CSCI 3428 - Software Requirements Specification

Group 4

Wednesday 11th December, 2019

1 Introduction

1.1 Purpose

The program is intended to allow users to communicate with one another via text and images through instant messaging. It distinguishes itself from other messaging platforms by prioritising accessibility (by being tailored to the individual needs of each of the users), as well as ease-of-use and simplicity. It hopes to respond to the need for simple and accessible web-based services for use by the elderly.

1.2 Intended Audience

The program is being custom-designed for three residents of the Northwood Long-Term Care facility in Halifax, Nova Scotia. While the program's functionality is similar in nature to any other messaging platform, and can therefore be exploited by a wider user-group, its design will be constrained according to the needs of the three residents, and will be driven based on the feedback we receive from the residents during the testing and prototype phase.

1.3 Intended Use

The program is intended to be used as a text- and image- based communication platform. While it will not include functionality for voice or video communication between users, it might implement accessibility features that allow the users to control and interact with the program by voice, depending on their specific needs.

2 Description

The system is a free instant-messaging platform tailored to the specific needs of residents at the Northwood long-term care facility.

2.1 User Needs

Users of the platform require an instant messaging system that allows them to communicate with friends and family via the internet. Specific demands include the ability to send and receive text messages and images to and from a number of different contacts, using separate conversations. In prioritising simplicity, the system will have no outward-facing functionality that will allow users to add or delete contacts. This functionality, among other considerations, are left to the system administrator's control, via the user-management panel.

3 System Features and Requirements

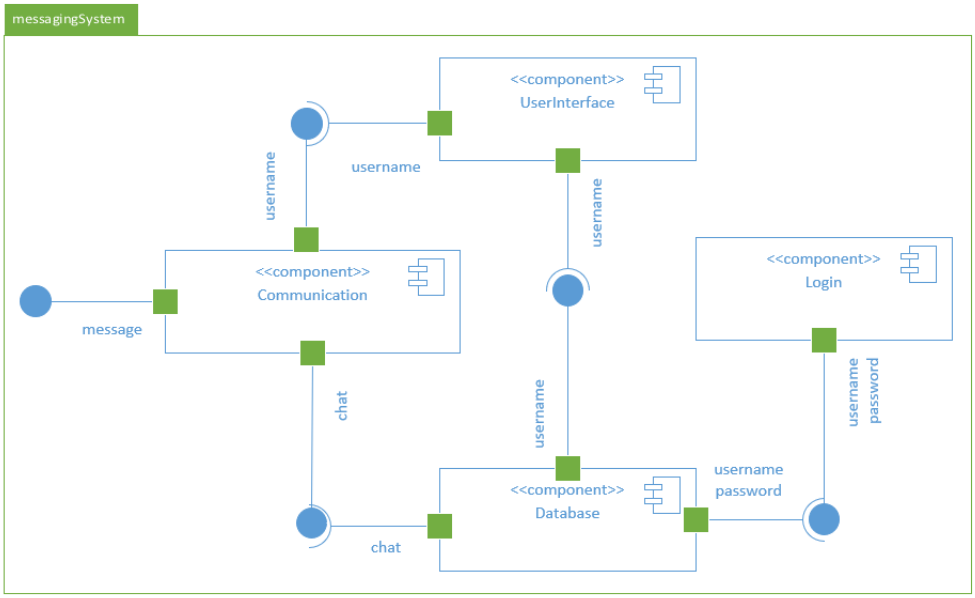

Figure 1: System Component Diagram

3.1 External Interface Requirements

3.1.1 User Interfaces

There are two primary user-interfaces that the users will interact with. The first is a log-in screen, for security and user-differentiation purposes, which gives each user access to their own conversation list. The user accesses the system via a given username (their first name) and password. The second primary user-interface is the conversation panel, which lists all currently active conversations that user has. The selected conversation appears to the right of the panel, and allows the user to scroll through their entire conversation history, as well as toggle between viewing the entire conversation (messages and images), and only the images they have sent or received. This toggle is activated by clicking the image icon that appears in the top-right corner of the chat window. The conversation panel include a text-box and image-upload button that allows them to send text and images respectively to their selected recipient.

Details for Login Page:

1. Username (name): The user is required to log in with their username credential in order to access the system. Text, size: 30
2. Password (password): The user is required to log in with their password credential in order to access the system. Text, size: 50
3. The correct combination of a username and its corresponding password is required to be entered into the system.

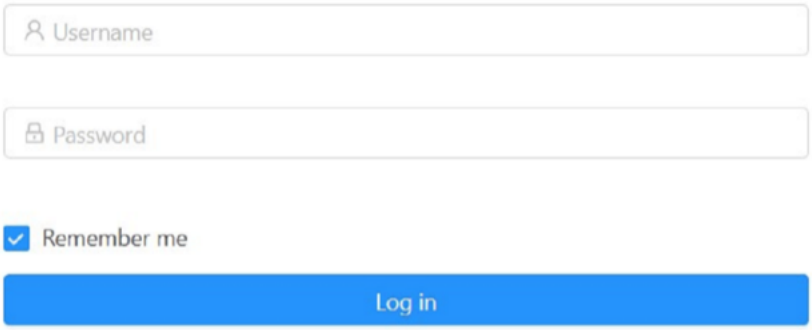

Figure 2: Log-In Page

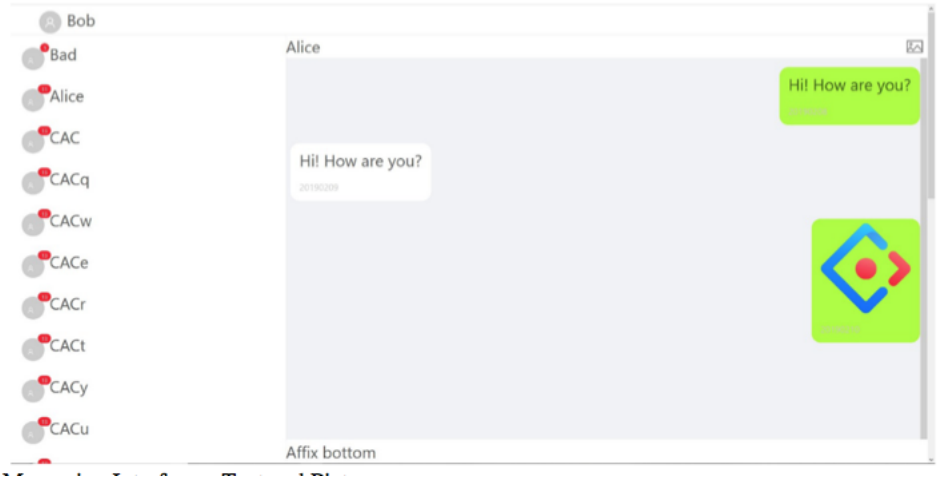

Figure 3: Conversation Panel

Details for Messaging Page:

1. Content of the Text-box (content): The user may type text into the input box on the bottom right of the screen. Upon pressing 'Enter', the text is displayed in the conversation window. The text is then sent to the recipient (another user of the system) who can view received messages on the left side of the screen in the chronological order of which they were received. Text, size: 100

2. Image Upload button: To the left of the text-box is an image-upload button, that allows them to send images to within their current conversation. Upon clicking, a their operating system's file browser will display, prompting them to select their desired image. Once selected, the image is automatically uploaded to the server, and sent to the recipient. Image file, size: N/A

3.1.2 Software Interfaces

The product will be accessed via a web-browser, and can therefore be widely used on most modern hardware. Specific requirements include in-browser support for the latest standards of both HTML (HTML5) and CSS (CSS3), as well as JavaScript and/or Python web-scripts. Ideal choices include the latest desktop versions of both Chrome (`v.78`) and Firefox (`v.70`), as the project was created and tested on both of these platforms.

3.1.3 Communication Interfaces

The project's webpage will be hosted on the undergraduate student's server at Saint Mary's University, and is accessible at `ugdev.cs.smu.ca/~group4`. Upon completion of the project, the system administrator will be given access to the server, its attendant SQLite database, and the user-management panel, to allow for long-term maintenance of the project. See the 'Installation and Maintenance' document for further details.

3.2 Functional Requirements

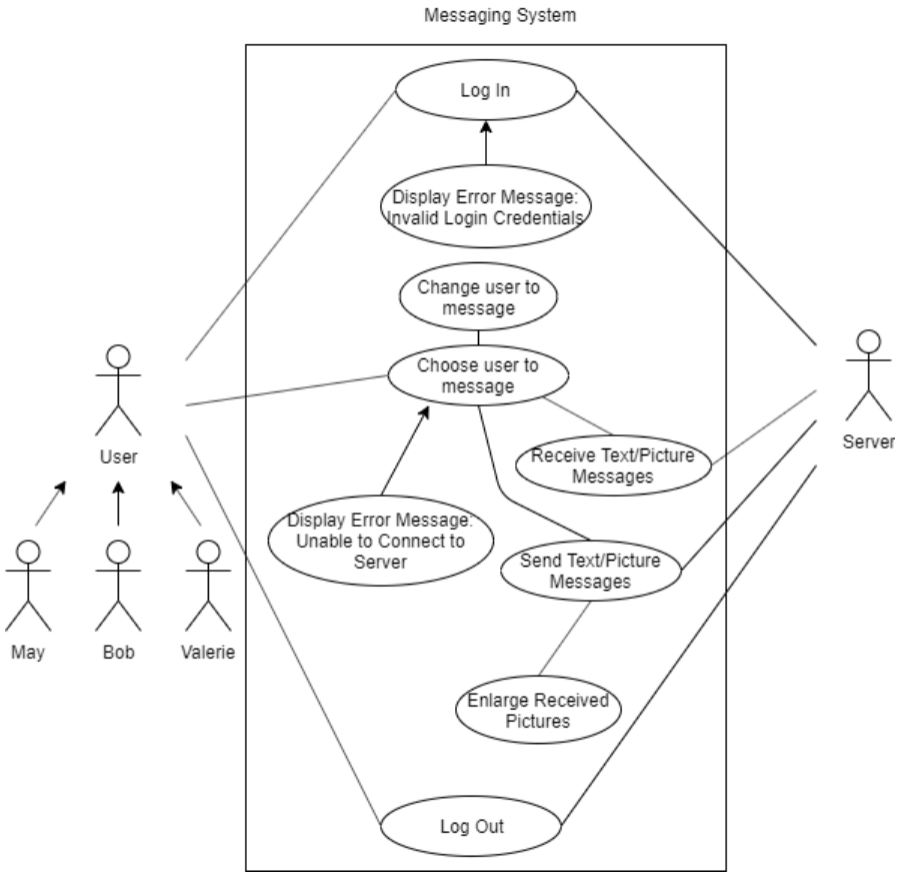

Figure 4: Use-case diagram

3.2.1 Essential

The following list represents core-aspects of the system's functionality that must be present in order to satisfy the client's requirements for its use.

1. Authenticate and log-in user into system: secures each user account to prevent public access to their communications. A robust user-management framework will further allow wider use of the project outside of its initial scope.
2. Allow users to change the current conversation to any of the other active conversations. Provides greater flexibility, and a potentially wider use-case for the project.
3. Allow user to send text messages to others: the key use-requirement for the entire system.
4. Allow user to send images to others: the second key use-requirement for the entire system.
5. Allow user to receive text messages from others: an extension of the first key use-requirement.
6. Allow user to receive images from others: an extension of the second key use-requirement.
7. Display loading icon if connection to the server is lost, and update if/when the connection is reestablished.
8. Enable user to log-out of system: allows use on public machines (e.g. at a library) without compromising the user's private data and conversations.

3.3 Performance and Quality Requirements

3.3.1 Essential

The following represents a list of requirements that must be present in order to distinguish it from alternative options. While not explicitly-stated by the core user's as a requirement, the following are necessary features to ensure the system is usable and maintainable over the duration of its life-span (minimum: 1-year).

1. Display all messages sent by the user on the right of the conversation panel, and the messages sent by their participant on the left.
2. Display time-stamp of when message was sent.
3. Display conversation history in order that messages were sent (oldest appears at the top, newest appears at the bottom).
4. Perform real-time synchronisation between user's session and database to update the conversation panel and display new messages as they are sent, without requiring user to refresh the page.
5. Allow the system-administrator to perform various user-management tasks:
    i. Change user's password
    ii. Add a new conversation between two users

iii. Delete an existing conversation between two users

iv. Add new user

v. Delete existing user

3.3.2 Optional

The following list represents a set of requirements that would make the system more flexible, allowing for use that can be tailored to a wider audience. Due to the time constraints present during this project, this functionality was not implemented in the first release of the system to its primary users, but remains an option for expansion for later in its life-span.

1. Allow user to access a settings page: provide functionality to allow users to tailor the appearance of the product according to their changing needs. Enables new users to access and use the system according to their own needs.

2. Allow user to change font size for messaging interface: improve readability of the displayed text according to user's preferences.

3. Allow user to change background colour of messaging interface: improve readability, comfort, and appearance of the system according to user's preferences.

4. Allow user to change text colour of messaging interface: improve readability and appearance of the displayed text according to user's preferences.

3.4 Design Constraints

3.4.1 Essential

The following is a general list of constraints that are placed on design of the system:

1. System must be browser-based, and be able to run on modern browsers (i.e. Google Chrome or Mozilla Firefox).

2. System must be hosted on the SMU computer science undergraduate student's server at `ugdev.cs.smu.ca/~group4`.

3. System must validate against current standards for web-development (specifically HTML5 and CSS3)

The following list represents the set of user-specific constraints that are placed on the design and functionality of the system, which must be taken into consideration in order to deliver a final product that is in line with the core user's needs.

a. **Valerie**

i. System must be readable and usable on a tablet screen.

ii. Must use varied colour palette to distinguish elements for readability.

iii. System must have support for tablet-based browsing platforms.

b. **May**

i. Must allow user to easily navigate through message history.

ii. Must allow user to easily navigate through image history.

c. **Bob**

i. System must include a high contrast between background and text.

ii. Background must be light-grey, and foreground elements/text must be lighter.

iii. Must allow users to have separate conversations with different users (family).

Contributors

- Rafid Akhtar (organisation)
- Gautham Chalapathy (user-specific requirements and communication)
- Lulu Chen (user interfaces, design constraints)
- Sarah Clarke (requirements, initial drafts)
- Veronica Hatala (figures, requirements, initial drafts)
- Martin McLaren (final document)
- Kreetish Venkataswami (introduction, description, initial drafts)
- Yilin Zhang (system organisation for figures)