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A Project Report
on
"ABHAYA"

[Code No: COMP 207]

(For partial fulfillment of II/II Year/Semester in Computer Science)

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Bona fide Certificate

This project work on

"ABHAYA"

is the bona fide work of

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who carried out the project work under my supervision.

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Abstract

A security app is a software application designed to enhance user safety and protection by incorporating features and functionalities that mitigate risks and respond to emergencies. These applications often leverage technology, such as real-time communication, location tracking, and emergency alerts, to provide users with tools to safeguard themselves in various situations. Now, focusing on our project 'Abhaya,' it is a security app developed using basic Flutter knowledge with Firebase as the backend. 'Abhaya' prioritizes user safety by seamlessly integrating Flutter's cross-platform development framework for the frontend, ensuring a consistent and visually appealing user experience. The app's core functionality revolves around personal safety, allowing users to trigger automatic emergency calls and share their real-time location with designated contacts. The use of Firebase as the backend ensures reliable data transmission and immediate updates, making 'Abhaya' a powerful and accessible solution for individuals seeking a digital guardian in times of distress. This project represents a significant step towards leveraging technology to enhance personal security.

Keywords: Security app, Location sharing, Crisis response, Safety features, Emergency contacts

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Acronyms/Abbreviations

AI: Artificial Intelligence

URL: Uniform Resource Locator

GPS: Global Positioning System

UI: User Interface

SMS: Short Message Service

Chapter 1   Introduction

1.1   Background

The Security App emerges as a crucial digital tool designed to safeguard individuals in times of peril. Through features such as emergency calls and real-time location sharing with designated contacts, the app serves as a virtual lifeline, bridging the gap between personal safety and digital innovation. Its ability to function seamlessly without the constraints of physical proximity underscores its importance in providing a sense of security in an increasingly interconnected world.

The Security App addresses notable drawbacks observed in personal safety applications. Concerns related to limited interaction, security vulnerabilities, and intrusive elements are actively mitigated, reflecting a commitment to enhancing user experience and security. Importantly, the Security App caters to scenarios where internet access may be unreliable, making it a reliable companion for users in various situations.

Despite the challenges associated with online systems, recent advancements in the security app sector showcase the continuous evolution of technology to meet the diverse needs of users. Intelligent emergency response mechanisms, seamless integration with emergency services, and support for multiple languages demonstrate a commitment to innovation and improvement. This progress marks a substantial step forward in leveraging technology to not only enhance personal safety but also to redefine the way we approach and navigate our digital lives.

1.2 Motivation and Significance

The decision to embark on the development of a security app was primarily fueled by the pressing factors of time constraints and a burgeoning interest in addressing safety concerns. In a world becoming increasingly fast-paced, time has become a precious commodity. Such a project offers a vital platform to streamline and reduce the time spent on mundane tasks, emphasizing efficiency and prompt response to emergencies. Moreover, with safety being paramount, the security app caters to the contemporary need for personal protection. In an era where personal safety is paramount, the app serves as a crucial tool to save individuals from danger through features like emergency calls and real-time location sharing with emergency contacts. The rising importance of personal security and the need for swift, reliable responses in critical situations make the development of this security app not just timely but also essential in today's dynamic and unpredictable environment.

1.3 Objectives

- To offer users a convenient and efficient means of enhancing personal safety.
- To expedite emergency response times among individuals facing danger.
- To empower users with the ability to call for help and share their location in real-time through a security app.
- To provide a reliable solution for users to access emergency assistance anytime and from anywhere with an internet connection.

Chapter 2   Related Works

- Security while traveling at night or alone, especially for women is of utmost concern. SheSecure is a women's safety app designed to empower women and enhance their personal safety and well-being. It provides a range of features and tools that help users feel more secure in various situations, both in their day-to-day lives and dance emergencies
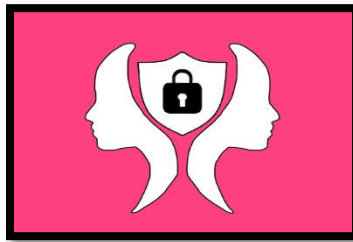
  Link -> https://shesafe.org/

Figure 1: SheSecure

- SafeReach is dedicated to fostering a safer environment through innovative technology and community solidarity. The app's mission is to equip customers with the resources and knowledge they need to navigate various situations with increased confidence and security.
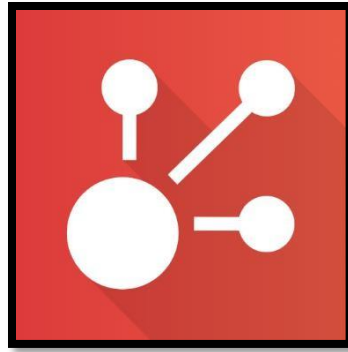
  Link -> https://safereach.com/en/

Figure 2: SafeReach

- The bSafe app ensures the safety and security. It allows contacts follow you through a live GPS trail and also set a timed alarm which goes off if you haven't 'checked in'. Moreover, it will also make your phone ring with a fake call and also notifies the emergency contacts with the location, video and even siren.
  Link -> https://besafeapp.ca/

Figure 3: bSafe

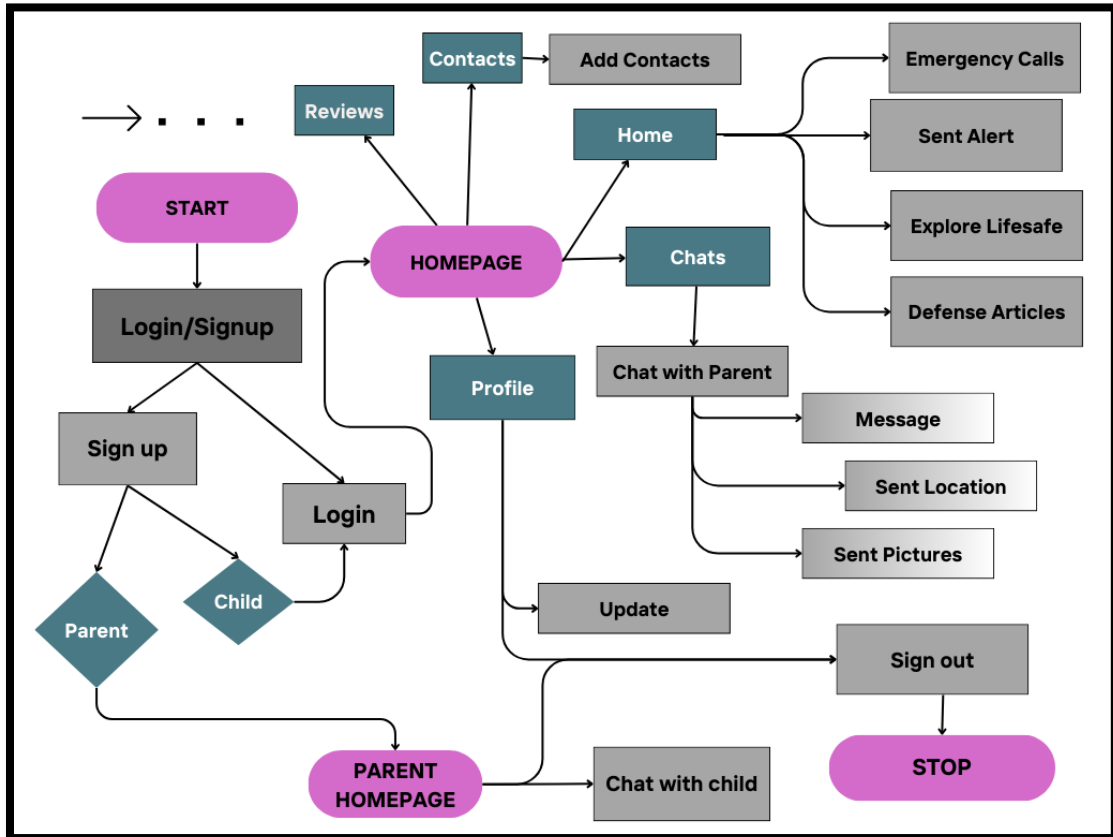# Chapter 3   Design and Implementation

Figure 4: Flowchart

A user can login regularly into the system with email and password but one-time registration with name, phone, email and password is must. The registration details get stored in the database. The UI of the pages is designed using Flutter widgets. The child user can share their whereabouts with their trusted contacts and send alerts during emergency. The parent user can chat with their children and know their locations.

3.1   System Requirement Specifications

3.1.1   Software Specifications

Functional Requirements:

➢ User Management Requirement

i.   Add child user with name, phone, email, guardian's email and password.

ii.   Add parent user with name, phone, email, child's email and password.

➢ Login Requirement

i.   Enter email.

ii.   Enter password.

➢ Profile Management

i.   Update trusted contacts.

ii.   Update personal information.

➢ Emergency Alert System

i.   Shake to quickly alert predefined emergency contacts.

➢ Real-time Location Tracking

i.   Grant permission to share real-time location with trusted contacts.

➢ In-app Chat or Call Support

i.   Select the child/parent to contact directly.

ii.   Grant permission to camera and gallery.

➢ Feedback and reporting

i.   Report your feedback on specific location and incidents.

Non-functional Requirements:

▪ IDE: Visual Studio Code

▪ Framework: Flutter

   Flutter is an open-source UI toolkit for building cross-platform mobile, web, and desktop applications, known for its efficiency and expressive design.

▪ Backend: Firebase

   Firebase is a comprehensive mobile and web development platform that complements Flutter with real-time database and backend services, facilitating seamless integration.

3.1.2   Hardware Specifications

▪ A laptop with Intel Core i5 64bit processor and Microsoft Windows 10 operating system

▪ 8 GB ram

▪ Android Smartphone

Chapter 4   Discussion on the achievements

The security app automates emergency response, ensuring swift assistance through calls and real-time location sharing. Its user-friendly interface allows accessibility from anywhere with an internet connection, enhancing personal safety with efficiency and ease of use.

4.1   Features

The basic features of this project are mentioned below:

- Before stepping into the main system, a user has to pass through a login system to get access. He/she should provide email and then password to continue.
- If s/he is not a previous user, they can register either as a child or a parent by providing name, phone, email, child/guardian's email and password.
- After logging in, the user gets directed to the home screen where they can view quotes, a slider for motivational purposes, another slider with emergency numbers, a LiveSafe dashboard a bottom sheet and a bottom navigation bar.
    - The quotes are based on emphasis of human security and get displayed randomly from the list created.
    - The motivational slider includes some self-defense tips and inspiring articles based on security. The articles get opened as webpages through the URL provided.
    - Next slider includes numbers of ambulance, police and fire brigade. On clicking the respective number, a pop up gets displayed asking permission for making calls. Upon selecting allow, phone call gets directed.
    - Explore LiveSafe includes icons of police stations, hospitals, pharmacy, bus stations. Upon click, addresses of the respective search nearby the users gets displayed in google maps.

- The bottom sheet is for sending location to the selected contacts through SMS.
- The bottom navigation bar contains pages for home screen, contacts, chat, profile and rating.

- The contact page asks permission to access user's contacts. After allow, user can search the required contact and add it to the list of trusted contacts. Calling the trusted contacts as well as removal of some contacts from the list is possible.

- The chat page allows child user and parent user to select their parent and children respectively. Then the user can send texts, photos and their current location through chat. There is also a feature to click picture instantly with camera.

- The profile page allows updating user profile, either name or image.

- The rating page allows user to review the safety of location they recently visited.

- Upon shaking of the mobile with a minimum count of 1 and a threshold gravity of 7, alert SMS with current location of user is sent to the trusted contacts.

4.2   Limitations

Despite our best efforts to make the application flexible and easy to operate, some limitations could not be ruled out. There is limited offline functionality causing limitations to the user in area with poor network connectivity. The accuracy of location data can be affected by factors like GPS signal strength. The shake mechanism is sensitive which can lead to false alarms.

Chapter 5   Conclusion and Recommendation

The development of a security project represents a significant step towards leveraging technology to enhance the safety and well-being of people. Our mini project focuses on addressing key concerns related to security of an individual by providing a user-friendly and accessible mobile application. Despite some major challenges that we faced over time such as addition of firebase, extraction of nearby local body contact number from the current location of user, we are successful in incorporation of various features such as emergency alerts, location tracking, and community support. Thus overall Abhaya aims to empower individuals to navigate their surroundings with confidence and ensure timely assistance in case of emergencies.

5.1   Future Enhancement

The below mentioned points are the enhancements which can be done to increase the usability of this project:

- Integration of voice activation for triggering emergency contacts in the situations where the user may not be able to use their hands.
- Extension of compatibility to wearable devices such as smartwatches.
- Implementation of AI algorithms for threat detection.
- Development of offline mode that allows users to access critical features even in the area with poor network connectivity.

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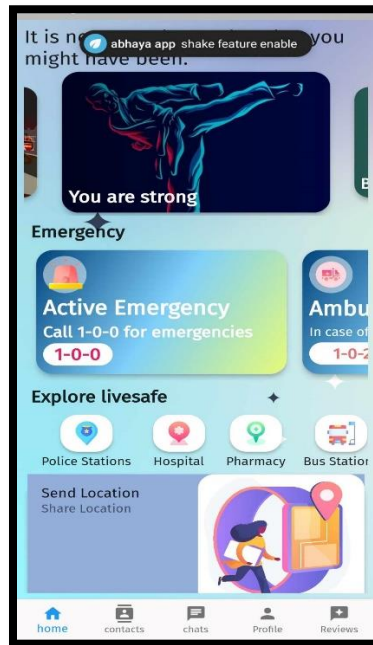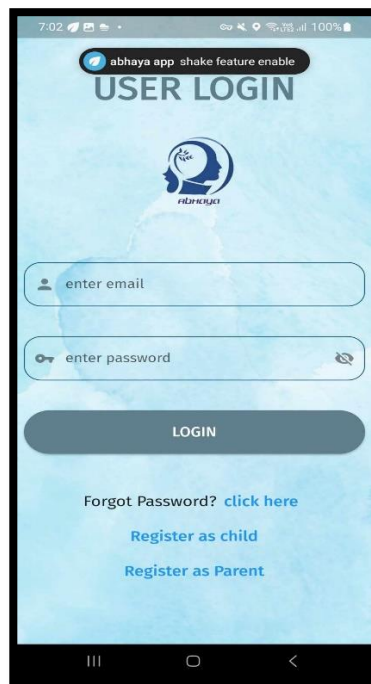III.   Shah, J. (2023, January 2). Building a Women Safety App using Flutter: Key Features and Capabilities. *ultroNeous*. https://blog.ultroneous.com/women-safety-app-development-using-flutter/

APPENDIX

Figure 5: Home Page

Figure 6: Login Page

Figure 7: Child Register Page

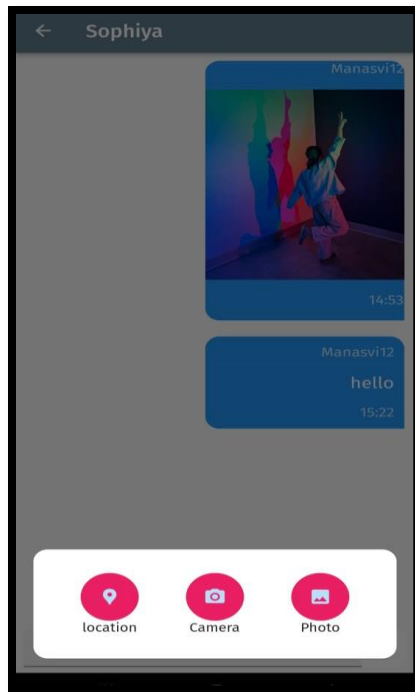**Figure 8: Parent Register Page**

Figure 9: Chat Page

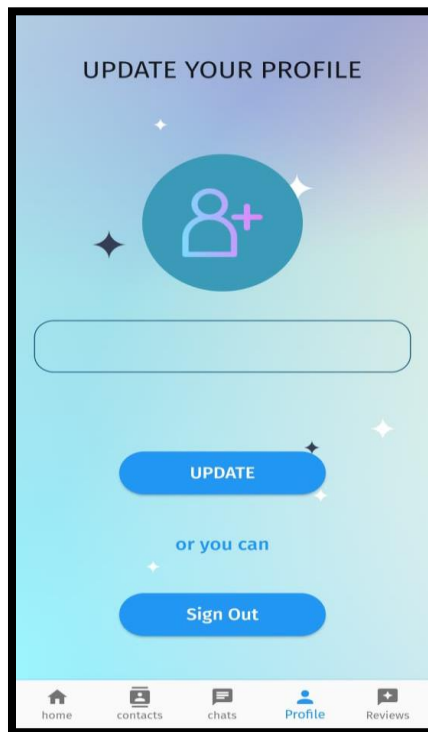**Figure 10: Chat Page2**

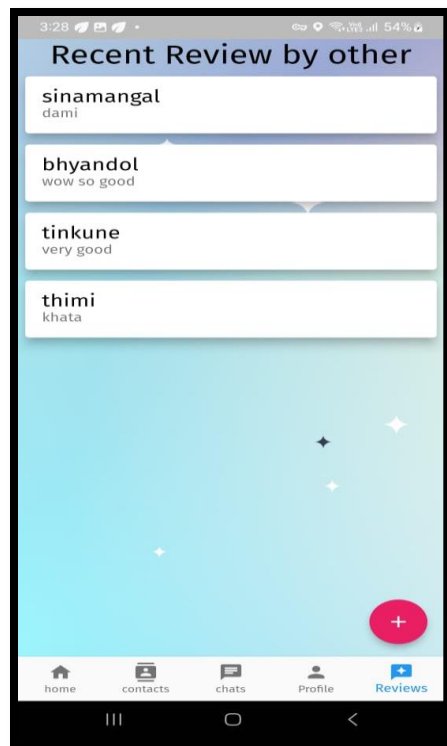**Figure 11: Contact Page**

Figure 12: Profile Page

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Figure 13: Review Page