SOFTWARE DESIGN DOCUMENT

Safe Haven

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1. Introduction

1.1. Project Overview

The Women Safety and Wellness Application is a mobile app designed to help women stay safe and healthy in their daily lives. The app includes features such as emergency contacts, safety tips, and wellness resources.

The app's primary objective is to provide women with a sense of security and support in situations where they may feel vulnerable or threatened. The emergency contacts feature allows users to quickly call for help in case of an emergency. The safety tips section provides users with practical advice on how to stay safe in different scenarios, such as traveling alone or walking home at night.

In addition to safety features, the app also includes wellness resources, such as mental health tips. These resources are designed to help women prioritize their physical and mental well-being and promote a healthy lifestyle. The app will also prioritize user privacy and data security, with strong encryption and data protection measures in place.

Overall, the Women Safety and Wellness Application aims to empower women by providing them with the tools and resources they need to feel safe and healthy in their daily lives.

1.2. Project Scope

The scope of the Women Safety and Wellness Application project would involve several key areas, including:

1.Planning and Research: Conducting initial research on the target audience and their needs, defining the app's objectives and requirements, and developing a project plan with timelines and milestones.

2.User Interface (UI)/User Experience (UX) Design: Developing the app's user interface and user experience, including wireframing, prototyping, and visual design.

3.App Development: Developing the app's functionality, including safety features like location tracking, crime detection, emergency contacts and safety tips and wellness resources.

4.Testing and Quality Assurance: Conducting usability testing to ensure the app is easy to use and meets user needs, testing the app's functionality, and ensuring data security and privacy measures are in place.

5.Launch and Deployment: Launching the app on app stores, promoting the app to the target audience, and providing ongoing support and maintenance to ensure the app remains up-to-date and relevant.

The project's scope would require careful planning, attention to detail, and a focus on delivering a high-quality, user-centered app that meets the needs of women seeking safety and wellness resources.

2. System Architecture Design

The system architecture design of the Women Safety and Wellness Application would involve the following components:

1.User Interface (UI): The user interface would be developed using a mobile application development framework such as Flutter. The UI would include different screens such as the login page, home screen, safety tips screen, location tracking screen, wellness resources screen, and emergency contacts screen.

2.Backend Server: The backend server would be developed using a programming language like Dart, and a database management system like FireBase. The server would be responsible for storing user data, managing user accounts, and serving the app's content.

3.Application Programming Interface (API): The API would provide a way for the mobile app to interact with the backend server. To implement location tracking and provide location-based services, you may need to use location-based APIs such as Google Maps API. For communication between users or with emergency services, we use communication APIs such as Twilio API, Nexmo API, or SendBird API. Information sharing on social media platforms or log in using their social media accounts, you may need to use social media APIs such as Facebook API, Twitter API, or Instagram API.

4.Safety Features: The safety features of the app would be implemented using native mobile app features such as GPS. In case of an emergency, the app would use GPS to track the user's location and send an alert to the emergency contacts listed in the user's account. We use location-based APIs such as Google Maps API.

5.Wellness Resources: The wellness resources section would be implemented using a content management system (CMS) that would allow the app's administrators to update the content of the app without requiring a code change. The CMS could be developed using a tool like WordPress or Drupal.

The above components would be designed and implemented in a way that prioritizes user privacy and data security, with strong encryption and data protection measures in place to ensure user data is kept safe.

3. Application Architecture Design

The application architecture design of the Women Safety and Wellness Application would involve the following components:

1.Presentation Layer: The presentation layer would be responsible for the user interface (UI) and user experience (UX) of the app. This layer would be developed using a mobile application development framework such as Flutter. The UI would include different screens such as the login page, home screen, location tracking screen including crime detection, safety tips screen, wellness resources screen, and emergency contacts screen.

2.Application Layer: The application layer would be responsible for the app's business logic and would include features such as user account management, safety tips, and wellness resources. This layer would be developed using a programming language like Dart, and would communicate with the backend server through a Firebase Realtime Database API, Firebase Cloud Messaging API and Firebase Storage API. FireBase Realtime Database API provides a cloud-based database that allows developers to store and synchronize data in real-time. It also provides features such as data encryption, offline data access, and data validation. Firebase Cloud Messaging API provides a messaging service that allows developers to send push notifications to their users, even when the app is not running in the foreground. Firebase Storage API provides a cloud-based storage system that allows developers to store and retrieve user-generated content, such as images and videos.

3.Backend Layer: The backend layer would be responsible for the storage and management of user data, including user account information, safety tips, and wellness resources. The backend would be developed using a programming language like Dart, and a database management system like FireBase.

4.Security Layer: The security layer would be responsible for ensuring the app is secure and that user data is protected. This layer would include encryption and data protection measures to prevent unauthorized access to user data. Since Firebase is the backend, you can use Firebase security rules to restrict access to data based on user roles and permissions. This ensures that only authorized users can access sensitive data.

4. User Interface Design

4.1. GUI Designs

1.Login Page: The login page would require the user to enter their credentials to access the app's features. The page would have fields for the user's email address and password. It also provides the facility to login using social media accounts. Registration screen and Forgot password screen are also present.

2.Home Screen: The home screen would be the main screen of the app, and would provide easy access to all of the app's features. The screen could have buttons or icons for different features such as “Location Tracking”, “Safety Tips," "Wellness Resources," "Emergency Contacts," and "My Account."

3.Safety Tips Screen: The safety tips screen would provide the user with important information and advice on staying safe in different situations. The screen could have different sections for different topics such as "Travel Safety," "Home Safety," "Self-Defense," and "Cyber Safety."

4.Wellness Resources Screen: The wellness resources screen would provide the user with resources and information on mental health and wellness. The screen could have different sections for different topics such as "Stress Management," and "Mental Health Resources”.

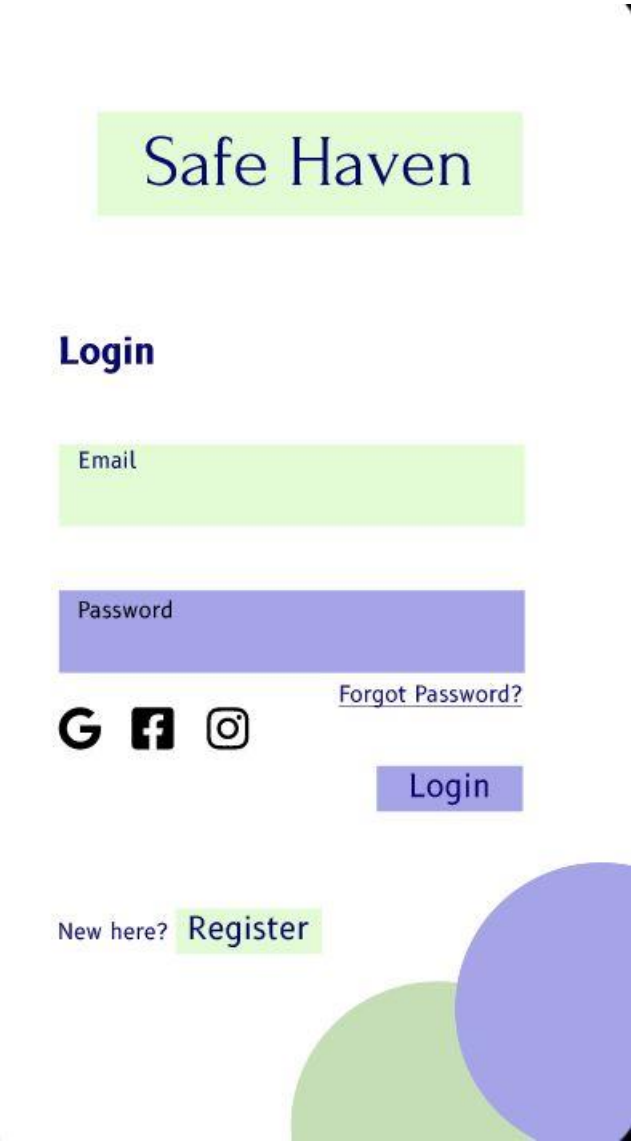
5.Emergency Contacts Screen: The emergency contacts screen would allow the user to add and manage emergency contacts that could be notified in case of an emergency. The screen could have fields for the contact's name, phone number, and relationship to the user.

6.My Account Screen: The "My Account" screen would allow the user to manage their account information, including their personal details, emergency contacts, and preferences. The screen could have fields for the user's name, email address, phone number, and password.

7.Location Tracking Screen : A location tracking screen in a women safety and wellness application is an important feature that allows users to track their location in real-time and alert their emergency contacts if they are in danger. It also includes “Crime Detection” feature.

Components in location tracking screen are map view, user location marker panic button, settings and emergency contact list.

(a) Login Page



(b) Register Screen

Register

Full Name

Email

Password

Phone number

Register

5. API Design

It uses Google Map API to implement location tracking feature. The APIs are designed using Django REST framework.

6. Database Design

The database design of the Women Safety and Wellness Application would involve creating tables and relationships between them to store and organize the app's data. Here are some examples of tables that could be used:

1.Users Table: The users table would store information about the app's users, including their name, email, password, and other user-specific data. The table might include fields like "id," "name," "email," "password," "phone_number," and "emergency_contacts."

2.Safety Tips Table: The safety tips table would store information about the different safety tips available in the app, including their title, description, and category. The table might include fields like "id," "title," "description," "category," and "created_at."

3.Wellness Resources Table: The wellness resources table would store information about the different wellness resources available in the app, including their title, description, and category. The table might include fields like "id," "title," "description," "category," and "created_at."

4.Emergency Contacts Table: The emergency contacts table would store information about the different emergency contacts that a user has added to their account, including their name, phone number, and relationship to the user. The table might include fields like "id," "name," "phone_number," "relationship," and "user_id."

7. Technology Stack

Safe Haven, the women safety and wellness application is built using the following technology stack :

Frontend : Dart, Flutter

Backend : Dart, Flutter

Database : FireBase

- Flutter
  Flutter is an open-source mobile application development framework created by Google. It allows developers to build native apps for iOS and Android platforms from a single codebase, using the Dart programming language.
- FireBase
  Firebase is a mobile and web application development platform owned by Google. It provides a range of services and tools that help developers build, improve, and grow their apps. It is a popular backend-as-a-service (BaaS) platform that can be used to build the backend of a Flutter app. It provides a range of services and tools that make it easy to build and manage app backends, including real-time database, cloud functions, authentication, and hosting.
- Dart
  Dart is a programming language developed by Google that is primarily used to build web and mobile apps using the Flutter framework. Dart is a statically-typed language, which means that data types are checked at compile time, rather than at runtime.

8. Conclusion

The Women Safety and Wellness Application is a platform designed to provide women with useful resources to stay safe and healthy. The application provides safety tips, wellness resources, and emergency contact information. The platform has a user-friendly interface that is easy to navigate and use.

The architecture of the application consists of a frontend client, backend server, and database. The client interacts with the server through a set of API endpoints, and the server processes the requests, queries the database, and returns the necessary data to the client. The database

stores the application's data, including user information, safety tips, wellness resources, and emergency contacts.

The application's success depends on its ability to provide valuable resources and a user-friendly experience. To achieve this, the application must be designed with user feedback and input, incorporating features that address their specific needs and concerns. Additionally, the application must be designed with security and privacy in mind, implementing measures like encryption, secure authentication, and data backups to protect user information.

Overall, the Women Safety and Wellness Application has the potential to be a valuable resource for women, providing them with the tools and information they need to stay safe and healthy. By focusing on user needs and security, the application can make a positive impact on women's lives.