship(uid,friendid)

friendrequest (uid, requestuser, action) (Added)

comment(cid.ctext,uid,noteid,time)

user(uid,uname,pwd,email)

location(lid,lname,lat,lon)

**history**(<u>hid</u>,uid,lid,state,time)

**schedule**(<u>sid.</u>starttime,endtime,startdate,enddate,repetition) (Modified)

### **Constraints**

1. note table

Primary key :noteid

Foreign key: lid references location(lid)

sid references schedule(sid) uid references user(uid)

noteTag table

Primary key :noteid,tag

Foreign key: noteid references note(noteid)

3. userFilter table

Primary key:fid

Foreign key: uid references user(uid)

lid references location(lid)

sid references schedule(sid)

4. friendship table

Primary key :uid,friendid

Foreign key: uid references user(uid)

Friendid references user(uid)

5. comment table

Primary key :cid

Foreign key: uid references user(uid) noteid references note(noteid)

6. user table

Primary key :uid

7. location table

Primary key :lid

8. history table

Primary key: lid

Foreign key: uid references user(uid)

lid references note(noteid)

9. schedule table

Primary key:sid

10. friendrequest table

Foreign key: uid references user(uid)

requestuser references user(uid)

## Sample Data

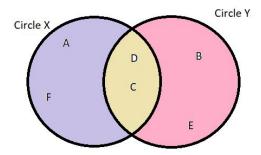
Sample data is such that few users are within the radius of notes. Few users have location outside of the radius of any note.

#### For instance:

If a note is created for location with name SOHO, then it is ensured that one of the users has location SOHO\_near with distance from SOHO less than the note\_radius.

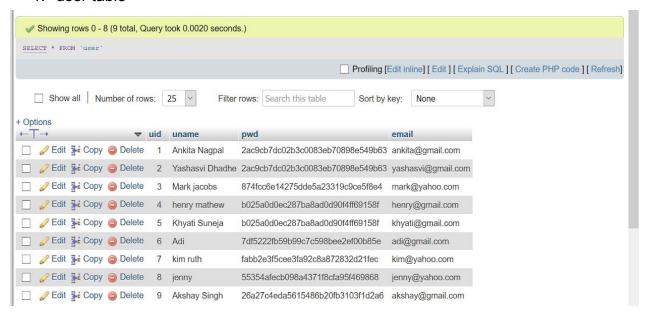
Similarly the locations are created like
Exchange Place and Exchange place harbour
NYU Tandon and 2 metrotech-NYU Tandon

Data can be depicted in the form of following venn diagram.

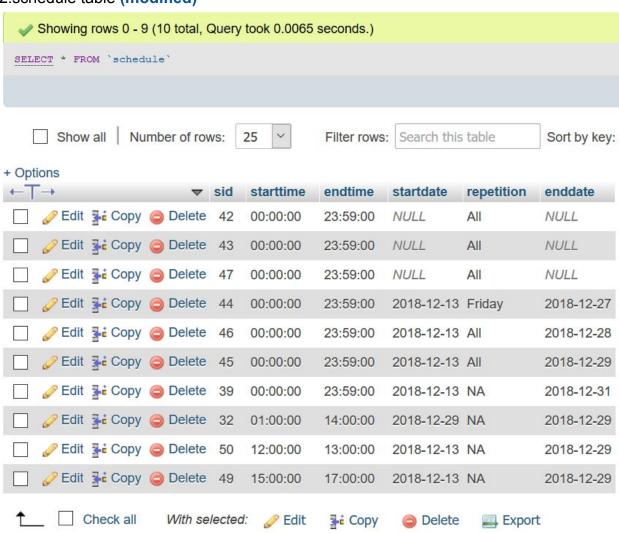


Circle X represents location of notes. Circle Y represents location of filters. A, B, C, D, E, F are users. C and D are users that satisfy location condition of note as well as their filter. A and F are near notes but they don't satisfy their filter condition on location. B and E are near near location conditions of their filters but they don't satisfy note's condition on location.

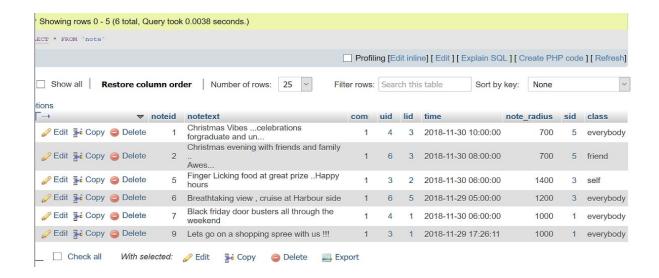
#### 1. user table



## 2.schedule table (modified)



### 3. note table



## 4. notetag table



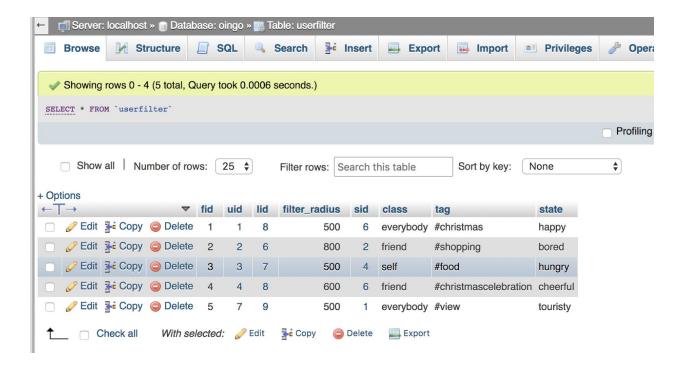
#### 5.comment table



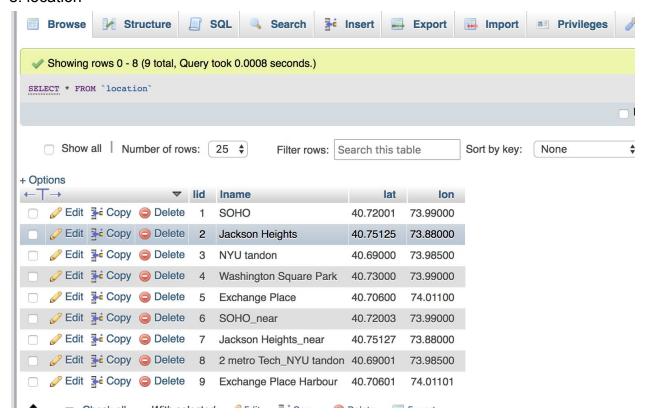
## 6.friendship table



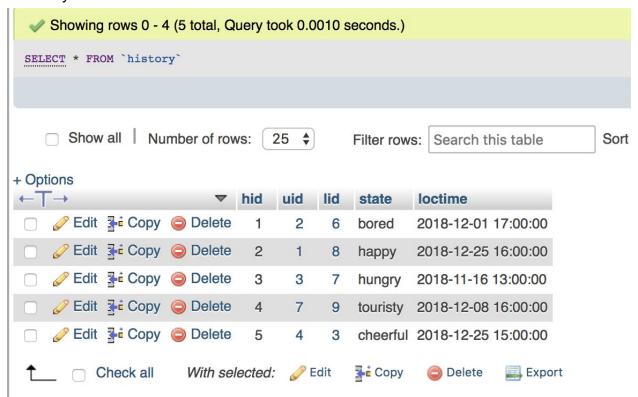
### 7.userfilter table



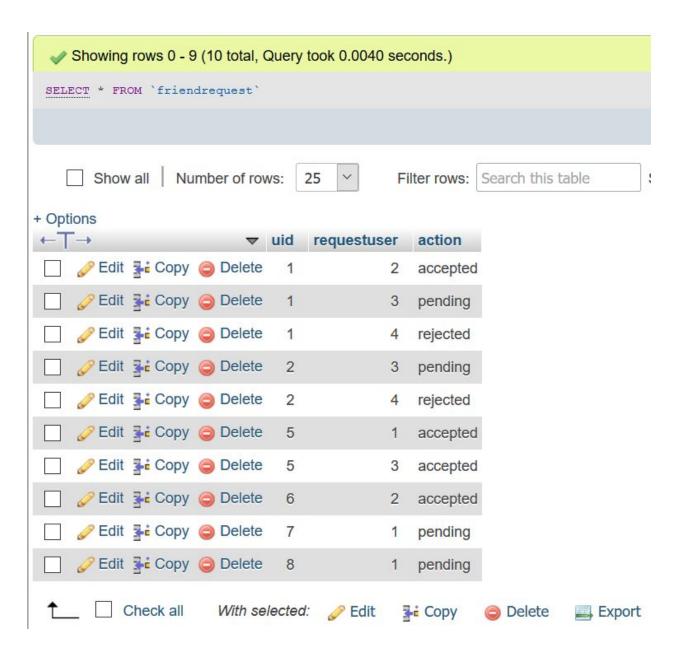
#### 8. location



## 9. history



10. friendrequest (added)



## **Default Values**

Column	Default value			
class	everybody			
commentenabled	true			
text	Hello, world			
tag	happy			

## Sample of supported schedules

- Next half hour
- 2. On 21st dec. 2019
- 3. Every friday between 5pm and 7pm
- 4. Always
- 5. Everyday between 11pm and 12am
- 6. 2pm to 3pm on 31st Dec, 2018
- 7. From 23rd Dec to 25th Dec from 5pm to 9pm (Now Supported)

### **Description of design (includes assumptions)**

#### **Users and notes**

- 1. A user can author multiple notes.
- 2. A note can be authored by a single user.
- 3. There are few users in the system who haven't yet written any notes.

#### **Notes and comments**

- 4. A note can have several comments on it.
- 5. A specific comment is only linked to a single specific note.
- 6. Comment cannot exist without a note. Hence comment table has total participation in relation (is for) with note table.
- 7. A comment cannot exist without a user who posts it. Hence comment table has total participation in relation (post) with user table.
- 8. A user can write multiple comments.
- 9. A comment can only be written by a single user.

#### Friendship

10. (Friend) is a recursive relationship set. A user can have several other users that are related to him as friends.

#### **Notes and Schedule**

- 11. A note is associated to a single schedule.
- 12. A single schedule can be there for several notes.
- 13. A note cannot exist without a schedule.

#### **Notes and Location**

- 14. A note is associated to a single location.
- 15. A specific location can be there for several notes.
- 16. A note cannot exist without a location hence note has total participation in (is for).

#### **History**

- 17. A history tuple is associated to a single location.
- 18. A specific location can be there for several history tuples.
- 19. A history tuple cannot exist without a location hence history has total participation in (is linked to).
- 20. A history tuple is associated to a single user.
- 21. A specific user can be there in several history tuples.

22. A history tuple cannot exist without a user hence history has total participation in (is of).

#### Filter

- 23. A filter can be associated with a single location and/or a single schedule.
- 24. A filter cannot exist without a user (who uploads it) hence filter has total participation in (uploaded by).
- 25. A filter is uploaded by a single user.
- 26. A user can upload multiple filters.

### Notes/Filters and tags

- 27. A note can have several tags associated with it.
- 28. A filter can have only one tag associated with it for simplicity.

### **Functions**

We are using function checkdistance() to calculate distance between two locations whose latitude and longitude are given. This function returns distance in yards.

Reference: stackoverflow

**DELIMITER \$\$** 

CREATE DEFINER=`root`@`localhost` FUNCTION `checkdistance` (`lat1` FLOAT(9,5), `lon1` FLOAT(9,5), `lat2` FLOAT(9,5), `lon2` FLOAT(9,5)) RETURNS FLOAT NO SQL

**DETERMINISTIC** 

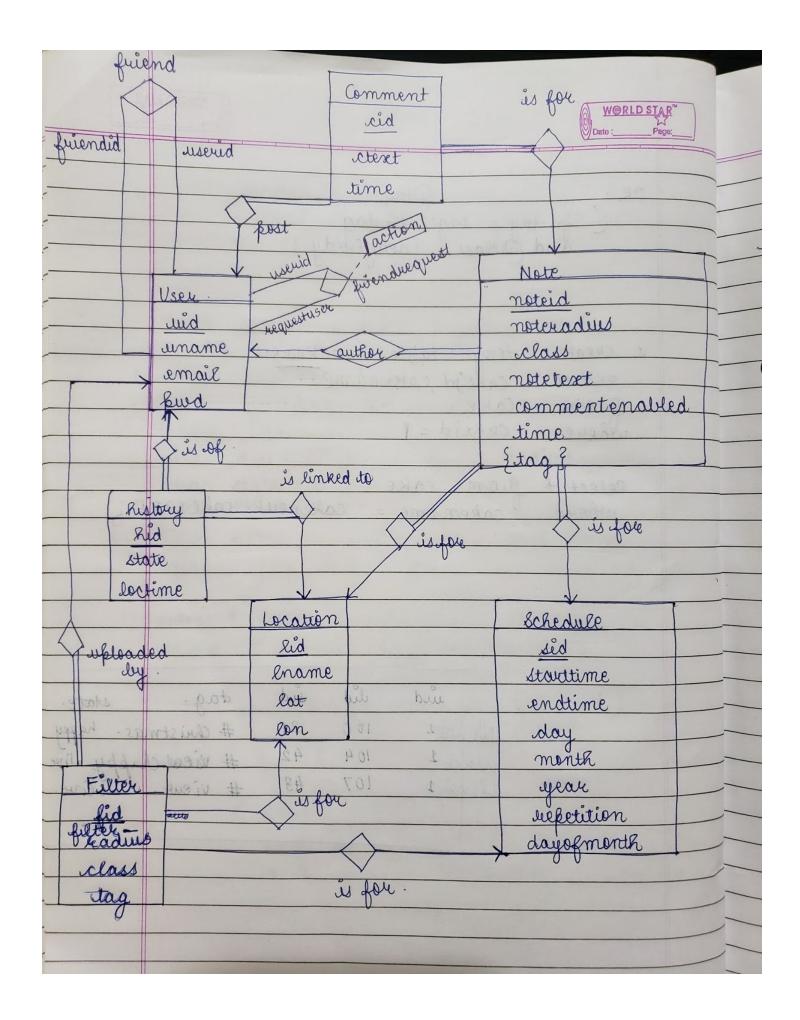
COMMENT 'Returns the distance in degrees on the Earth between two known points of latitude and longitude. To get miles, multiply by 3961, and km by 6373' BEGIN

```
RETURN (1093*6373 *DEGREES(ACOS(
COS(RADIANS(lat1)) *
COS(RADIANS(lat2)) *
COS(RADIANS(lon2) - RADIANS(lon1)) +
SIN(RADIANS(lat1)) * SIN(RADIANS(lat2))
)));
```

END\$\$

**DELIMITER**;

**Entity Relationship Diagram (modified)** 



### **Limitations of schedules**

Schema does not support schedules like the following:

- 1. Every mondays and thursdays from 5pm to 7pm.
- 2. Easter Sunday
- 3. Second thursday of each month

## Using the oingo App

We have login page and sign-up page for existing users and new users respectively.

When a person is registering following are checked:

- 1. Username is unique
- 2. Email is unique
- 3. Password and Confirm Password Match

A logged in user has the option to

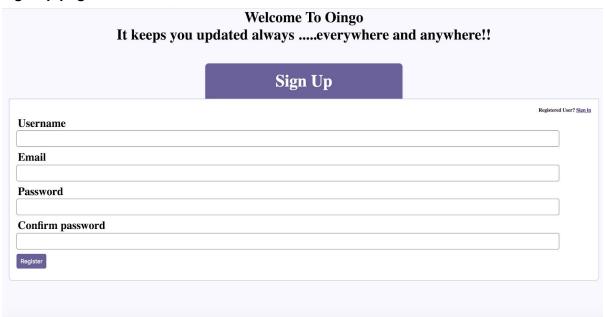
- 1. View notes and post comment on them is comments are enabled.
- 2. Add notes for a location and schedule,
- 3. add filter.
- 4. view users using the oingo app,
- 5. See friend requests(if any) and accept/reject them,
- 6. update his/her profile.

User sees notes on the homepage based on the filters he/she has added and based on the notes visible at that time and at that location.

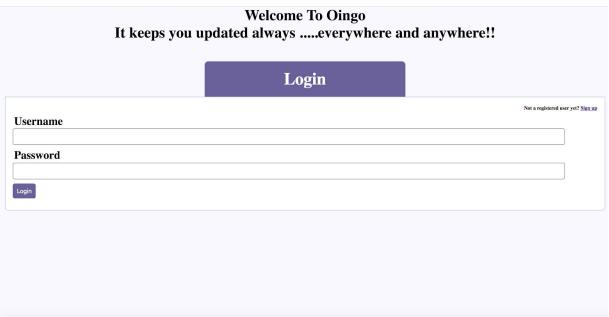
User can select any location on the map, and the app will automatically pick up the coordinates for that location.

## **Application Screens**

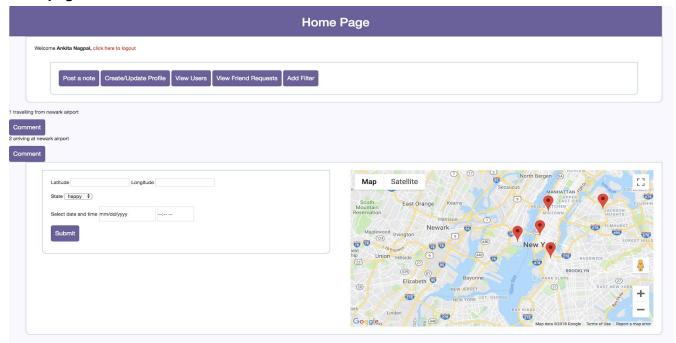
## 1. Sign Up page



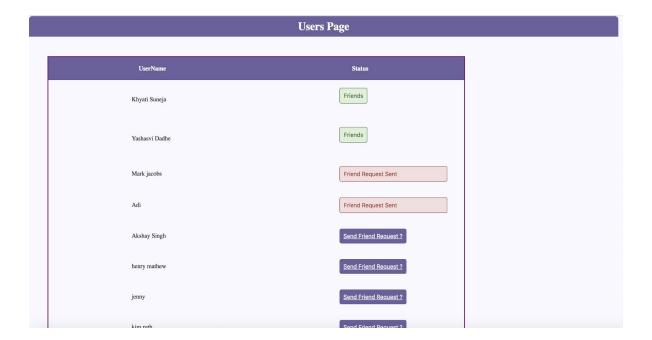
## 2. Login page



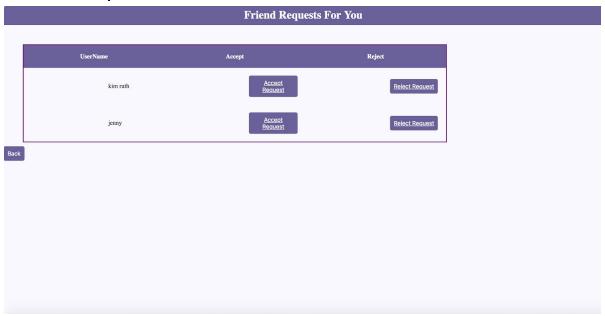
## 3. Homepage



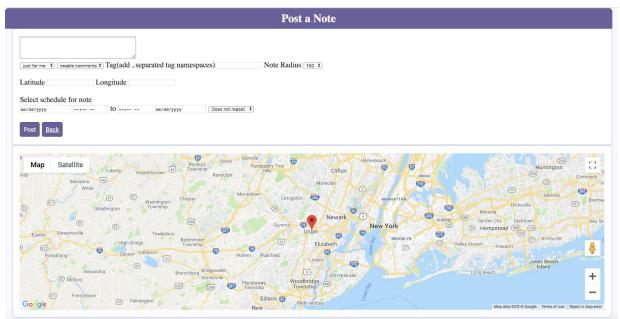
### 4. View Users



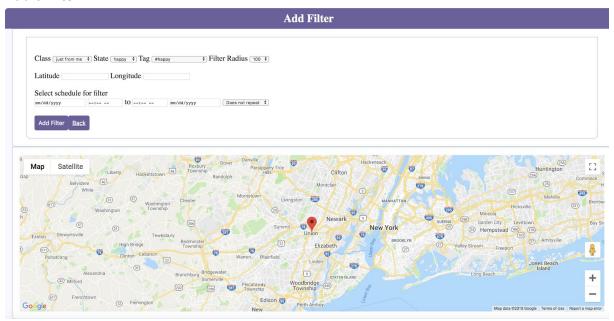
## 5. View Friend Requests



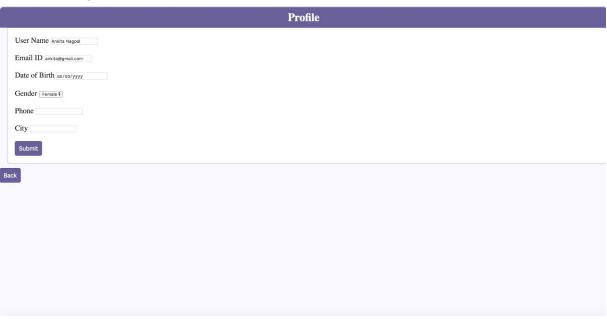
### 6. Post a note



### 7. Add a filter



## 8. Create/Modify Profile



#### 9. Add comment



### Queries

1. Create a new user account, with name, login, and password

Insert into user(uname,pwd,email) values ("Akshay Singh", MD5("Password10"),"akshay@gmail.com")



2. Add a new note to the system, together with tags, and spatial and temporal constraints.

Insert into note (noteid, notetext, commentenabled, time,uid, lid, note\_radius, sid, class) values ( NULL, "Lets go on a shopping spree with us !!!", 1,CURRENT\_TIMESTAMP, 3, 1, 1000, 1,'everybody');



3. For a given user, list all her friends.

If we are given the user's id, Let the id of given user be 2:

Select uid, uname
From user as u
Where uid in ( select friendid
From friendship as f
Where f.uid= 2)



If we are given user name, Let the name of given user be Adi: Select friendid, u.uname
From user join friendship on user.uid = friendship.uid
join user as u on friendship.friendid = u.uid
where user.uname = 'Adi'



4. Given a user and her current location, current time, and current state, output all notes that she should currently be able to see given the filters she has set up.

# currently be able to see given the filters she has set up. Input: Userid: 7 Current location: Exchange Place Harbour Current time: 2018-11-24 15:30:00 Current state: alive Query: set @I1 := (select lat from location where Iname = 'Exchange Place Harbour'); set @I2 := (select Ion from location where Iname = 'Exchange Place Harbour'); set @ctime = '2018-12-29 14:30:00'; set @cstate = 'alive'; set @uid = 7; create temporary table vn select \* from note natural join location natural join schedule where checkdistance(@I1,@I2,lat,lon) <= note radius and (dayname(@ctime) = day or day = 'All') and (time(@ctime) <=endtime and time(@ctime) >=starttime) and ( (month(@ctime) = month and year(@ctime) = year and dayofmonth(@ctime)=dayofmonth) or repetition = 'Yes' ); create TEMPORARY table fn1 select \* from vn natural join friendship where vn.class= 'self' and vn.uid = @uid; create TEMPORARY table fn2 select \* from vn natural join friendship where vn.class= 'friend' and friendship.friendid = @uid; create TEMPORARY table fn3 select \* from vn natural join friendship where vn.class= 'everybody'; create temporary table fn4 select \* from fn1 union (select \* from fn2) union (select \* from fn3); Set @tag = (select tag from userfilter NATURAL JOIN location NATURAL JOIN schedule where checkdistance(@I1,@I2,lat,lon) <= filter radius and(dayname(@ctime) = day or day = 'All') and (time(@ctime) <=endtime and time(@ctime) >=starttime) and

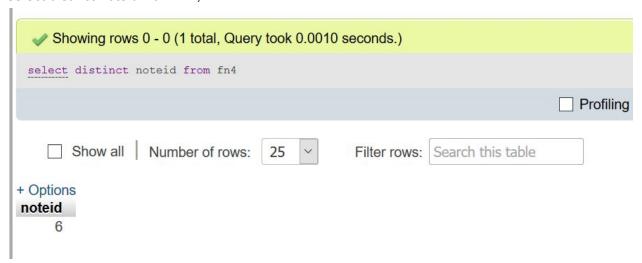
dayofmonth(@ctime)=dayofmonth) or repetition = 'Yes' ) and uid = @uid and state = @cstate);

( (month(@ctime) = month and year(@ctime) = year and

```
Set @class = (select class from userfilter NATURAL JOIN location NATURAL JOIN schedule where checkdistance(@l1,@l2,lat,lon) <= filter_radius and(dayname(@ctime) = day or day = 'All') and (time(@ctime) <=endtime and time(@ctime) >=starttime) and ( (month(@ctime) = month and year(@ctime) = year and dayofmonth(@ctime)=dayofmonth) or repetition = 'Yes' ) and uid = @uid and state = @cstate);

select * from fn4 NATURAL JOIN notetag where tag = @tag and @class ='self' and uid = @uid or tag = @tag and @class ='friend' and friendid = @uid or tag = @tag and @class ='everybody';
```

select distinct noteid from fn4:



5. Given a note (that maybe was just added to the system) and the current time, output all users that should currently be able to see this note based on their filter and their last recorded location.

#### Input:

noteid =7, node tag = #shopping, node author = 4 and current time =2018-11-24 16:00:00

#### Query:

```
set @ctime = '2018-11-24 16:00:00 ';
set @givennote = 7;
set @tag = '#shopping';
set @noteauthor= 4;
```

Create Temporary Table latest\_location\_users SELECT uid, lid,lat,lon,state, loctime FROM history natural join location

```
WHERE (uid, loctime )
IN ( SELECT uid, MAX( loctime )
FROM history GROUP BY uid );
```

Create Temporary Table tagclass Select \* From latest\_location\_users as t1 natural join userfilter as t2 NATURAL join location as t3 natural join schedule where checkdistance(t1.lat,t1.lon,t3.lat,t3.lon) <= filter\_radius and (dayname(loctime) = day or day = 'All') and (time(loctime) <=endtime and time(loctime) >=starttime) and ( (month(loctime) = month and year(loctime) = year and dayofmonth(loctime)=dayofmonth) or repetition = 'Yes') and t1.state = t2.state;

#### select \*

from tagclass as t1

where (class='everybody' and t1.tag=@tag)OR

(class='self' and t1.uid=@noteauthor and t1.tag=@tag) OR

(class='friend' and @noteauthor in (select friendid from friendship where uid=t1.uid) and t1.tag=@tag);



6. In some scenarios, in very dense areas or when the user has defined very general filters, there may be a lot of notes that match the current filters for a user. Write a query showing how the user can further filter these notes by inputting one or more keywords that are matched against the text in the notes using the contains operator.

#### Input:

Keyword1 = 'view' Keyword2 = 'side'

#### Query:

Execute queries in 5.

Create temporary table additionalfilter

Select distinct noteid from fn4;

Select \* from additionalfilter natural join note Where notetext like '%view%' and notetext like '%side%'

	<b>.</b>	*								
Select * from additionalfilter natural join note Where notetext <u>like</u> '%view%' and notetext <u>like</u> '%side%'										
☐ Profiling [Edit inline] [ Edit ] [ Explain SQL ] [ Create F										
	Show all   Number of rows: 25	Filter rows: Search	h this table							
+ Options	8									
noteid	notetext	commentenabled	notetime	uid	lid	note_radius	sid	class		
6	Breathtaking view , cruise at Harbour side	1	2018-11-29 05:00:00	6	5	1200	3	everybody		