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**WPWPWP**

Security

And

Data Integrity

Analysis

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# 1.Privacy Analysis

For our database, all user’s password must be private, and can only be access by user himself. And user’s contact information is private unless user chooses to open to public or open to other user with relation. User’s nick name is always be public. Other than that, the privacy is depend on user setting and their relationship.

## Here are the rules:

1. When user sets up a user name, all activities associate with this user will use his nick name instead of user name. The actual user name will only be used when user does not have a nick name.
2. If a user is a member of a organization, then he can have access to user name and nick name of all other members in this organization.
3. When a user joins a event, he can only know people’s nick name.
4. After you join an event, you have right to keep it private or open to public to let your friends know which event you are goint to attend.

# 2. Security Analysis

The main implication for data integrity is that user and those he gives permission to would access to his calender (event list).

Here are the restrictions:

1. Actions such as add friend and send invation must use user name or UID.
2. Strangers should not be allowed send any invations.
3. To prevent breach on privacy, only friend can see those event you are about to attend.
4. Whenever someone make a query, UID must be contained, so database knows which information could be accessed.
5. When an organization host an event, people outside this organization can not see the member list of this organization.
6. Whatever you join or quit an event, only host will be notified, other attendees will not know.
7. When user want to create an event as organization host, he must be the representative of the organization. Otherwise, an organization host evernt will not be created.

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# 3. Entity Integrity

1. For the Usertable, UserID must be 8 digit unique integer that is the primary key. Username must be a 20 character varchar and not null, Password is a 20 character varchar , not null and unique . Nickname is a varchar within 20 characters.
2. For the Organization Table, OrgID must be 8 digit unique intger that is the primary key. Name must be a 20 character varchar , not null and unique.
3. For the Event Table, EID must be 8 digit unique integer that is the primary key. Name must be a 50 character varchar, not null and unique. Both start and end date should not be null and end date must be later than start date for the same event. Location is a 25 character varchar. Description is a text. Type is a predifined varchar of length 25 (we will create the list of predifined types later). HostID is a foreign key to the organization table.
4. For the Invitation Table, IID must be 8 digit unique integer that is the primary key. Title must be 25 character varchar and not null. Message is a text. Event\_ID is a foreign key to the event table. I\_UserID is a foreign key to the User Table.
5. For the Table Tag, TID must be 8 digit unique integer that is the primary key. TagName is 25 character varchar that must not be null. Description is text.

# 4. Referential Integrity

1. For tables that specify relations (UserRelation, EventTag Receive, MemberOf, Join), both delete and update will cascade since the original relation no longer makes sense if any side of it has been deleted or updated.
2. On delete of UserID from the User Table, rows in the Invitation table will cascade since if the sender of an invitation no longer exists, the invitation should no longer be valid. Rows in the event table will have a trigger to check if this event is a host type (which means there must be somebody or an organization that is in charge of it), if it’s not, there will be no change; if it is, the trigger continues to check if this event has a host organization. If there’s no organization that hosts the event, the event gets deleted, otherwise the foreign will be set to null. On delete of OrgID from the Organization Table, it has a very similar trigger to check if the event is a host type and if the event loses both creater and host organization.
3. On update all operations will cascade since for all the references, as long as the refrenced key still exist, it’s reasonable for the refrencing keys to maintain the pointer to them.

# 5. Business Rule Integrity

Since out database system does not maintain any numeric data except for the integer ids for each entity and does not involve any calculation, there is no business rule integrity associated with our database.