Faculty of Engineering and Applied Science

ENGR 4941U Capstone Systems Design for ECSE II

Design and Development of a Virtual Reality System to support Reminiscence Therapy for Patients with Dementia

R3: Detailed Design and Integration Test Report

Team Members

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1. Detailed Design

This section of the report contains diagrams, analysis, algorithms, etc. that is required by the capstone project to become a product. The faculty advisor should specify to your team what detail design artifacts are expected as these are project dependant.

Note: Caregivers in this document refer to the friends or families of patients, while staff is used for any employee of Ontario Shores for Mental Health Science.

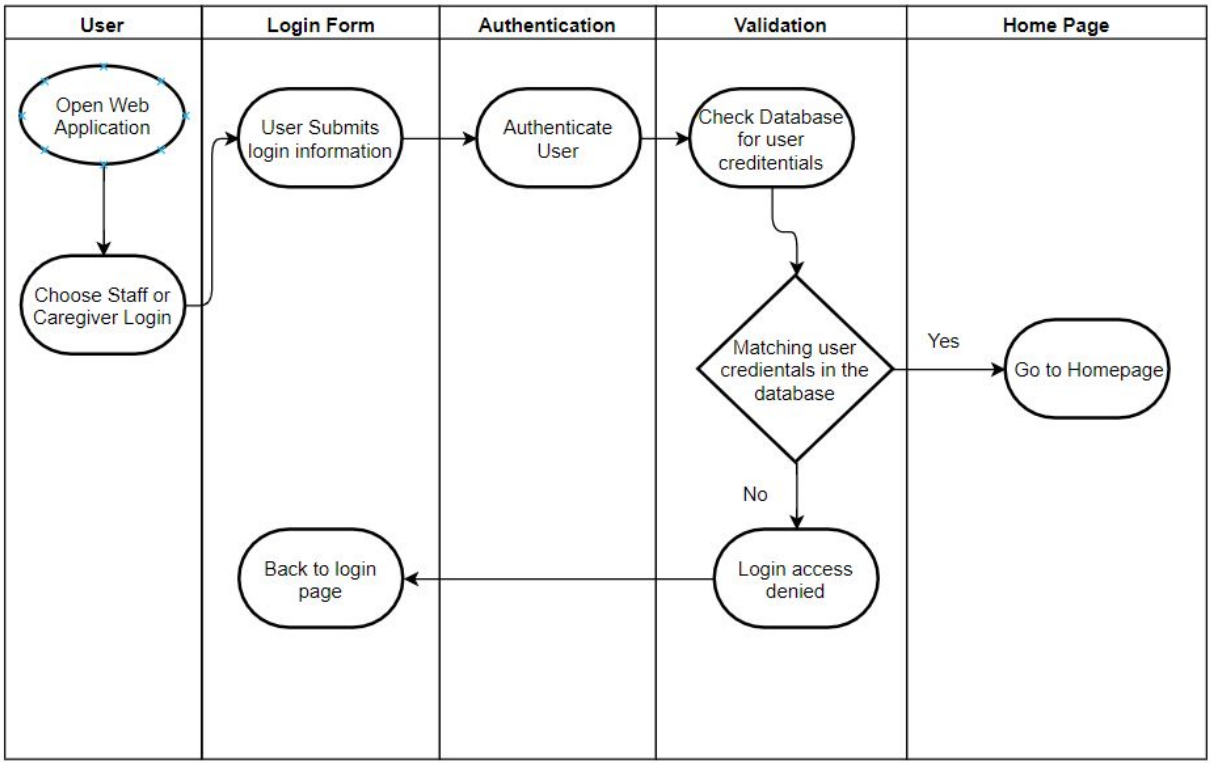

Figure 1.1: Activity Diagram of Signup and Login

This activity diagram shows how a user can sign up and login to the web application. First the user needs to go to the web application site. Once there, the user can choose to login as a staff user, or caregiver user. The user submits login information. Authentication is done to verify the correct login, to prevent security breaches. The database is checked for the inputted user credentials. If the database can find the proper credentials, then the user is redirected to their respective homepage. If the database cannot find the proper credentials, then the user is denied access, and is redirected to the login form.

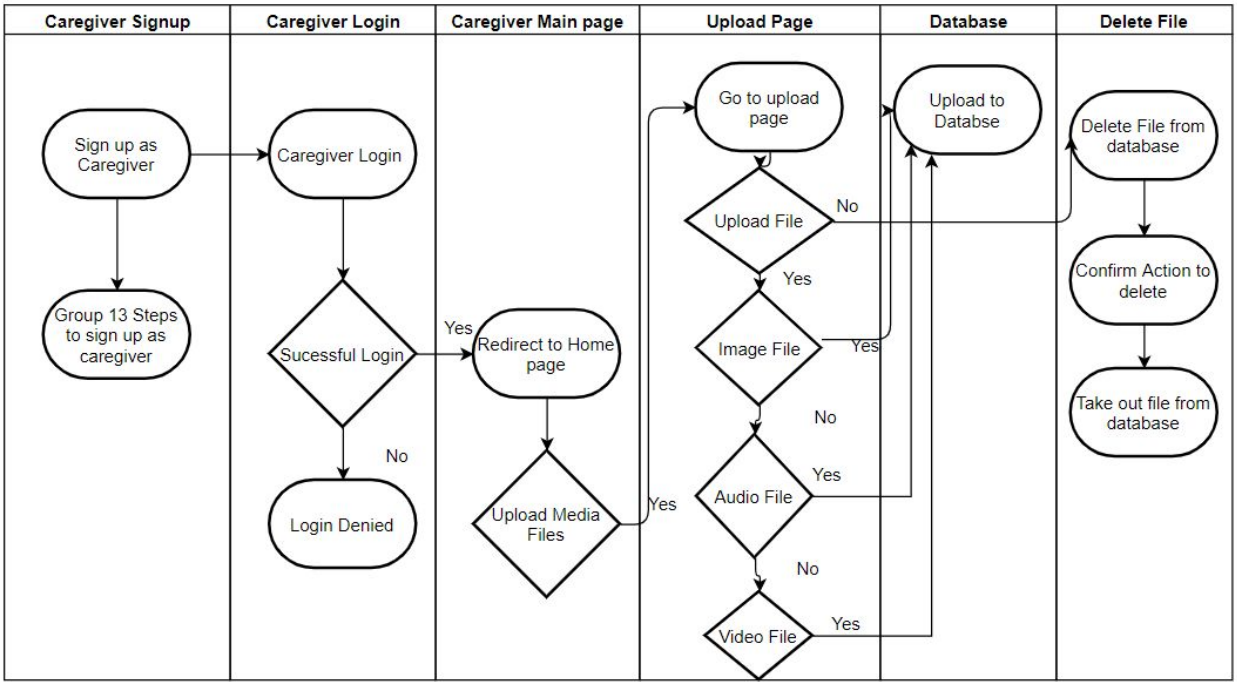

Figure 1.2: Activity Diagram of Caregiver

This activity diagram goes through the stages for caregivers. First if caregivers do not have an account, they can sign up, and go through the steps that Group 13 has detailed on in their respective report. If a caregiver already has an account they can go to the login page. Caregivers will go through the steps detailed in Figure 1. Once successfully logged in, they will be redirected to the home page. They can then click on an 'Upload Media File' button, which will take the caregivers to an upload page. Once in the upload page users have the option to upload a file, or delete a file. To upload a file, the caregivers have to choose what type of file to upload, image, audio or video file. Once the file has been chosen, the file can be uploaded and stored on the database. If a caregiver wants to delete a file, the file has to be chosen and then the delete button needs to be pressed. There will be a popup warning, "current action cannot be undone", and a final button to press to continue with deleting the file. Once that button is pressed, the file is deleted from the database.

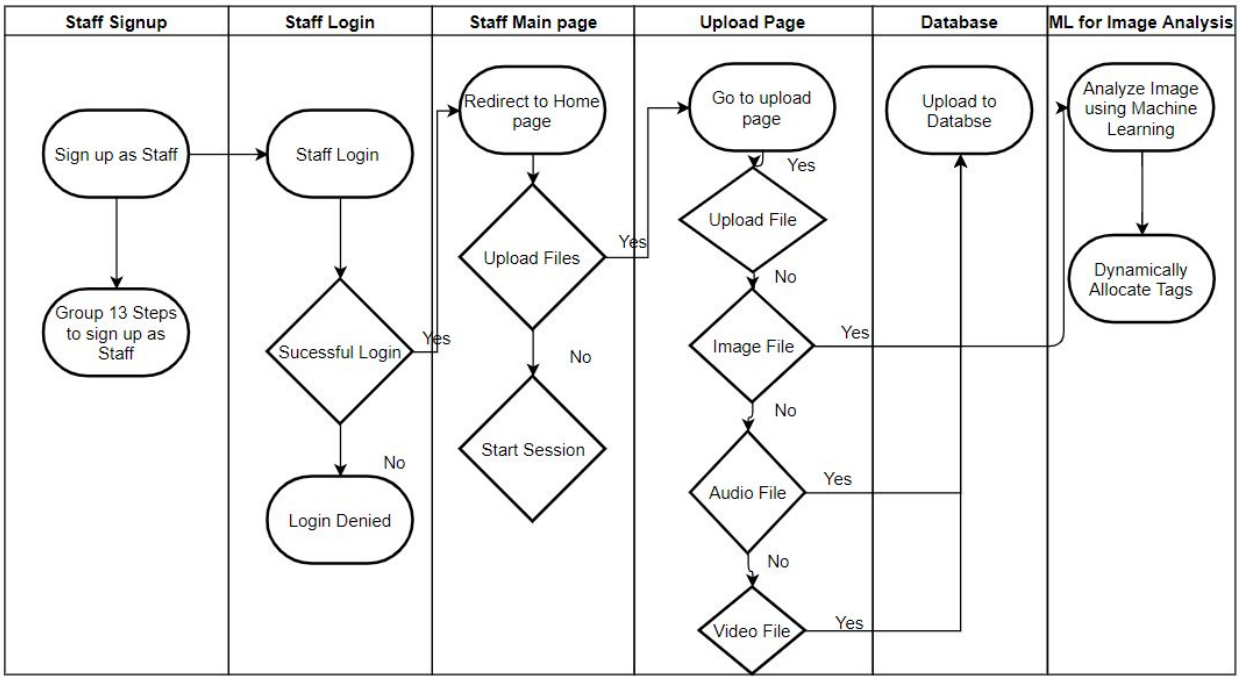

Figure 1.3: Activity diagram of Staff: Signup, Login & Upload media files

This activity diagram goes through the stages for staff. First if staff do not have an account, they can sign up, and go through the steps that Group 13 has detailed on in their respective report. If a staff member already has an account they can go to the login page. Staff will go through the steps detailed in Figure 1. Once successfully logged in, they will be redirected to the home page. They can then click on an 'Upload Media File' button, which will take the staff to an upload page. Once in the upload page users have the option to upload a file, or delete a file. To upload a file, the staff have to choose what type of file to upload, image, audio or video file. Once the file has been chosen, the file can be uploaded and stored on the database. The media files can be tagged, for easy search access. In addition, there will be a machine learning algorithm that will be running in the browser. If a staff member wants to dynamically assign a tag for an image file, they can upload the image into the machine learning module, which will assign the image tags based on what it thinks that image represents.

If a staff member wants to delete a file, the file has to be chosen and then the delete button needs to be pressed. There will be a popup warning, "current action cannot be undone", and a final button to press to continue with deleting the file. Once that button is pressed, the file is deleted from the database.

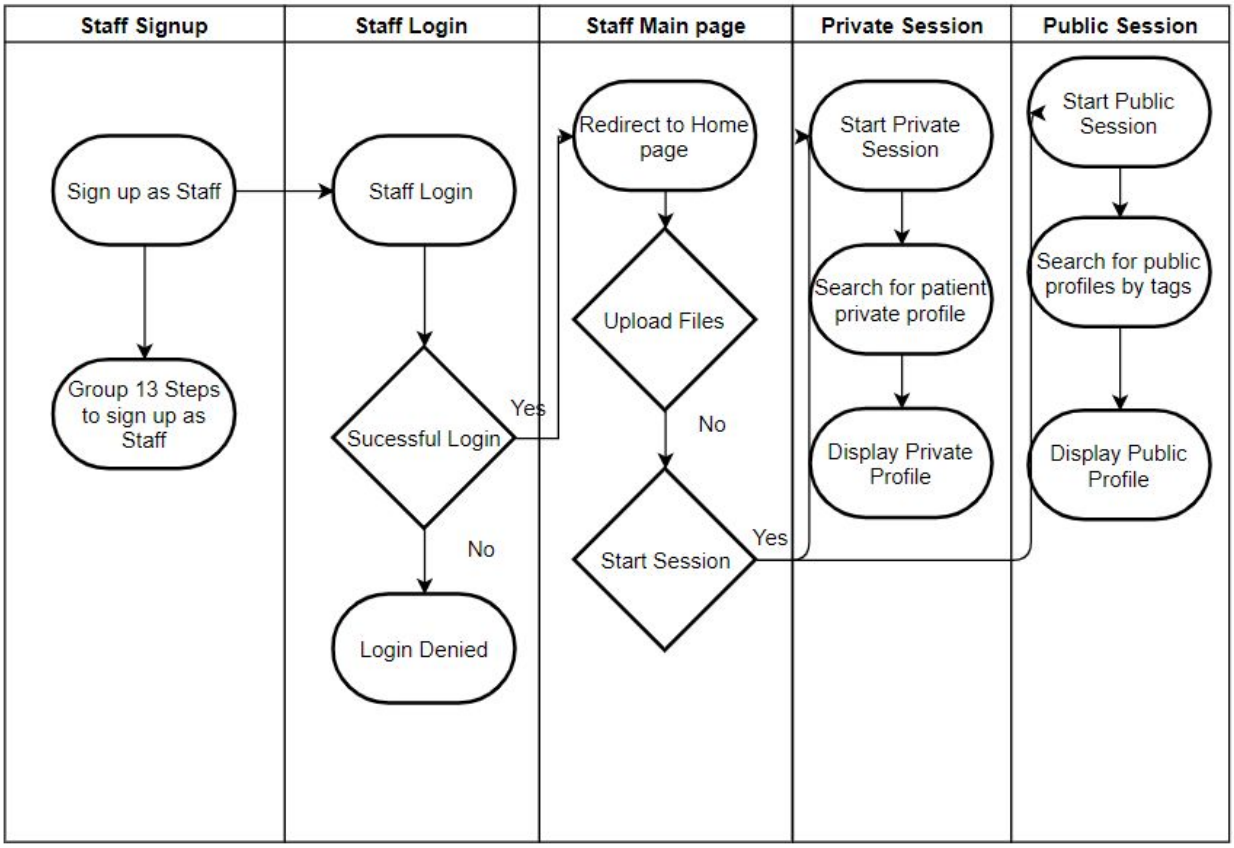

Figure 1.4: Activity Diagram for Staff starting the session

This activity diagram shows the steps for staff to start a private or public session. Firstly if the staff do not have an account, they can sign up, and go through the steps that Group 13 has detailed on in their respective report. If a staff member already has an account they can go to the login page. Staff will go through the steps detailed in Figure 1. Once successfully logged in, they will be redirected to the home page. Here the staff can choose to start a session, and will be given an option of starting a private or public session. The staff can start a private session if they are doing therapy for an individual patient. In a private session, the staff has access to the patients private profiles provided by the caregivers. The staff can also start a public session, for a group setting. Here the staff can access a public profile, by searching. Once the public profile is found, the staff can access the profile. They will be redirected to the slideshow module, which will automatically display pictures and videos of that profile. Audio files can also be played in the background. To display the session to a TV or projector, the staff needs to use a chrome web browser. They can then click on the settings and navigate to the ‘Cast’ feature, where they can select a Google Chromecast that they want to stream to.

2. Unit and Integration Testing

The system consists of multiple parts which must work together in order to perform a specified task. At a higher level the system is split into large components dealing with data access and data display, since these 2 parts are modular they can be tested separately. We will employ the bottom-up approach to testing the system, ensuring the smaller parts are working correctly before they are merged as part of a larger system.

The data access portion deals with establishing a database connection, interfacing with the user, downloading the requested data, and uploading user data. For prototype development we used a locally hosted database using WAMP. Our section of the project requires us to access the media table and the profile table. The design of the media table has been revised from the prototype design as we incorporated the feature of tagging images.

Test No.	Module	Test	Result
1	Database Setup and PHP Connection	Create the db and verify the PHP script is able to query data	Success
2	Media Deletion	Ability to delete media from db during slideshow viewing	Has not been tested
3	Streaming Media	Pull Media from db into slideshow	Success
4	Streaming Website Wirelessly	Use Google Chromecast to wirelessly display site to projector	Success

Table 2.1: Unit Test

3. Updated Project Plan

Task	Person	Date
UI Design & Mapping	Hameed	Feb 5th
User Authentication Design and Testing	Abdurrahman & Other Group	Feb 5th
Database Design & Testing	Hameed & Other Group	Feb 5th
Full Picture Slideshow Functionality	Abdurrahman	Feb 12th
Audio and Video Storage/Playback	Abdurrahman	Feb 12th
Image Analysis to Assign Media Tags	Danny	Feb 19th
Dynamic Profiles based on User Search	Hameed	Feb 19th
Media Exporting & Deletion	Abdurrahman	Feb 26th
Final Rough Project	Group	Feb 26th
Polished Project	Group	March 4-11

Table 3.1: Updated Project Plan

4. Contribution Matrix

The contribution matrix provides details on how each member has contributed to the content of the report both in writing and material. For example, the list of tasks and contributors are shown in Table 4.1.

Table 4.1: Contribution Matrix

	People			
Members	Abdurrahman Ansari	Mohammed Hameeduddin	Dhanushga Lionel	Mingwei Zhang
Detailed Design	50%	0%	50%	0%
Unit and Integration Test	0%	100%	0%	0%
Updated Project Plan	33%	33%	33%	0%

References

List of references should be formatted using one of the referencing styles: APA or MLA or **IEEE**. All references should be cited within the report.