REQUIREMENT ANALYSIS AND SPECIFICATIONS

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General Overview

Purpose

MyTab is a web application which acts as a single safe platform to hold multiple accounts of a user and enables accessing these accounts with just one click. The application thus frees the users from having to remember the passwords of every account. It also saves valuable user time by avoiding the need for users to enter their credentials manually each time.

Current Scope

The MyTab application is currently targeted for the Cornell students and staff, and will support a set of six Cornell accounts. Users can add these accounts to their MyTab by providing their credentials for the first time. From then on users can simply access these accounts with just a click on the added accounts from MyTab. Opening an account in MyTab opens it as a tab within MyTab. Thus, users can simply navigate among accounts from within the same tab.

As the system stores user credentials of multiple accounts, security is one of the prime concerns of this project. However, for the scope of CS 5150 project we are developing only the Phase I prototype for the application. Thus a framework for the security will be provided now, although the production system would need a very high-level security architecture.

Current Systems

Almost all the existing systems which support handling user's multiple accounts open the accounts in a new tab and none open all the accounts within the same tab.

System Requirements

Functional Requirements

User Interface:

1. MyTab page should have a logo. The logo should be at the top left corner of the page and should have M@ symbol as the first letter in MyTab.

2. Blue/Light Blue scheme to be used for the page background.

3. MyTab page should have an interface for the registered users to login.

4. If the user forgets his password, and is not able to login, MyTab interface should allow the user to reset his password, after authenticating the user.

5. If the user is not already registered, the MyTab interface should present user with a registration form, to register the user with the MyTab. After the user gets registered, the user should be able to login to his MyTab page and configure his accounts.

6. MyTab page should present an interface that allows the logged in users to add/remove their accounts in their MyTab page.

7. A navigation bar should be present that enable the users to navigate between their accounts in their MyTab page, including the "home" page.

8. MyTab page should provide an interface for the users to log themselves out from their MyTab page, from any of their account pages.

9. Clicking on the thumbnail of the configurable accounts, should open the corresponding page of that account in the MyTab page.

10. The currently selected account should be high-lightened in the Navigation bar to let the user know the account the user is currently in.

Functionality:

1. Registered users should be able to login themselves into their MyTab account, using only their MyTab credentials. If the false credentials are used, MyTab should prompt the user to enter the correct information.

2. If the user forgets his password, the system should allow the user to reset his password using email authentication.

3. Logged in user should be able to add/remove accounts to his MyTab page.

4. Logged in user should be able to navigate between his selected accounts or switch between his added accounts at any point of time.

5. After adding an account, clicking on it thumbnail should present the page corresponding to that particular account.

6. Logged in user may add/remove more than one accounts, but one account at a time only.

7. Logged in user should be able to logout from his MyTab account.

8. Only the accounts selected/configured by the logged-in user should be presented to the user. The user should not be able to access any other account other than the accounts that are present in his MyTab page.

9. Once the user gets logged out from his MyTab page, his browser session should end and the user should again login to access his MyTab page.

Data:

1. User credentials should be encrypted and stored in a database.

2. During user validation, the user-data in database is matched against the input credentials, if matched, the user gets authenticated to login to the MyTab page.

3. Database should store the information for all the accounts configured by the logged-in user and if the user add/removes/updates his accounts, the database should be accordingly updated for the user. This information should be encrypted and should not be accessible to anyone else except the database administrator.

4. If the user decides to delete his MyTab account, the user credentials should be deleted from the database as well.

5. The database should have the following attributes:

   A. User_Data: This should contain the following attributes

   - login_user_id – Unique ID assigned by the database to the user.
   - first_name – should be a valid name.
   - last_name – should be a valid name.
   - authenticated – should be “true” only if the user-email is validated.

- password – encrypted, should allow for special characters.
- email-id – should be a valid email id. Should be used as the user-name.
- last-login time – should be a valid time. Should be later than the created_time.
- created_time – should be a valid time. Should not be modifiable.

B. Accounts: This should contain the following attributes and should be controlled only by theAdmin.

- acc_id – Unique ID assigned by the database to the account.
- Name – should be a valid account name. For example - Piazza
- ID – This records the order of the accounts added to the list.

C. User_Accounts: This should contain the account information for the individual usersregistered with the MyTab. It should contain the following attributes

- login_user_id – Unique ID assigned by the database to the user.
- acc_id – Unique ID assigned by the database to the account.
- user_name – Should be a valid user-name. Email id should be used as the user-name.
- password – encrypted, should allow for special characters.
- account_added_time – should be a valid time. Should be updated as per user configures his accounts on his MyTab page.
- account_last_modified – should be a valid time. Should be updated as per the user configures his accounts on his MyTab page.

D. Authenticated_Users: temporary access token information for the user-browser session.Should have the following attributes

- login_id – Unique ID assigned by the database to the user.
- access_token – token information for the master account to authenticate the user for his account activation.

Non-Functional Requirements

1) ***Legal:***Website should meet privacy policy and encryption requirements since it obtains andstores confidential information about users' account details.
2) ***Security:***Website must be secure and prevent unauthorized access and be strong to resist

attacksfrom malicious users.

3) ***Usability:***The technologies used to build the MyTab page should be supported by a typical user'sweb browser (a typical user is assumed to be a college student or a college staff whose computer is relatively up-to-date). MyTab page should be accessible in multiple browsers, and the behavior of the page should be consistent across all the browsers

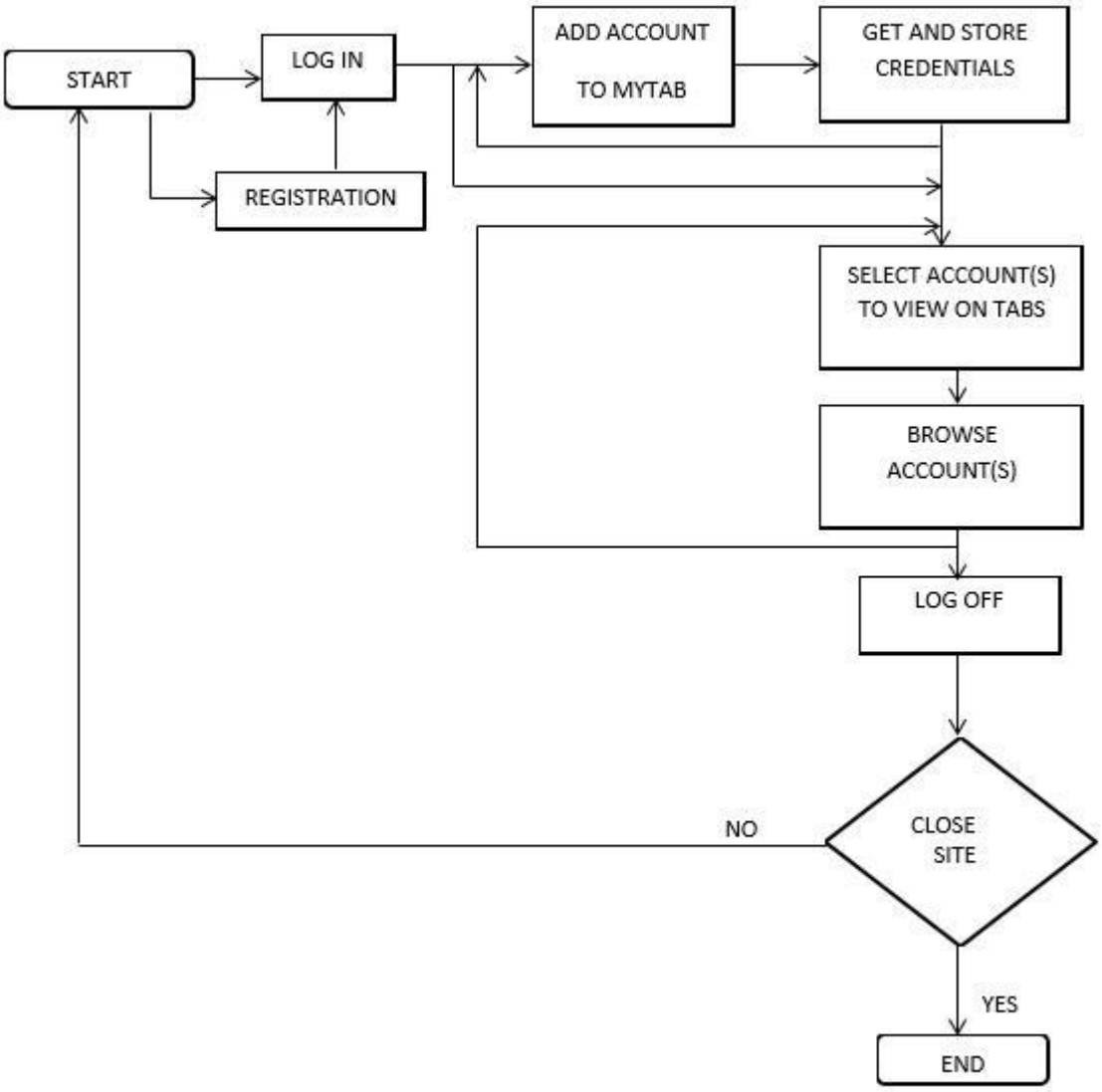
4) ***Portability:***Website should be portable and accessible from different operating systems and fromdifferent browsers.

5) ***Modifiability:***The code of the website should be readily modifiable for further increments andadding additional functionality.

6) ***Performance:***Website should have a good response time for fast and convenient use and access.

Flow Charts

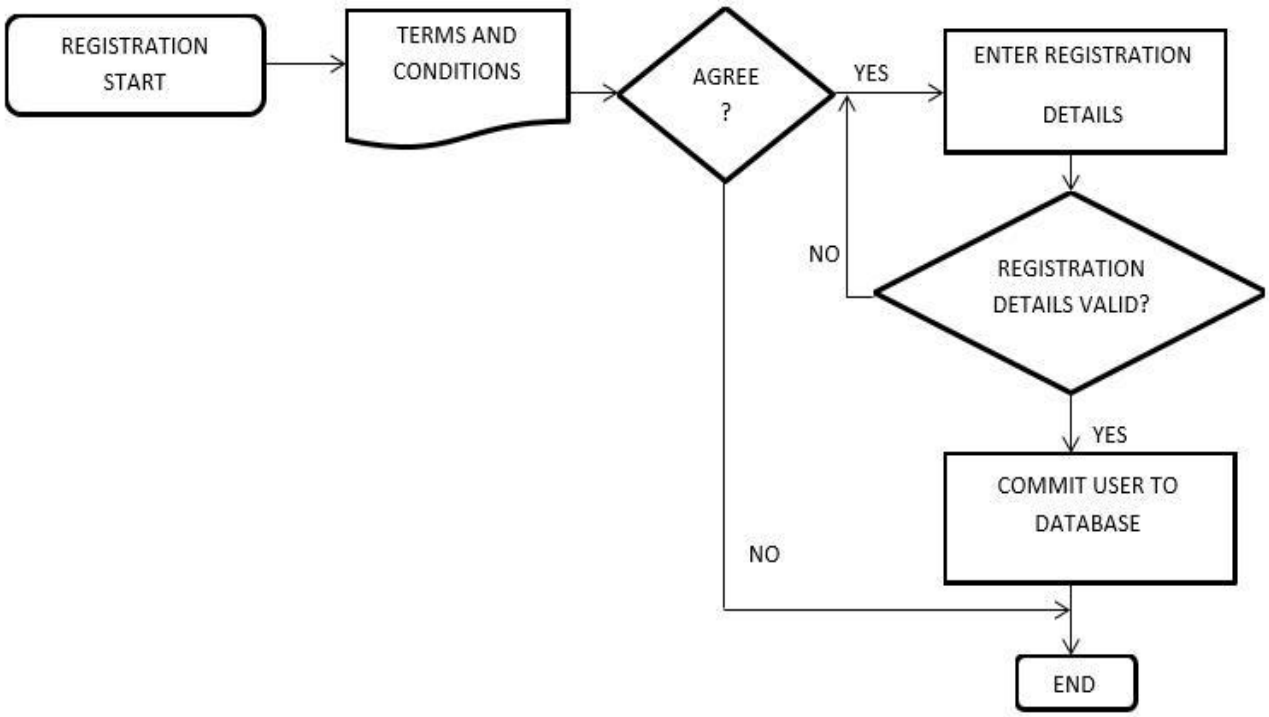
Main Module Flowchart



Description

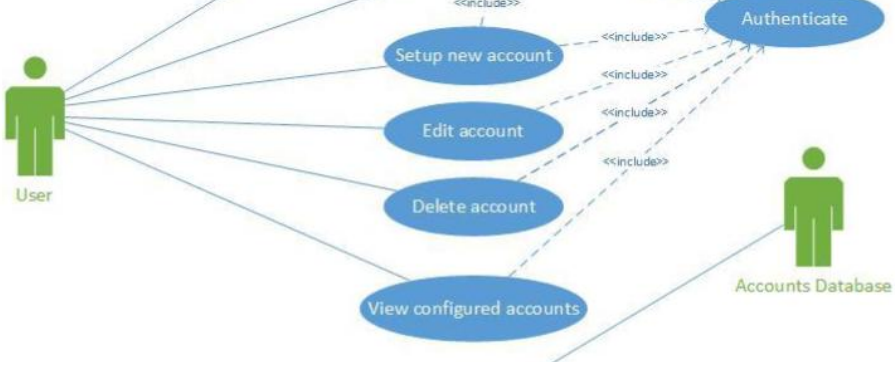
This is the top level flowchart of how a user will be accessing MyTab.com. He can either register or Log-in. Flowchart for registration is given below. After log-in, the user can add accounts to his MyTab and for each account he adds, user will be providing the user name and password to be stored in the database. He can directly select an account or accounts he has added before and click on them to view that account in a new tab. After browsing the accounts on different tabs, he can log-off and exit the system.

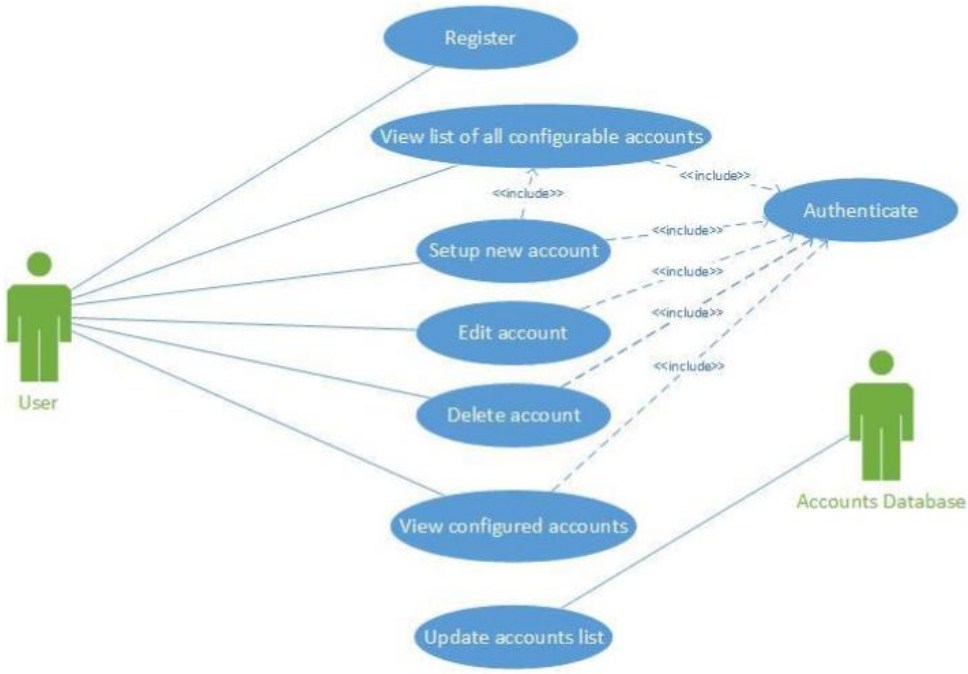
Registration Module Flowchart



Description

This shows the Registration Module Flowchart. When the user clicks Register, the Terms and Conditions Page is displayed. If they are not accepted, the Registration process ends, If they are accepted, user is prompted to fill in the details required for registration. The details are then validated. If the details are invalid, the user is prompted to enter the details again .If they are valid, the user is registered and the entry is committed to the database.





Use Case Specifications

1) Register

Summary:The user creates a new account for MyTab

Actor: User

Flow of events:

1. Register requests for user name, password and e-mail from the user.
2. Register stores the account data in database.

Entry Conditions:

User should have computer connected with internet and supported browser.

2) View list of all accounts

Summary: The user views list of accounts that can be configured using MyTab.

Actor: User

Flow of events:

1. The user requests for viewing list of all configurable accounts.
2. MyTab retrieves the accounts information from the server.
3. MyTab displays the list of accounts in a new display section.

Entry Conditions:

1. User should have computer connected with internet and supported browser.
2. User should be logged into MyTab.

3) Setup new account

Summary:The user sets up a new account using MyTab.

Actor: User

Flow of events:

1. The user selects an account from the list of all configurable accounts.
2. User enters the login credentials for the selected account.
3. MyTab encrypts and stores the data.
4. MyTab removes the option to add the account again.

Entry Conditions:

1. User should have computer connected with internet and supported browser.
2. User should be logged into MyTab.

4) Delete account

Summary:The user deletes a previously configured account.

Actor: User

Flow of events:

1. The user selects the account to be deleted.
2. MyTab asks for confirmation.
3. User confirms deletion.
4. MyTab deletes the account credentials from database.
5. MyTab adds it back to the list of all configurable accounts, so that it can be added again in future.

Alternate Paths:

Cancel Deletion

3b. User cancels deletion

4b. MyTab displays the list of configured accounts.

Entry Conditions:

1. User should have computer connected with internet and supported browser.
2. User should be logged into MyTab.
3. User should have at least one account configured.

5) Edit account

Summary:The user edits a previously configured account.

Actor: User

Flow of events:

1. The user selects the account to be edited.
2. MyTab displays the previously saved credentials.
3. The user updates the data.
4. MyTab encrypts and updates the previously stored account credentials in database.

Alternate Paths:

Cancel Editing

3b. User cancels editing

4b. MyTab displays the list of configured accounts.

Entry Conditions:

1. User should have computer connected with internet and supported browser.
2. User should be logged into MyTab.
3. User should have at least one account configured.

6) View configured accounts

Summary:The user views the configured accounts.

Actor: User

Flow of events:

1. The user selects the account to be viewed.
2. MyTab adds a link for the account in the navigation bar.
3. MyTab opens the account in the same page with the navigation bar on the top.
4. User views the account.

Alternate Paths:

Navigate to Home Page

3b. User selects the link for Home in the navigation bar.

4b. MyTab displays the home page showing list of all configured accounts.

Navigate to another account

3c. User selects the link for another account in the navigation bar.

4c. MyTab displays the selected account in the same page with the navigation bar on the top.

Select navigation arrows

3d. User selects the Previous/Next arrow.

4d. MyTab shows the previous/next configured account based on user selection.

Entry Conditions:

1. User should have computer connected with internet and supported browser.
2. User should be logged into MyTab.
3. User should have at least one account configured.

7) Logout from an account

Summary:The user logs out of an already logged in account.

Actor: User

Flow of events:

1.The user selects the account to be logged out.

2. MyTab displays the account page.

3. The user selects to log out of the account.

4. MyTab logs out the user from the account.

Entry Conditions:

1.User should have computer connected with internet and supported browser.

2.User should be logged into MyTab.

3.User should have at least one account configured, at least one account logged in.

8) Logout from master account

Summary:The user logs out from the master account i.e., Mytab.

Actor: User

Flow of events:

1. The user clicks the logout button on the home page.

2. MyTabredirects the user to the login page.

Entry Conditions:

1. User should have computer connected with internet and supported browser.
2. User should be logged into MyTab. .

9) Updates accounts list

Summary: The accounts database updates the list of accounts that can be configured.

Actor: Accounts Database

Flow of events:

1. MyTab establishes a connection to the accounts database.
2. MyTab updates the list of all configurable accounts
3. MyTab closes the connection.

Entry Conditions:

The database containing set of all configurable accounts should be available for the MyTab to connect.

10) Authenticate

Summary*:*MyTab verifies the login credentials provided by the user.

Flow of events:

1. MyTab prompt the user to enter user name and password.
2. MyTab checks the login credentials provided by the user against its database of accounts.
3. If the information matches, MyTab displays the accounts setup by the user.
   Otherwise, return to step 1.

Entry Conditions:

1. User should have computer connected with internet and supported browser.
2. User should be already registered with MyTab account.

Scenarios

Scenario 1 – User Registering to MyTab Application

Individual: Xiang, first time user of MyTab

Equipment: Laptop with google chrome browser, Javascript enabled

Scenario:

1. Xiang turns on Laptop and opens the browser.
2. Xiang types the URL of MyTab and sees the login/Signup page on the browser.

3. Xiang sees the form displayed on the right hand side of the page for registration.
4. Xiang enters his first name, last name, email, password and accepts the terms and conditions and clicks on register button.
5. Xiang sees a confirmation message on the screen saying "Thank you for registering with MyTab. A mail has been sent to your email for activation".
6. Xiang opens his email and sees the activation mail from MyTab application.
7. Xiang clicks on the confirmation link and a new tab opens with MyTab application in her browser.
8. Xiang sees the login page with a message "Activation successfully completed and can use MyTab application now."
9. Xiang logins to MyTab and continues with the application.
10. Xiang logs out and closes the MyTab application.

Scenario 2 – User Logins to MyTab application.

Individual: Xiang, an already registered user of MyTab.

Equipment: Laptop with google chrome browser, Javascript enabled.

Scenario:

1. Xiang turns on Laptop and opens the browser.
2. Xiang types the URL of MyTab and sees the login/Signup page on the browser.
3. Xiang sees the login form on top right hand side of the header.
4. Xiang enters his username and password in the respective text boxes and clicks login button
5. Xiang is logged into MyTab application and sees his home page.
6. Xiang sees the accounts that he has already added to his MyTab on the home page.
7. Xiang continues with the MyTab application.
8. Xiang logs out and closes the MyTab application

Scenario 3 – User adding new account (piazza) to MyTab Application

Individual: Xiang, an already registered user of MyTab.

Equipment: Laptop with google chrome browser, Javascript enabled

Scenario:

1. Xiang turns on Laptop and opens the browser.
2. Xiang types the URL of MyTab and sees the login page on the browser.

3. Xiang logins to MyTab application by entering his username and password in the login form and clicking on login button.
4. Xiang sees his home page with a “get started” button.
5. Xiang clicks on the button and a dialog box pops up which shows all possible accounts he can add to his MyTab.
6. Xiang clicks on piazza image and sees a dialog pops up which asks for his piazza’s username and password.
7. Xiang gives his username and password and clicks on submit.
8. Xiang sees that piazza is added to his homepage.
9. Xiang continues with the MyTab application.
10. Xiang logs out and closes the MyTab application.

Scenario 4 – User accessing multiple accounts (piazza and mygannet) in MyTab Application.

Individual: Xiang, a user having multiple accounts added to his MyTab.

Equipment: Laptop with google chrome browser, Javascript enabled

Scenario:

1. Xiang turns on Laptop and opens the browser.
2. Xiang types the URL of MyTab and sees the login page on the browser.
3. Xiang logins to MyTab application by entering his username and password in the login form and clicking on login button.
4. Xiang sees all the accounts (piazza, mygannet, CMS) he has added to his MyTab.
5. Xiang clicks on piazza account.
6. Xiang sees a new tab inside the MyTab application that shows his piazza homepage. (auto logging into piazza)
7. Xiang also sees a bar on top of the page which has home and piazza hyperlinks on it.
8. Xiang clicks on home hyperlink which takes him to the homepage while still piazza account is opened.
9. Xiang clicks on mygannet account from available accounts on his homepage.
10. Xiang sees a new tab inside MyTab which shows his mygannet account and now the bar on the top of the page also has mygannet hyperlink added to it.
11. Xiang also sees arrows on the tab and using the arrows he can navigate through piazza and mygannet accounts.

12. Xiang clicks on home hyperlink and goes to homepage.
13. Xiang also logins to other available accounts by clicking on the images in the homepage and gets login to the accounts and navigates with the help of arrows on the tab.
14. Xiang logs out of MyTab by which he logs out of both piazza and mygannet accounts.
15. Xiang closes the MyTab application.

Scenario 5 – User forgets the password and thus requests for a new password in MyTab Application.

Individual: Xiang, a user having a valid account in MyTab Application.

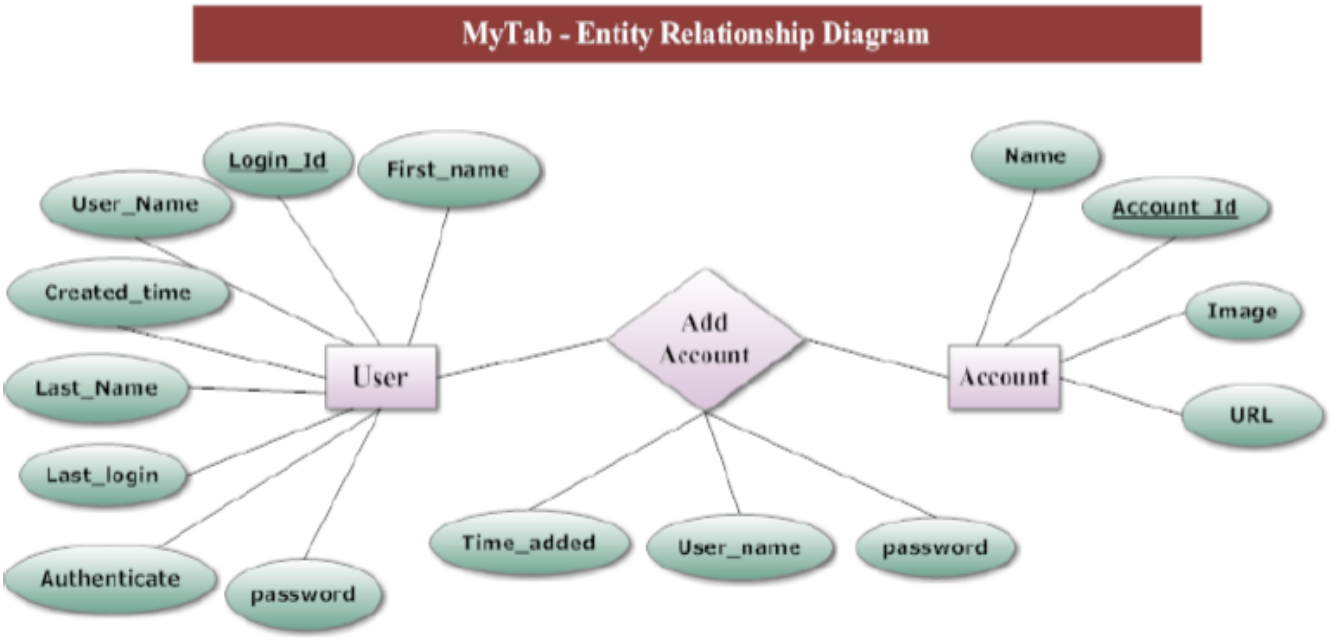
Equipment: Laptop with google chrome browser, Javascript enabled

Scenario:

1. Xiang turns on Laptop and opens the browser.
2. Xiang types the URL of MyTab and sees the login page on the browser.
3. Xiang enters his username and password in the login form and clicks on login button.
4. Since Xiang has entered a wrong password, he cannot login into his MyTab account.
5. Xiang clicks on forgot password link that is in the header.
6. Xiang sees a dialog box which says an email is sent to him giving the present password.
7. Xiang opens his email and checks for his password.
8. Xiang now knows his password and reenters it and successfully logins to his MyTab account.
9. Xiang continues with his MyTab application and finally logs out his account.

Data Models

Simplified ER Diagram



The **user** entity will have the attributes like first last names of the user (first_name and last_name) , time when the user creates the profile (created_time), his email id (user_name), time of last login (last_login), password of the profile (password).

The **account** entity will have attributes like name of the account (name), location of the account's image (image), url of the account (URL).

The user can choose from the available accounts and add them to his MyTab. This relation (add account) stores the time of adding (time_added), user name and password for that particular account. (user_name and password).