Milestone 1 Proposal

PREPARED FOR
SW Engineering CSC648/848

PREPARED BY
CSC648-01, Team 04

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Doseedo

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1. Executive Summary

As we journey through life, caring for our beloved seniors becomes a cherished responsibility. Yet, we understand that providing constant care can be demanding, especially when time is limited. That's why we created Doseedo, a user-friendly companion designed to support both seniors and their caregivers. With our app, we aim to ease the burden of caregiving by offering gentle reminders and helpful tools, allowing you to make the most of your time together while ensuring peace of mind.

Our application will have two different accounts where the user can be a caregiver or the senior.

Seniors

Our application features an intuitive interface tailored specifically for seniors, prioritizing ease of use. With just a few clicks, seniors can confirm their medication intake or acknowledge notifications with a quick yes or no response. Our app also facilitates seamless communication with loved ones, providing updates throughout the day. In case of emergencies, access to vital services is just a click away, ensuring peace of mind for seniors and their families.

Caregivers

We understand the importance of balancing caregiving responsibilities with personal lives. Our application empowers caregivers by allowing them to create personalized reminders for their seniors, ensuring essential tasks are never overlooked. Additionally, caregivers receive daily updates on their senior's well-being, providing reassurance and allowing them to stay connected even from a distance. With our app, caregivers can confidently support their seniors while maintaining their own autonomy and lifestyle.

Setting us apart from other similar applications, we've meticulously crafted our user interface with seniors in mind, drawing from color palette studies to create a welcoming and visually comfortable experience. Our design prioritizes simplicity and ease of navigation, consolidating all features onto a single screen for effortless use. Additionally, our app offers versatile

communication options, allowing users to receive notifications within the app or via text messages. In cases where a senior doesn't have a designated caregiver, they can seamlessly transition to a caregiver account, gaining autonomy to manage their own reminders and notifications independently.

Our diverse team comprises 6 San Francisco State students, each bringing a unique blend of skills and experiences to the table. With backgrounds in software development and user experience design, we have collaborated to bring our vision to life. Driven by our shared passion for improving the lives of seniors and caregivers, we draw inspiration from our own personal experiences and connections to senior care. We are excited for the opportunity to work together and continue our journey of creating impactful solutions for our community.

2. Personas and User Stories

1. Patient Fredricksen:

Ellie Fredricksen is a 72 year old mother of 2 and grandmother of 5. She lives in a quiet home by herself and looks forward to visits from her family and friends every week. Ellie's favorite hobby is stamp collecting and has been collecting them ever since she met her late husband Carl. Ellie has one dog that keeps him company but she wishes he was able to keep contact with her immediate family more often. She is very stubborn about her ability to live independently. She is a middle class senior retiree living off his retirement savings and SSI. She is well off financially but his kids/grandkids worry about her and wish they were able to keep in contact more often to make sure she's taking medications every day and to know if she's mentally able to remember them, but they are very busy with their own families. She doesn't like using Facetime because she thinks he's bothering her family, but she would still like to have more contact with them on weeks they can't visit.

2. Caregiver Andrea:

Andrea is a non-binary caregiver, he is quite experienced when taking care of elderly users. One thing Andrea is worried about is having to memorize each medicine along with their dosage for each patient. He usually writes it down on paper after looking it up in the computer system of each patient, schedules for each patient based on dosage, and often has to reprint them when a change is made for each person. He wants to use this app to help him set up medication reminders for elderly and disabled users, and to give them a feeling of control over their own medication if they can usually remember. He wants to be able to input medication schedules, dosage information, and receive timely notifications to ensure that the seniors take their medications as prescribed. This feature will help him manage and track the medication routines effectively, ensuring the health and well-being of his patients.

Caregiver Michael:

As a family caregiver I want to use the app to help my grandpa since he doesn't really like technology that much being unable to understand it at that age. He is in great health right now but his family constantly is worried about him because he is very clumsy. I want to use the app to set up and receive medicine reminders for my grandpa, including dosage information, to ensure he takes his medications on time. Since I am monitoring him I want to also use this app's calendar to assist me with daily necessities such as meal preparations, along with a built-in function of emergency contacts to family members or emergency services in case I am not there so other assistants can use it at hand.

3. Data Definitions

- **User** - This holds all the users personal information data. This includes an account id, name, DOB, email, phone number, etc.. This data is used to link to an account type that the user creates

- **Account** - This holds the type of the account that the user holds, each with different permissions.
  - Caregiver - Holds information on patient data, medication, dosage, and reminders. They hold administrative permissions over patient medication cycles and schedules.
  - Patient - Holds information on medical records and medical reminder completions

- **Notification** - These are events that are going to be triggered whenever the assigned To do / Daily tasks aren't fulfilled. Gets the details from the patient account and alerts their caregiver.
  - These are also triggered when ever a patient needs take their medicine

- **Medication** - This holds all the data about the medications that a patient has assigned to them. This includes dosage, frequency, type, application, description, etc...

4. Initial List of Functional Requirements

- User - General
    - User shall log in and out
        - For all three personas, security is a requirement for medications
    - Users shall not be timed out of log in.
        - Michael's grandfather leaves the web app on the computer 24/7, and would not like to struggle with login and logout often.
- Account
    - The initial account shall have one primary user associated with caregiver permissions
        - Ellie's daughter wants to be added to her medication routine in case she begins to forget- this can indicate potential memory loss if it notifies them frequently.
    - A secondary account may be added to many primary accounts.
        - Caregiver Andrea has more than one patient.
    - A primary account may be associated with only one secondary account.
        - Andrea patients do not need more caregiver accounts than the one for Andrea, since he is setting it up and managing it for them.
    - Once a secondary account becomes associated with the primary account, permissions shall change
        - Initial account shall be given patient permission
            - As Ellie has added another account, it implies that she may need assistance remembering her pills with full functions from the solo account. She may

accidentally remove a reminder alert or a medication from her list.

- ■ Second account shall be given caregiver permissions
  - ● Michael has more cognitive faculty or electronic savvy than his grandfather, so it is easier for the both of them if he manages the app for his grandfather.
- ● Task notification bar
  - ○ For Patient
    - ■ Taskbar reminders for medications shall appear at the reminder alert time until an 'alert expire-time'.
      - ● Ellie is reminded to take her medication as she keeps the web app open.
  - ○ For Caregiver
    - ■ Notify every time new browser session
      - ● Andrea can see that his patient is up and around before he has gone to their apartment.
      - ● Ellie's daughter can see that she has used the app for the day, even though she isn't answering the phone
- ● Reminder
  - ○ General Attributes
    - ■ Dosage
      - ● All personas require dosage.
    - ■ Units of measurement i.e. mg, g etc
      - ● All personas require measurement units per dose.
    - ■ Medication "form"- i.e. capsule, pill, powder
      - ● All personas require knowing what the pill looks like.
    - ■ Portion of form optional i.e. full, half
      - ● All personas require an amount because they take half a pill.
    - ■ Option click boxes for common requirements such as 'with food' and 'with water'
      - ● All personas require dosage.
    - ■ Time
      - ● All personas require a time for their medication.
    - ■ Date

- - - All personas require a date because some medications are only once a month.
    - For Patient
      - Shall include an 'alert expire time' where alerts will stop, taskbar items will disappear, and caregivers will be notified automatically by text and email.
        - Ellie has forgotten to take her meds for the day, and so her daughter will remind her.
    - Shall display reminder alert pop ups at the time set.
      - Ellie has forgotten to take her meds for the day while cooking, but will remember at the next popup.
    - Shall include a reminder alert interval 10 min, 30 min, 1 hr option.
      - Ellie has forgotten to take her insulin which is a very time dependent medication.
    - Reminder Alert Pop-ups
      - Shall require a yes or no input
      - Shall block the entire app until input is given
      - Shall include a time out of 5 minutes
      - Shall send time outs as a "no"
        - Michael's grandfather is going to press the button so that he can go back to his tv without his grandson 'bothering him' about taking his medication
- Calendar
  - Displays a schedule of medication from reminders list
    - Andrea can view his patient's medication list instantly while talking to a doctor.
- Medication List
  - Medications will be shown as a list and can be added/deleted/edited from here
    - One of Andrea's patient's medication changes every few days based on blood levels.

5. List of Non-Functional Requirements

1. Compatibility:

   a. Application can be used on several mobile browsers

      including chrome and Mozilla Firefox. Website should

      be able to run in any web browser using our HTTP

2. Development requirement:
   a. Data shall be stored in the team's chosen database technology on the team's deployment server (Amazon AWS)
   b. The code in the master branch of the team's github repo should be well maintained and tested, and guarantee working at any time.
3. Usability:
   a. Application shall be easy to use and intuitive by taking users list of medicine and daily reminders of time and dosage of such medicine
   b. Website should be easy to use for the recipient side
   c. Website should ask for caregivers information and

      displays recipients information
4. Security:

    a. constraints might want to provide a pin for security measures

    b. Users passwords should be encrypted for security reasons

    c. a HIPPA approved db and cloud server

5. Accounting requirements:

    a. User should be able to sign up

    b. User should be able to login

    c. User should be able to set up reminders

    d. User should be able to add in time and dates

    e. User should be able to add the type of medicine

6. Fault Tolerance:

    a. The website or system should be available 90% of the time unless maintenance or outage

7. Operational Requirements (Permissions):

    a. If user has one primary account they have access to both recipient and caregiver(permission #)

    b. Permission # give access to account functionality

    c. If user has 2 account they have limited access and the second account would be the caregiver permission #c

    d. Permission id # for primary user

6. Competitive Analysis

Company's	Features				
	Messages	**Account security/permissions**	**UI/UX Design**	**Calendar**	**Pill reminder option**
Doseedo	Our app will allow the doctor, loved ones, and caregiver to send messages to the patient in the messages section.	We are implementing two accounts: one for the patient, which is mandatory to use the app, and the second for the caregiver, which is optional. If a caregiver creates an account linked to a patient, they can access all of their patient's data and permissions.	Utilize pastel-subtle warm/cool tones from online elderly studies to showcase preferred shades, enhancing the feeling of being more alive and updated. The design also includes large icons and a daily tab with a navigation bar.	The app showcases daily reminders, messages, and medications for the day. Users can click the icon to view a more detailed calendar for the full week or month if needed.	With our app, we aim to include a timed window for pill reminders, allowing users to indicate whether they have taken their medicine by clicking yes or no.
Medisafe	The app doesn't send messages; instead, you can view your progress report and send it to the doctor or nurse as a PDF.	You can invite caregivers to remind patients to take their medication.	The colorway implemented in this app is similar to Everydose; however, our UI is more updated and incorporates the use of calendars and graphs to showcase reminders and health data.	The calendar is presented as a separate category.	The pill reminders include timed notifications, even when you fall asleep.
Pill reminder	The only permitted communication is via email, facilitating the transmission of medication lists or administration histories to the doctor.	Only a patient account is available, featuring the functionality to create medication lists for patients and their family members.	The UI design incorporates colors of orange, white, blue, and red, though it appears outdated with drop-down boxes on the screen.	It solely presents a comprehensive calendar where users can configure alarms.	reminders repeat every X hours (e.g., from 8 AM to 8 PM, every 4 hours), repeat at specific times, repeat every half-hour, repeat on selected days of the week, repeat every X days, weeks, or months), and repeat daily for 21 days with a 7-day break

Everydose	The app does not send messages but instead shares "health progress" exclusively through friends within the network.	There is only a patient account available, and users can only share their medication list with their caregivers.	The design is primarily list-oriented, with navigation limited to drop-down screens featuring white and blue color schemes throughout the application's UX design.	The presented calendar feature only allows users to set reminders.	Users can easily schedule reminders for medications, vitamins, and supplements. Customizable scheduling options include daily, as-needed, specific days, and more. Quick actions enable users to respond to medication reminders without opening the app, while notification frequency can be adjusted to meet individual needs.

Summary

Doseedo offers several advantages over existing solutions. Firstly, its messaging section enables seamless communication between doctors, caregivers, and loved ones, fostering a supportive environment for the patient. The implementation of two accounts, one for the patient and an optional one for the caregiver, ensures personalized access to patient data while maintaining security and privacy. The UI/UX design, inspired by pastel-subtle warm/cool tones from elderly studies, enhances user experience by catering to the preferences and needs of older adults, with large icons and intuitive navigation. The calendar feature provides daily reminders and medication schedules, with the option to view more detailed weekly or monthly calendars for comprehensive planning. Additionally, the pill reminder option offers a timed window for medication intake, allowing patients to track their adherence easily and providing valuable data for healthcare providers. Overall, the planned product prioritizes user-friendly design, security, and comprehensive features to enhance the healthcare experience for patients and caregivers alike.

7. High-level System Requirements

Server Host	Amazon Web Services - EC2
Operating System	Ubuntu 22.04LTS
Database	MySQL Community Server 8.3.0
Web Server	NGINX
Front-End Framework	React, Bootstrap
Server-Side Language	Javascript
Web Application Framework	Express
IDE	VS Code, IntelliJ
Additional Technologies	HTTPS
Development Environment	Node.js
Network Protocol	HTTPS
Terminal Emulator and SSH	MobaXTerm
Open Source APIs/ Codes/ DataBase	RxNorm

8. The Team

Team Members

Student names	Roles
Yuto	Team lead
Paige	Scrum Master
Aleia	Back-end Lead
Carlos	Front-end Lead
Yakoub	Front-end Floater
Wing	Git-Hub Master / Back-end Floater

Study Plan

Topic of Study	Who	Study By Date
Server Configuration Study Plan Part 1: Initial Server Set up using EC2 & MobaXterm	Yuto (leader) / All	2/7
Server Configuration Study Plan Part 2: NGINX Configuration	Aleia (leader) / All	2/14
Server Configuration Study Plan Part 3: RDS Configuration	Aleia (leader) / All	2/21
Server Configuration Study Plan Part 4: Node.js vs NGINX	Yuto (leader) / All	2/28
DataBase Study Plan part1: Principle of DataBase	Paige (leader) / Aleia / Yakoub / Yuto	3/15

Front-End Study Plan Part1: Basic design principles using Figma	Carlos (leader) / Yakoub	3/15
Back-end Study Plan Part1: Server-client architecture and APIs	Aleia (leader) / Wing	3/15
Version Control study plan part 1: Basic Commands	Wing (leader) / Paige /Carlos	3/15
DataBase Study Plan part2: Database diagram	Yuto (leader) / Aleia / Yakoub / Paige	3/31
Front-End Study Plan Part2: Principle of HTML and CSS and Java Script	Carlos (leader) / Yakoub	3/31
Back-end Study Plan Part2: Principle of Java Script	Aleia (leader) / Wing	3/31
Version Control study plan part 2: How Git works	Wing (leader) / Paige /Carlos	3/31
DataBase Study Plan Part 3: Database Schema	Aleia (leader) / Paige / Yakoub / Yuto	4/15
Front-End Study PlanPart 3: React	Carlos (leader) / Yakoub	4/15
Back-end Study Plan Part 3: Express	Aleia (leader) / Wing	4/15
Version Control study Plan Part 3: Useful Commands	Wing (leader) / Paige / Carlos	4/15
DataBase Study Plan Part4: Architecture and Modeling	Aleia (leader) / Paige / Yakoub / Yuto	4/31
Front-End Study Plan Part 4: utilizing CSS frameworks	Carlos (leader) / Yakoub	4/31
Back-end Study Plan Part4: authentication methods	Aleia (leader) / Wing	4/31
Version Control Study Plan part 4: Dealing with errors	Wing (leader) / Paige / Carlos	4/31

9. Checklist

Task	Status
Team found a time slot to meet outside of the class	**DONE**
Scrum Master shares meeting minutes with everyone after each meeting.	**DONE**
Github master chosen	**DONE**
Everyone sets up their local development environment from the team's git repo	**DONE**
Team decided and agreed together on using the listed SW tools and deployment server	**DONE**
Team ready and able to use the chosen back/front-end frameworks.	**DONE**
For each technology (front/back-end/DB/cloud), team decides who will lead the study of each technology and what will be the specific goal of the study within one month from the M1 announcement	**DONE**
Team lead ensured that all team members read the final M1 and agree/understand it before submission	