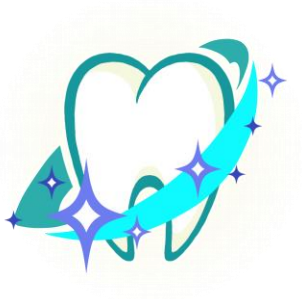
Software Requirement Specifications (SRS)

Scheduled Smiles



CSC 131-04 Software Engineering Project

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1. Introduction

1.1. Purpose of this document

The purpose of this document is to describe the desired functionality of the website with detailed requirements and proposed operations.

1.2. Scope of this document

All necessary requirements will aid the management of clinical activities with organizational standards and quick access to necessary records/information. Development of this system will include production of a website consisting of a

database and functions. How these requirements operate will be described within this document with proposed cases and listed by functionality with their purpose and processes.

1.3. Overview

Scheduled Smiles aims to streamline the gathering of clinical information by giving its client a user-friendly framework endowed by a structurally organized website.

2. General Description

2.1. Glossary

Definitions:

1. Database: A structured set of data held in a computer, especially one that is accessible in various ways.
2. Clinic: An establishment or hospital department where outpatients are given medical treatment or advice, especially of a specialist nature.
3. Query: A question, especially one addressed to an official or organization.
4. Encryption: The process of converting information or data into a code, especially to prevent unauthorized access.

Acronyms:

1. SRS: Software Specifications Requirements
2. HIPAA: Health Insurance Portability and Accountability Act

2.2. Project Sponsor

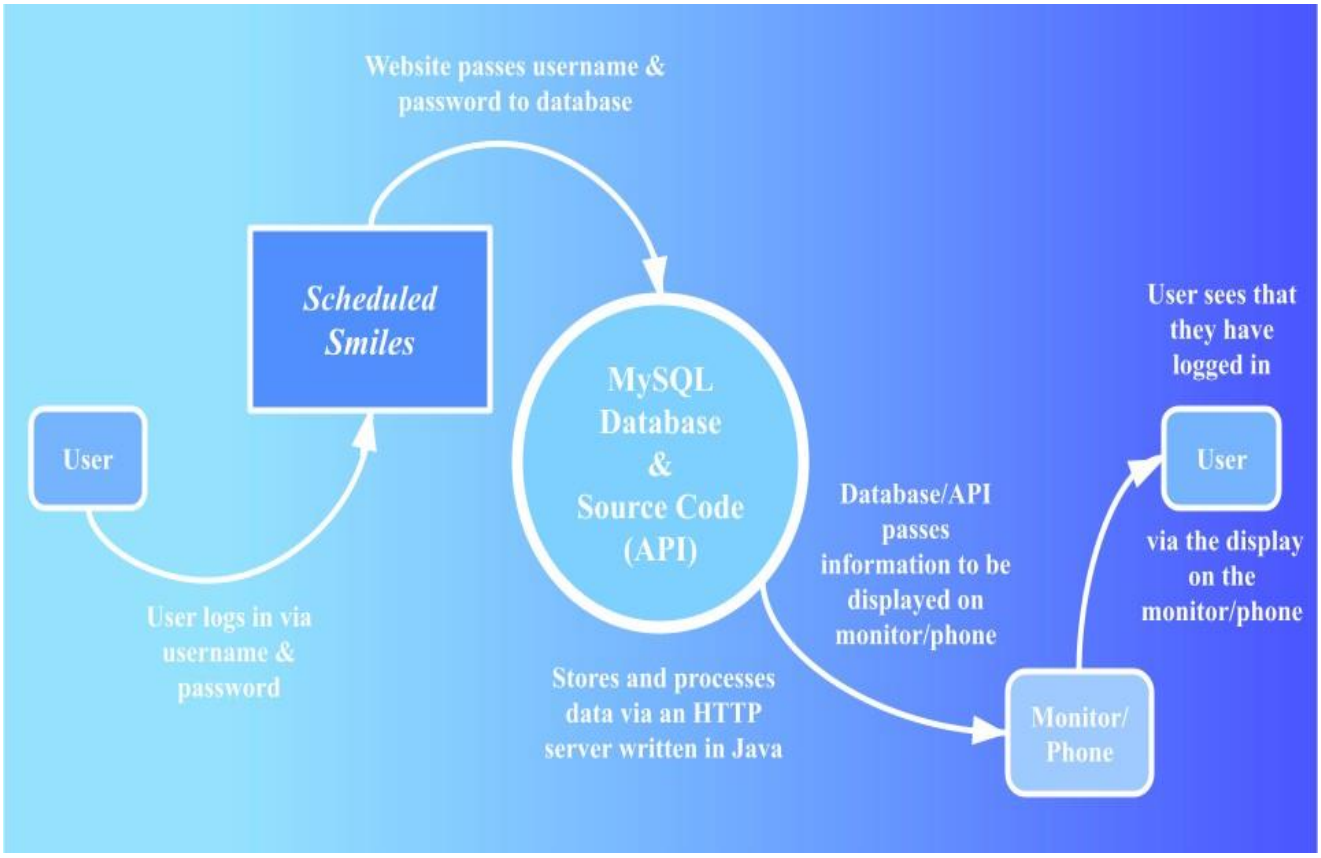
Client: Maryam Siddique

Maryam Siddique is looking for a way to help professional clinics by streamline interaction between patients and staff with ease of access and simplified use cases.

2.3. User Characteristics

1. General public: Individual users who plan to schedule appointments, contact the clinic, or access their medical records.
2. Staff: Individuals on the administrative side of the clinic who is the first point of contact with users. These individuals can work with users utilizing the same level of access as the general public as well as extra features exclusive to the staff. Staff users are also able to access payroll and salary calculations using the website.

2.4. Product Perspective



3. Object-Oriented Analysis

3.1. Use Case Diagram

Now we will define the use case diagram to give a brief description for each case.

FIGURE 1 : Creating an Account ; Users of our website will be able to create an account which houses information relevant to the specific user and be able to access that information by their unique account key.

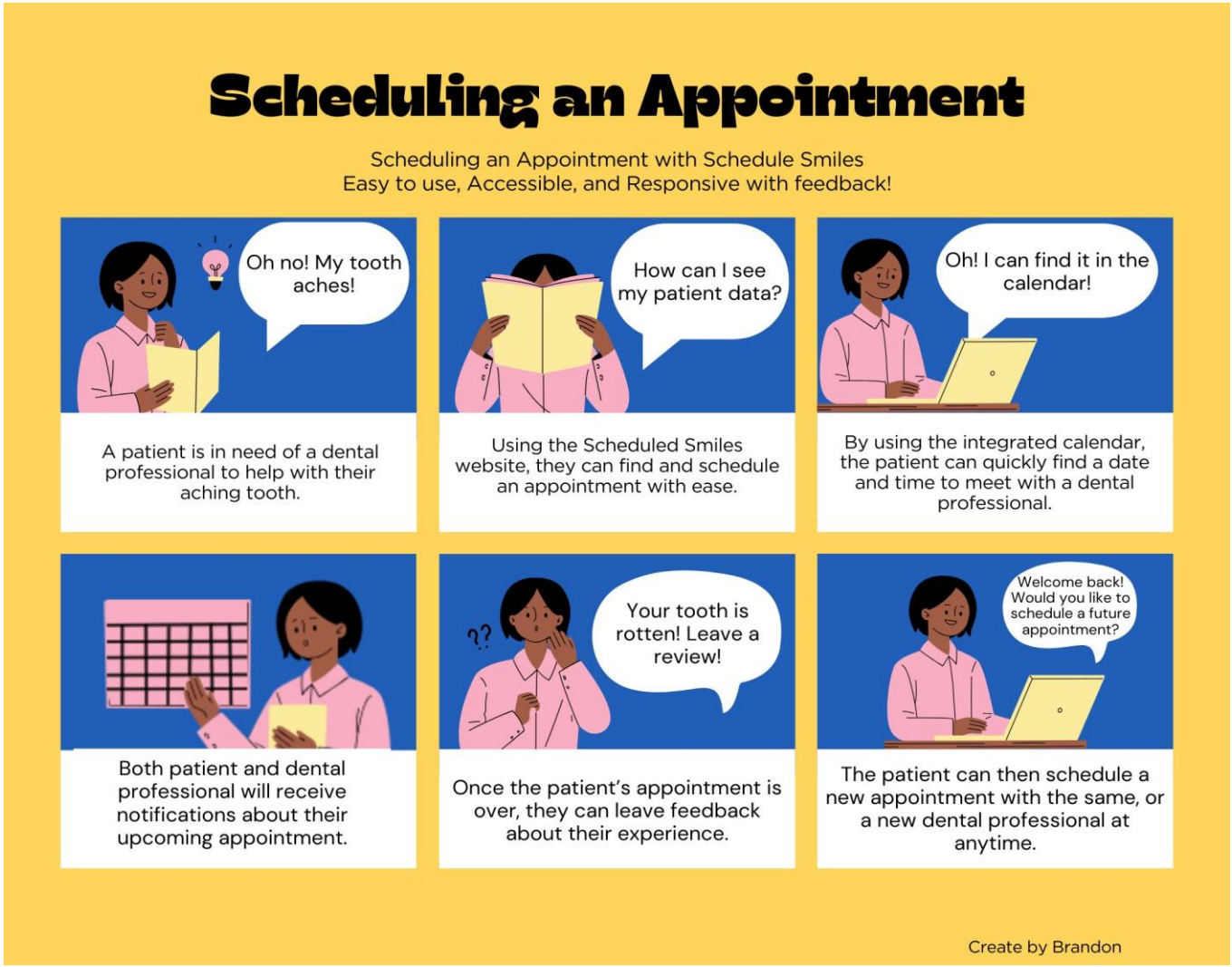


FIGURE 2 : Scheduling an Appointment ; Users will be able to organize their scheduling by using the website scheduling feature. The scheduled appointment is recorded into the database and will be able to be received by both patient and clinical staff, ensuring timely awareness of upcoming appointments.

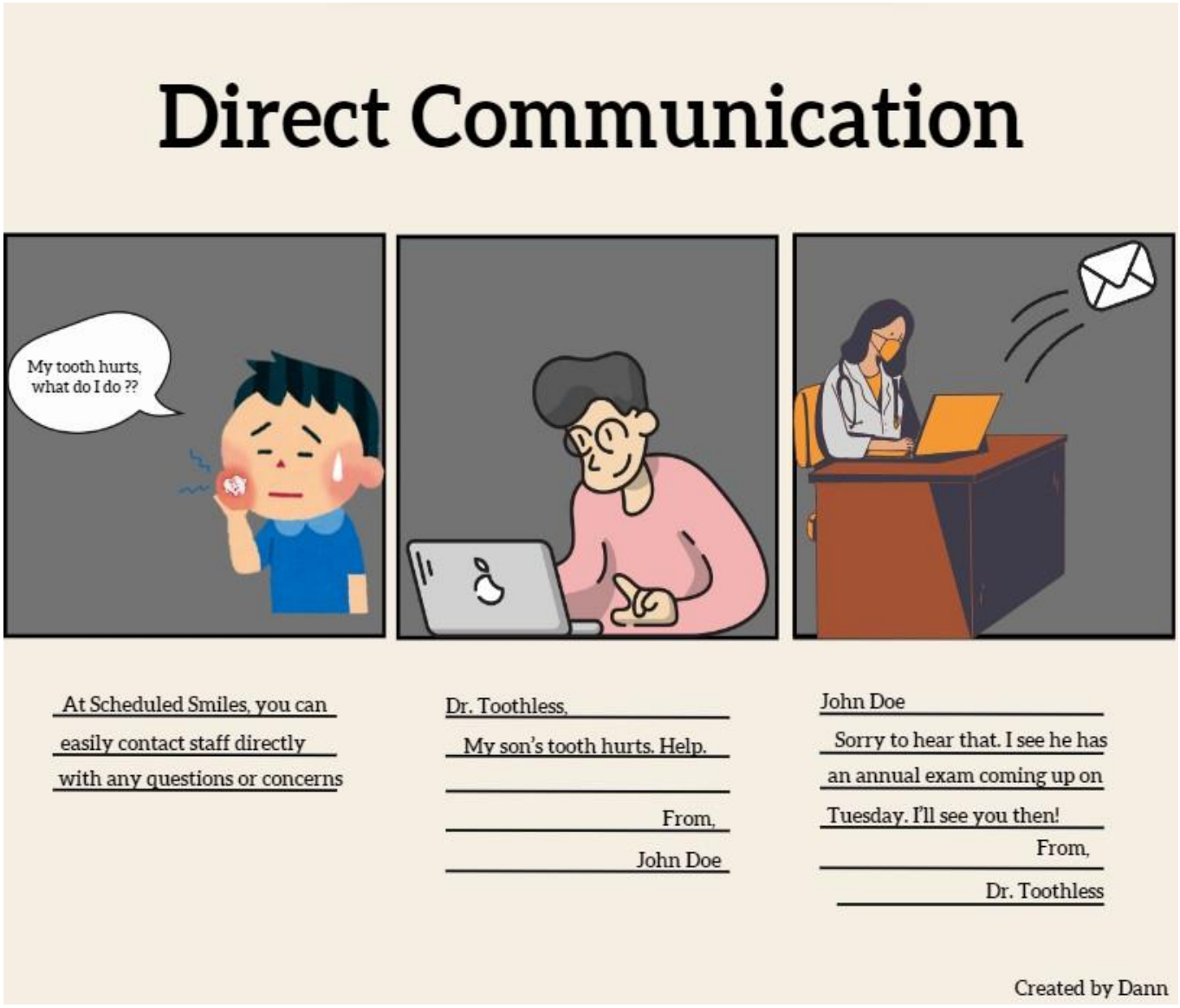


FIGURE 3 : Direct Communication ; Patient and Staff will be able to contact each other directly with an integrated messaging system found within the website. This messaging system records sent messages from participants into a database as a log which the Users will access once opening this system.

3.2. Use Case Descriptions

Now we will define the use case diagram to give a brief description for each case.

3.3. Creating an Account

Use Case Name: Creating An Account
Use Case Number: User Case 1
Authors: Kaylina & John
Actors: Patients
Overview: A patient is in the market for a new dentistry after being handled poorly by other absent-minded dental staff. They scour the world wide web for something that even mildly resembles a dentist's office that would meet their expectations. They reach the website and are welcomed to input their personal information to create an account.
References: FR 6.0 → **Related Use Cases:** UC 2, UC 3
Typical Flow Description: Users must enter their first name, last name, date of birth, and email in order to sign up for an account on the Scheduled Smiles website.
Alternative Flow Description: Provide a step-by-step process to the user in order to create their own account.

3.4. Making an Appointment

Use Case Name: Making an Appointment
Use Case Number: User Case 2
Authors: Sammy & Kaylina
Actors: Distressed Individual
Overview: An afflicted individual has a worrisome toothache and does not know what to do. They look online for a good dentistry and stumble onto our website due to our welcoming name Scheduled Smiles. They are enticed to create an account, log in, and make an appointment for their crippling affliction.
References: FR 1.0 → **Related Use Cases:** UC 2, UC 3
Typical Flow Description: Users input their login information and go to appointments and schedule a new appointment.
Alternative Flow Description: Users are given a set of step by step instructions to schedule an appointment.

3.5. Direct Message

Use Case Name: Direct Message
Use Case Number: User Case 3
Authors: Sammy & John
Actors: Patients & Dental Staff
Overview: The active users of Scheduled Smiles use its direct messaging system to get assistance with their questions and general check-ups. Staff also have the option of messaging each other when necessary.
References: FR 2.0 → **Related Use Cases:** UC 2, UC 3
Typical Flow Description: Users that have an account created can ask questions and directly message dental staff.
Alternative Flow Description: Users can select dental staff that have helped them previously and message them on the website.

4. Functional Requirements

FR 1.0 User Dashboard:

- Purpose: This requirement allows the user to access records relating to them. (i.e. scheduled appointments, previous treatments).
- Input: Users will select from predefined links on a main dashboard.
- Processing: Upon selecting a desired link, the website will redirect to the webpage related to the link description. If such webpage requires displaying specific data, a SQL query will be sent via server request to read user specified information from the remote database on AWS.
- Output: Recorded information will be displayed for the Users in an organized manner.

FR 2.0 Patient-Doctor Chat:

- Purpose: This requirement allows patients to directly communicate with their doctor(s) and vice versa.
- Input: Users directed to a dedicated chat page will be required to select another user that they wish to open a chat with. Upon opening a chat log connecting to desired user, messages need to be inputted through the text bar to be sent to specified user.
- Processing: Both the sender and receiver will have dedicated IDs, the message sent between users are stored in the database alongside the timestamp that it was sent to be ordered chronologically. Viewing a

chatlog will query the database to retrieve up to n^{th} number of message, decided by optimal runtime efficiency.

- Output: Users will be able to see up-to-date conversations between participants.

FR 3.0 Patient Billing:

- Purpose: This requirement allows patients to receive, view and pay their billed amounts.
- Input: Users navigating to the payment page will have the option of selecting to pay their most recently billed amount. An on-page redirect will serve a payment information page for users to input credit card information and opt to finalize payment.
- Processing: Upon page opening, a server request will send a query into the database selecting all recent appointments for that user up the n^{th} recent appointment, decided by optimal runtime efficiency. All selected appointments with the "paid" status (stored backend data type) as *true* will be sorted into the payment history alongside that appointment's respective cost, treatment, and date. Selected appointments with the "paid" status (stored backend data type) as *false* will be displayed separately with the option for user to select "pay".
- Output: Users will be able to see an up-to-date log of fees and charges. Confirmation of payment will display a clear prompt notifying the user their payment has been verified.

FR 4.0 Employee Payroll:

- Purpose: This requirement allows the user (staff) pay to be calculated and viewed based on hours worked.
- Input: This is a display only page, no inputs will be prompted from the user.
- Processing: Each staff associated will have their predefined hourly rate (backend variable) and hours worked (found by querying database for all recent appointments attached to that staff) used to calculate their expected pay.
- Output: User staff will be able to calculate and see their pay.

FR 5.0: Session Tracking Form:

- Purpose: A web page (form) for storing records per appointment. The page contains patients' health information, staff's notes, treatment type, and any other relevant information to be stored in the database.

- Input: User will be able to select a start time and additional keywords relating to patient's appointment. Users will also be allowed to input additional notes in the form of text.
- Processing: This webpage will have pre-determined keywords and will be saved with a unique form identification based on its entry number (generated in backend) into the MySQL database, saving account IDs associated with the session (both staff and patient). Keywords and key information in this form will be tracked and parsed into separate pieces of information for data storing. Tags/keywords from the session will be used to filter information via dashboard (FR 1.0).
- Output: Relevant information based on keywords will be stored in respective fields for viewing (i.e. payment, dashboard, etc…)

FR 6.0 User Login:

- Purpose: This requirement will allow users to log in and access their personal accounts.
- Input: User will enter their account credentials, associated by a username,, defined by email, and password, defined by user created text.
- Processing: User inputted credentials will be cross-referenced with a hashed version of the password stored in the database to verify correct user login. On verification, return account key (backend data type) associated with that specific user.
- Output: Specified account key tied to that user will be used throughout website access.

FR 6.1 User Registration:

- Purpose: This requirement will allow users to generate a unique account key to store and access related information, so that history associated with the user is trackable
- Input: User will enter required security credentials a username, defined by email, and password, defined by user created text, alongside various fields of personal information.
- Processing: Upon user input, credentials are cross-referenced from database for a search of duplicate credentials by querying previously created accounts. If no such replica is found, initiate account creation and store all information in database, as well as generate non-occupied account ID to be associated with user account.
- Output: A new account will be created for the expected new user with access to features accessible to defined role of specified user.

FR 7.0 Appointment Scheduler:

- Purpose: This requirement allows patients and staff to schedule an appointment at an available date and time through the Scheduled Smiles website.
- Input: Users that are logged in will automatically send their account key to the website. Users will select a day/week/month and enter their name/email.
- Processing: Upon receiving the user's account key, a server request will query the MySQL database for the account's role, displaying role specific processes. A separate server request will query the database for all non-occupied times available for the user to schedule their appointment.
- Output: The webpage will display a calendar/drop list of schedules available. Additional features will be available based on account privilege.

FR 7.1 Patient: View/Request Schedule Times

- Purpose: This view will allow patients to select from available time frames and request to reserve an appointment on the specified timeframe.
- Input: The user will choose from a list of selectable timeframes and enter identification in the form of name/email.
- Process: The timeframe will be entered into the website and database and be recorded. The reservation will occupy a time slot of 1 (one) hour. The account ID and user inputted information will be used to recognize who the appointment is for and retrieving history relating to that user.
- Output: A dedicated appointment slot has been created per user request.

FR 7.2 Staff: Creating/Managing Schedule Availability:

- Purpose: Staff will be able to create availability of appointments by whitelisting timeframes allowed for appointments from a list/calendar.
- Input: Staff select a start time from a list filled with daily and monthly attributes, they will also be able to select reserved timeframes from FR 7.1 to cancel appointments.
- Process: Selected time frames will be sent to the website and processed. These timeframes will create new overwritable data entries and store them in the database. If there are duplicate entries, they will overwrite the old ones. Recorded data entries will then be retrieved and displayed on the Calendar pages for general view.
- Output: Database will store new whitelisted entries for availability.

5. Performance Requirements

5.1. Query Process into a database

5.1.1. There is a process of actively pulling through a database and writing or overwriting informational references.

5.2. Up-to-Date tracking

5.2.1. There's a requirement to track accurately and up-to-date either with timestamps or variable attributes for data collection.

6. Design Constraints

6.1. HIPAA Compliance

6.2. Technological competency of User

6.3. Mobile Viewing Compatibility

7. Non-Functional Requirements

NFR 1.0 User Record Database:

The database for this Scheduled Smiles will be created utilizing MySQL and hosted remoted on AWS server. Queries into the database will be sent using server calls initiated from the backend.

NFR 1.1 Securing Database:

To prevent information breaches, sensitive information will be secured through the hash algorithm *sha256*

NFR 2.0 User communication:

At account creation, all users will be given a unique ID for linking communication. Messages will be inserted into a log on the database, and on webpage load, the latest log of that chat will be presented on the page.

NFR 3.0 Patient Information Validation:

Patient (role) identification is initialized after cross-reference of database for matching credentials. Uses include validation of payment information and appointment scheduling.

NFR 4.0 Staff Information Validation:

Staff (role) identification is initialized after cross-reference of database for matching credentials. Uses encapsulate staff specific view permissions such as payroll and alternate appointment page.

NFR 5.0 Session Tracking Form:

Checks and verifies if scheduled appointment sessions are available and then completed.

NFR 6.0 User Login:

Logging in will compare credentials against the database. User will input their expected username and password that will be used in a search through the database. The database will be checked if a username matching the inputted value exists, it will then require hashing the password and matching it to password hash stored under the corresponding username in the database. If matching,the user will be logged in.

NFR 6.1 User Insert to Database:

Registering new users will add them as a new entry to the database. They will be inserted in an organized data structure based on a newly created and unique ID.

NFR 7.0 Appointment Scheduler

When scheduling an appointment, clear, visual user feedback will be given based on account privilege. We will display obvious color schemes or patterns to determine which specific time frames are available/allowed. An easily-accessible legend will also be displayed for clarification on the meanings of each color/pattern.

8. Uses of SRS document

8.1. Scrum Master:

8.1.1. Helps with planning and managing the development phases

8.1.2. Keeps track of the timeline and budget to meet the client's requirements

8.2. Developers:

8.2.1. Provides clear set of requirements of the client's needs

9. Remarks

Ideas to Consider:

1. Connect server to Gmail API for notifications
2. Host domain via Squarespace

10. References

10.1. Canva (Create User stories)

10.2. FireAlpaca (Logo)

10.3. Google Slides (System Context Diagram)

10.4. Google Docs (Software Requirements Specifications Document)

11. Conclusion

11.1. This SRS document informs the reader of the projection of the website, Schedule Smiles. Interactions between Patient and Staff are defined through Use Case scenarios and visual representational diagrams. Requirements are specified and explained to show their productivity and performance in aiding clinical sessions

between users of the platform. Overall, Schedule Smiles aim to perform beneficially as a median for its clients.

12. Team members

12.1. Sammy Wong – Product Owner/Scrum Master
12.2. Keav'n Lor – Full Stack Developer
12.3. Kyle Tran – Full Stack Developer
12.4. Dann Manganti – Lead Frontend Developer
12.5. John Vue – Backend Developer
12.6. Kaylina Kwong – Lead Backend Developer
12.7. Brandon Casey – Backend Developer
12.8. Erds Ferdi Mabilog – Database Developer