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Project Description- MiddCal

CS1002

Professor Christman

Link to final website: <http://www.cs.middlebury.edu/~mwinkler/calendar.php>

This website was designed to be fully functional and secure while still being intuitive and easy to use. We hope that users will create and search for events on the Middlebury campus. As we developed our website, we made many changes to the structure and design to most improve the site.

Our entities for the database are Events, Creators, Tags and Approver\_password. Creators create and edit events, and events have tags that are assigned by creators. Special creators who have administrative power can also approve events. Events have exactly one creator. All tags in our database describe at least one event, and each event is described by at least one tag. For the Creator table, the primary key is the username that creators enter upon account creation. We know this will be a unique key because they are using their Middlebury email accounts, which all have unique addresses. Our event\_ID, the primary key for the Events table, is the timestamp of when the event was created. We’re assuming that no two events will be created at the exact same time. The combination of tagname and eventID as the primary key for the Tags table allows the table to have multiple events with the same tag. Approver\_password has just one attribute and one entry, which is the encrypted password that new users can input to gain administrative powers.

Here are our schemas for our tables:

- Creator(username: string, password: string, name: string, hash: string, approver: boolean, verified: boolean)

- Events(event\_ID: integer, event\_title: string, description: string, host: string, creator\_username: string, location: string, time: time, date: date, tags: string, time\_created: string, approved: boolean)

- Tags(tag\_name: string, event\_ID: integer)

- Approver\_password(password: string)

We assume that only people with Middlebury email accounts will want to create accounts. We did this intentionally to ensure that only members of the college community can create events, making it a website exclusively for Middlebury students, faculty and staff. Our description attribute in the Events table is restricted to 1000 characters, so we also assume that descriptions do not exceed this length. In general, we assume that event creators will not want to make events with exceptionally long titles, hosts, and locations. We capped event title at 150 characters, which seems like a reasonable length for a normal event. We also assume that users of this website will not want to see events further than two weeks in the future. Based on personal experience and information gathered from peers, not many people think about events that are more than two weeks away. We still allow users to search for events further in the future, but in order to streamline the website we restricted the dates shown on the homepage. Lastly, we hope that our event creators will be considerate when assigning tags to their events. We don’t restrict our tags, so we hope that creators don’t spam the tag field with a bunch of ridiculous and inappropriate tags. If they do, our approvers can edit the tags before approving the event, but abusing tag assignment is still mean and we hope nobody tries to do it.

We have organized functionality into three levels, each level having more power over the previous. The three levels, in increasing order, are general users, event creators, and administrators.

General users have the most limited view of the website. They do not have an account, so they cannot log in. Their use of the website is limited to viewing events. By default, the homepage shows events sorted by date, starting at the current date and showing events for the next seven days. They have the option of showing events for the upcoming 14 days. General users can also sort events alphabetically by event title, host or location, and can also sort by tag. They can use the search box in the upper left corner, which allows users to type in specific event titles, locations, hosts or tags. The search results show all approved events, not just events less than two weeks away.

Creators can use all the same features as general users, but they can also create and edit events. When creators sign up for an account, they must provide a valid Middlebury email and a password. Once they register, an email is sent to the given email address so that creators can verify ownership of the email address they provided. After creators verify their account by clicking on a link in their email, they can log in with their username and password and start creating events. The event creation page prompts logged in users for an event title, a description, a host, some tags to describe the event, a date and time, and a location. Creators are also reminded to reserve their space on the event page. Once a creator submits their event, an administrator must approve it before it appears on the calendar homepage.

When signing up for an account, there is an optional field that asks for a password to provide administrative powers. If a user inputs the correct password, they are entered into the database as an event approver. Event approvers have all the same functionality as event creators, plus some extra abilities. In addition to creating events, event approvers can approve or delete events that other users have created. They can also edit these events before approving them to take out offensive tags or correct any spelling errors. Ideally the power of approving events will be limited to only a few users selected by the SGA.

All users with an account have the option to reset their password. If a user wants to reset their password, they click on the ‘forgot password’ link on the sign in page, which then prompts them for their username. If they input a valid username, an email is sent to the corresponding email address with a link to the reset password page. Upon clicking on the link, users input their new password and it is updated in the database.

We chose to implement two views on the Events table. The first view, Approved\_Events, gets all events that have been approved. This makes it much easier to display events on our calendar main page and our search page, as it only performs a query on approved events, not all events. This view is quite helpful to any user who wants to view events. Complementary to our first view, our second view gets all the events that have not been approved. This view is beneficial for our event approvers, who are allowed to see and change the status of all unapproved events. Rather than scrolling through all the events to find those that haven’t been approved, event approvers can simply see events that are not yet approved.

We have multiple indexes on our Events table to make the search feature a bit more efficient. Since users can search and sort by event title, location and host, we’ve put indexes on those attributes to hopefully speed up search time.

We worked hard to ensure that our website is secure for all users. All accesses to our database are made with prepared statements to protect against SQL injections. When writing descriptions for events, we noticed that adding apostrophes and quotations made SQL injections possible, so we used html special characters so that quotations are treated as characters rather than ends to SQL statements.

In addition to security on the website itself, we made the database itself secure. Passwords are encrypted rather than stored directly, and each user is assigned a unique hash code when they sign up. The hash is a 32-character string created from the string of the user’s username and a random integer between 0 and 2000, making it practically impossible to guess another user’s hash. This hash is used to verify a new account and to reset one’s password. The verification and reset password links include the username and hash, so when the link is clicked on the page can compare the provided username and hash with the information in the database. If these two parameters match, the user can proceed. For example, if user ‘middkid’ with hash 50c1a7d4258e5c8eaf000c47a944a253 wants to verify their account, the link they would receive in their inbox would be:

<http://www.cs.middlebury.edu/~mwinkler/verify.php?username=middkid&hash=50c1a7d4258e5c8eaf000c47a944a253>

When user ‘middkid’ clicks on this link (if that was actually a valid username), the website would verify that there is an entry in the database with the matching username and hash, and that the account has not already been verified, before allowing the user to verify the account. This prevents users from simply entering a username into the URL of the ‘verify’ page to automatically verify an account without going through their email.

Since our presentation on Thursday, we’ve already made several improvements to our website. The most noticeable has been darkening the background image so that text towards the bottom of the page can be read. We’ve also adjusted the alignment of the event creation page to make it more uniform and easy to read. We extended the length of event title to be 150 characters instead of 50. Our search feature now searches by event title and description, which is a feature we thought we implemented but apparently did not do until now.

Currently, our website is far from complete. We would still like to improve the search feature to better handle searching by date or time. Our tag system currently works, but given more time we would like to try to eliminate the Tag table and make it an attribute of Events without losing the ability to sort events by tag. We would also like to make it possible to promote users to approver status without deleting and recreating the account or manually changing it in the database. Ideally we would also like to be able to change the approver password without having to enter it directly into the database. It has also been pointed out to us that there is no simple way to see events for upcoming days. We would like to think of a good way to view all events that occur on a specific day. Since the main goal of our website is to keep students informed about activities on campus, we would like to add a weekly email blast that users can sign up for. This email list would be entirely optional, and students would be able to customize what kinds of events they receive in the email list.

Our final ER Diagram:

