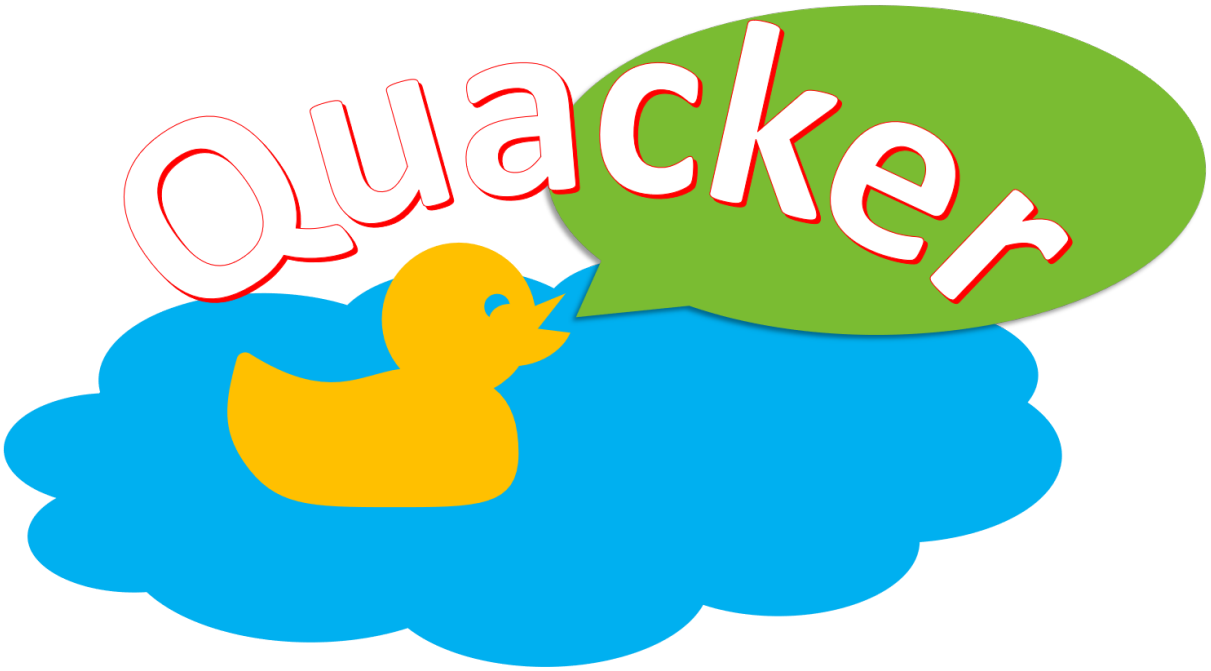
University of Puerto Rico, Mayagüez Campus
Department of Electrical and Computer Engineering



Project Phase 3

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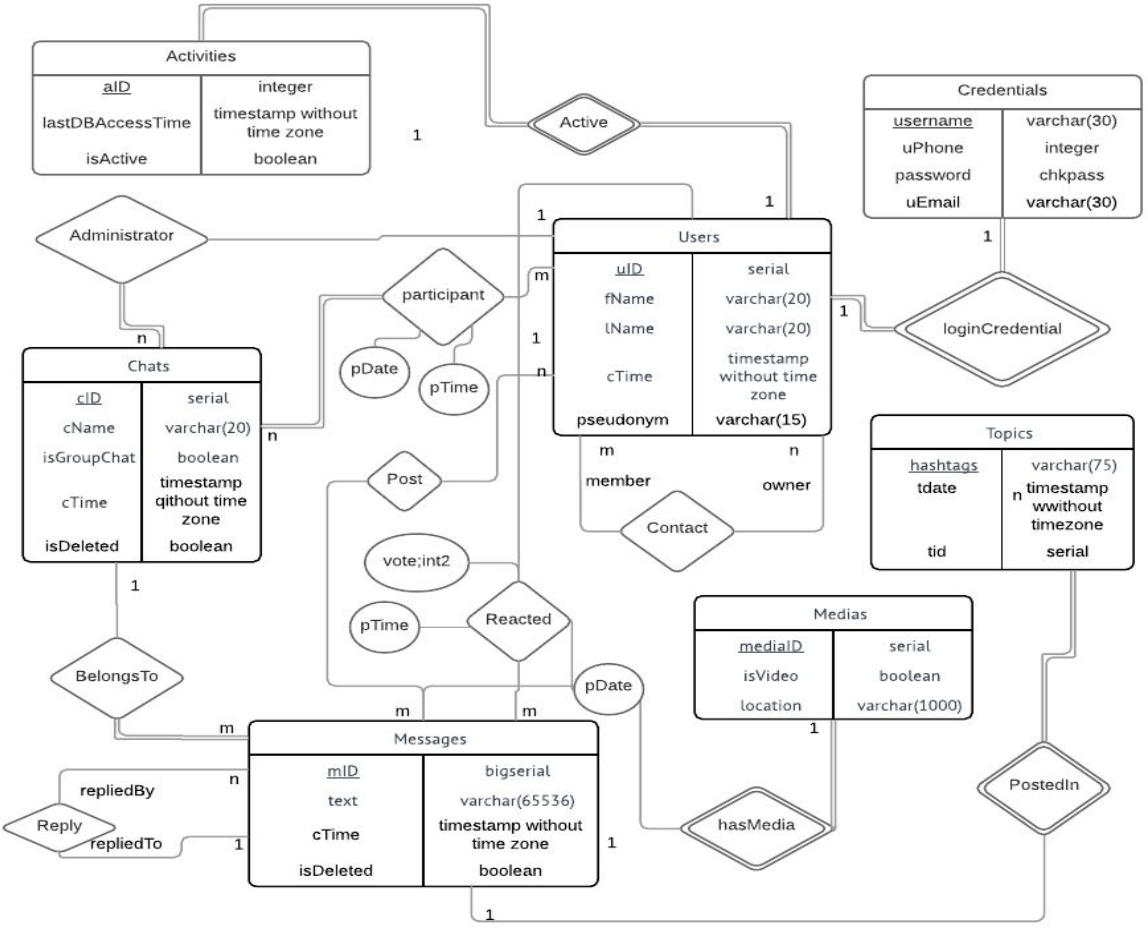
I. ER Diagram


Activities
aID
integer
lastDBAccessTime
timestamp without time zone
isActive
boolean
Active
Credentials
username
varchar(30)
uPhone
integer
password
chkpass
uEmail
varchar(30)
Administrator
Users
uID
serial
fName
varchar(20)
lName
varchar(20)
cTime
timestamp without time zone
pseudonym
varchar(15)
participant
loginCredential
pDate
pTime
Chats
cID
serial
cName
varchar(20)
isGroupChat
boolean
cTime
timestamp qithout time zone
isDeleted
boolean
Post
member
owner
Contact
Topics
hashtags
varchar(75)
tdate
timestamp wwithout timezone
tid
serial
vote;int2
pTime
Reacted
pDate
BelongsTo
Medias
mediaID
serial
isVideo
boolean
location
varchar(1000)
Messages
mID
bigserial
text
varchar(65536)
cTime
timestamp without time zone
isDeleted
boolean
repliedBy
Reply
repliedTo
hasMedia
PostedIn
1
n
m

II. Entity-Relationship and Attribute Explanations

A. Entities:

1. Users - This entity represent the user's of the quacker application.
    a) Attributes:
        (1) UID:serial Primary Key - User Identification
        (2) FName:varchar(20) - User's first name
        (3) LName:varchar(20) - User's Last name
        (4) UTime:timestamp without time zone - Account creation time
        (5) Pseudonym:varchar(15) - An pseudonym for the user to use if they wish to not use their real name.
2. Credentials - A weak entity dependant of User that holds the login credentials for security.
    a) Attributes:
        (1) Username:varchar(30) partial key - User's login username
        (2) UPhone:char(10) - User's registered phone number
        (3) UEmail:varchar(30) - User's email address
        (4) Password:chkpass - User's login password
3. Activities - A weak entity dependant of User that contains the necessary information to determine if an user is active or not.
    a) Attributes:
        (1) UID:serial partial key - An id to identify an active account.
        (2) isActive:boolean - It determines if a user account is still an active account.
        (3) lastDbAccessTimestamp:Time - The time of the last time the user accessed the database.
4. Chats - An entity that contains the information related to a chat or chat group.
    a) Attributes:

(1) CID:serial primary key - Chat ID
(2) CName:varchar(20) - Chat name
(3) CDate:date - Chat's creation date
(4) CTime:timestamp without time zone Chat's creation time
(5) isGroup:boolean - Determines if the chat is a group chat or not.
(6) isActive:boolean - Determines if a chat has been deleted or not.

5. Messages - An entity that represents a message sent in a chat.
    a) Attributes:
        (1) MID:bigserial primary key - Message ID
        (2) Text:varchar(65536) - Text in a message
        (3) CTime:timestamp without time zone - Time of the posted massage
        (4) isDeleted:boolean - Determines if a message has been deleted.
6. Medias - A weak entity of Message, it manages the images that a message might include.
    a) Attributes:
        (1) MediaID:Serial partial key - Media ID
        (2) isVideo:boolean - determines if the media is a video or a photo.
        (3) Location:varchar(1000) - The address of the media in question.
7. Topics - A weak entity of Message, it contains any topics mentioned in the messages.
    a) Attributes:
        (1) Hashtag:varchar(75) - The topic mentioned in the chat.

B. Relationships:
1. LoginCredentials - A relationship between User and Credential. An user uses the credentials to login into the app.
    a) Participation:

(1) Users: Total participation
(2) Credentials: Total participation

b) Cardinality: 1 to 1

2. Active - A relationship between User and Activity. An user needs to have an active or inactive mode.
    a) Participation:
        (1) Users: Total participation
        (2) Activities: Total participation
    b) Cardinality: 1 to 1
3. Contact - A self relationship with User. An user has a contact list composed of other users.
    a) Participation:
        (1) Owner: Partial participation
        (2) Member: Partial participation
    b) Cardinality: Many to Many
4. Post - A relationship between User and Message. The user posts messages.
    a) Participation:
        (1) Users: Partial participation
        (2) Messages: Total participation
    b) Cardinality: Many to 1
5. Participant - A relationship between User and Chat. A chat must contain users to exist.
    a) Participation:
        (1) Users: Partial participation
        (2) Chats: Total participation
    b) Cardinality: Many to Many
    c) Attributes:
        (1) PTime:time - Time an user got added to a chat
6. Administrator - A relationship between User and Chat. A chat has as an admin the user that created it.
    a) Participation:
        (1) Users: Partial participation
        (2) Chats: Total participation
    b) Cardinality: 1 to Many

7. Reacted - A relationship between User and Message. An user reacts to a message by liking or disliking it.
    a) Participation:
        (1) Users: Partial participation
        (2) Messages: Partial participation
    b) Cardinality: Many to Many
    c) Attributes:
        (1) RDate:date - Date an user reacted to a message
        (2) RTime:timestamp without time zone - Time an user reacted to a message
        (3) Vote:short - The vote a user gave to a message, 1 for like and -1 for dislike.
8. BelongsTo - A relationship between Chat and Message. A message belongs to a chat for it to be displayed in.
    a) Participation:
        (1) Chats: Partial participation
        (2) Messages: Total participation
    b) Cardinality: 1 to Many
9. Reply - A self relationship with Message. A message can reply another message.
    a) Participation:
        (1) RepliedBy: Partial participation
        (2) Replied_To: Partial participation
    b) Cardinality: Many to 1
10. HasMedia - A relationship between Message and Media. A message can contain 1 media content video or photo.
    a) Participation:
        (1) Messages: Partial participation
        (2) Medias: Total participation
    b) Cardinality: 1 to 1
11. PostedIn - A relationship between Message and Topic. A message can contain multiple topics depicted with hashtags.
    a) Participation:
        (1) Messages: Partial participation
        (2) Topics: Total participation

b) Cardinality: 1 to Many

III. SQL Create Table Commands

create table Users(uid serial primary key, fname varchar (20), lname varchar(20), utime timestamp without time zone, pseudonym varchar(15));

create table Credentials(uid integer references Users(uid), username varchar(30) unique, password chkpass , uemail varchar(50) unique, uphone char(10), primary key(uid, username));

create table Activities(uid integer references Users(uid), lastdbaccesstime timestamp without time zone,isActive boolean);

create table Contacts(uid integer references Users(uid), memberid integer references Users(uid), primary key(uid, memberid));

create table Chats(cid serial primary key, cname varchar(20), ctime timestamp without timezone, isgroupchat boolean, isactive boolean, uid integer references Users(uid));

create table Participants(cid integer references Chats(cid), uid integer references Users(uid), ptime timestamp without time zone , primary key(uid, cid));

create table Messages(mid bigserial primary key, text varchar(65536), ctime timestamp without time zone, uid integer references Users(uid), cid integer references Chats(cid), isDeleted boolean, rid integer references Messages(mid));

create table Topics(tid serial, hashtag varchar (75), mid integer references Messages(mid), ttime timestamp without time zone, primary key (tid, mid, hashtag));

create table Reacted(uid integer references Users(uid), mid integer references Messages(mid),rtime timestamp without time zone, vote smallint, primary key (uid, mid), check (vote = 1 OR vote = -1));

create table Medias(mid integer references Messages(mid), isvideo boolean, location varchar(1000), primary key (mid, mediaid));