TAKSHSHILA INSTITUTE OF ENGINEERING & TECHNOLOGY, JABALPUR (M.P.)

Session 2025

Department of Computer Science & Engineering

Major Project Report

Synopsis

On

"Donor Pulse App"

Submitted For the partial fulfillment of the requirement for the award of the degree of bachelor of engineering in Computer Science & Engineering

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that the Major Project report entitled, " **Donor Pulse***" is the bonafide record of the work done by "* **Prashant Kushwaha ,Hariom,Chandrika Patel, Krishna Kumar Kewat, Ranjeet Patel** *from Takshshila Institute of Engineering & Technology Jabalpur under the guidance of "* ***Prof. Neha Khare "*** *and submitted to Rajiv Gandhi Prodyogiki Vishwavidyalaya, Bhopal MP, in accordance with the requirement for the award of the Bachelor Engineering from Computer Science & Engineering.*

I certify that the above declaration is true to the best of my knowledge and belief.

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APPROVAL CERTIFICATE

This is to certify that project entitled, **"*Donor Pulse*",** submitted by " **Prashant Kushwaha, Hariom, Chandrika Patel, Krishna Kumar Kewat, Ranjeet Patel"** *is* accepted for the award of degree of Bachelor of Engineering in Computer Science & Engineering.

INTERNAL EXAMINER **EXTERNAL EXAMINER**

Date: **Date:**

ACKNOWLEDGEMENT

Apart from the efforts of me, the success of any project depends largely on the encouragement and guidelines of many others. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project.

I would like to express my sincere gratitude to my guide Prof**.** *Neha Khare* for encouraging me throughout the research work and also for providing me various opportunities at different stages of my studies. I thank him especially for the help that he extended to me in the form of valuable discussions and reading materials**.**

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Title – Donor Pulse (Rakt Daaan)

Introduction

The Donor Pulse Application is developed using flutter framework with Dart Programming Language. This Documentation provides the Features, Architecture & usage of Application.

1.1 Donor Pulse App Overview:

Donor Pulse is a mobile application designed to bridge the gap between blood donors and recipients. Built with Flutter and powered by the GetX state management system, the app provides a clean, responsive, and intuitive user experience.

The app empowers users to register as donors, search for nearby donors based on blood group and location, and connect quickly in times of need. With a soft & pastel UI theme and real-time updates, Donor Pulse makes blood donation accessible, efficient, and community-driven.

1.2 Project Scope:

The project scope for the Donor Pulse App includes:

- Facilitate quick access to verified blood donors.
- Allow users to register as donors and manage their availability.
- Enable location-based search and filtering by blood group.
- Promote a user-friendly and aesthetically pleasing UI experience.
- Donor registration and profile management.
- Direct calling or messaging options.
- GetX for efficient state management and navigation.
- Firebase or custom backend (as used) for real-time database and authentication.

1.3 Objectives:

The primary objective of **Donor Pulse** is to create a reliable, accessible, and user-friendly mobile platform that connects individuals in urgent need of blood with nearby willing donors.

By leveraging modern mobile technologies and real-time data, the app aims to:

→ Minimize delays in finding compatible blood donors during emergencies.

→ Encourage and simplify voluntary blood donation through easy onboarding.

→ Build a community-driven network of verified donors.

→ Promote social good through technology-driven healthcare support.

System Requirements:

System requirements is a statement that identifies the functionality that is needed by a system in order to satisfy the customer's requirements. System requirements are a broad and also narrow subject that could be implemented to many items.

2.1 Software Tools:

Android Application Development is possible with a couple of software & development kits to support the software & execution they as follow.

- **Vs Code -**

  Visual Studio code is a streamlined code editor with support for development operations like debugging, Task running & version control. It Aim to provide just the tool as a developer need for a quick code-build, debug-cycle & complex workflows to fuller featured IDES, such as IDE.

- **Git -**

  Git is a powerful, distributed version control system used to track changes in source code during software development. It allows multiple developers to work on a project simultaneously without overwriting each other's work.

- **Flutter -**

  Flutter is an open-source UI software development kit created by google. It can be used to develop cross platform applications from a single codebase for the Web, Android, IOS, Linux, Mac & Windows. Flutter was released in May 2017. Flutter is used internally by Google in apps such as Google pay, Google earth.

- **Dart –**

  Flutter uses the programming language Dart & Compiles into Machine code. Host devices understand this code, which ensure a fast & Effective performance. It is designed by "Lark Back & Kasper" & developed by Google in 2011.

2.2 Software Specification**:**

(1) Smart phones with Android OS version 4.4 (KitKat) or Higher.

(2) Minimum 512 MB of RAM.

(3) A processor with speeds above 1.2 GHz.

(4) 19 MB of storage of the app & extra for the data stored, the size of the app increases as the number of the app increases as the number of entries are increased.

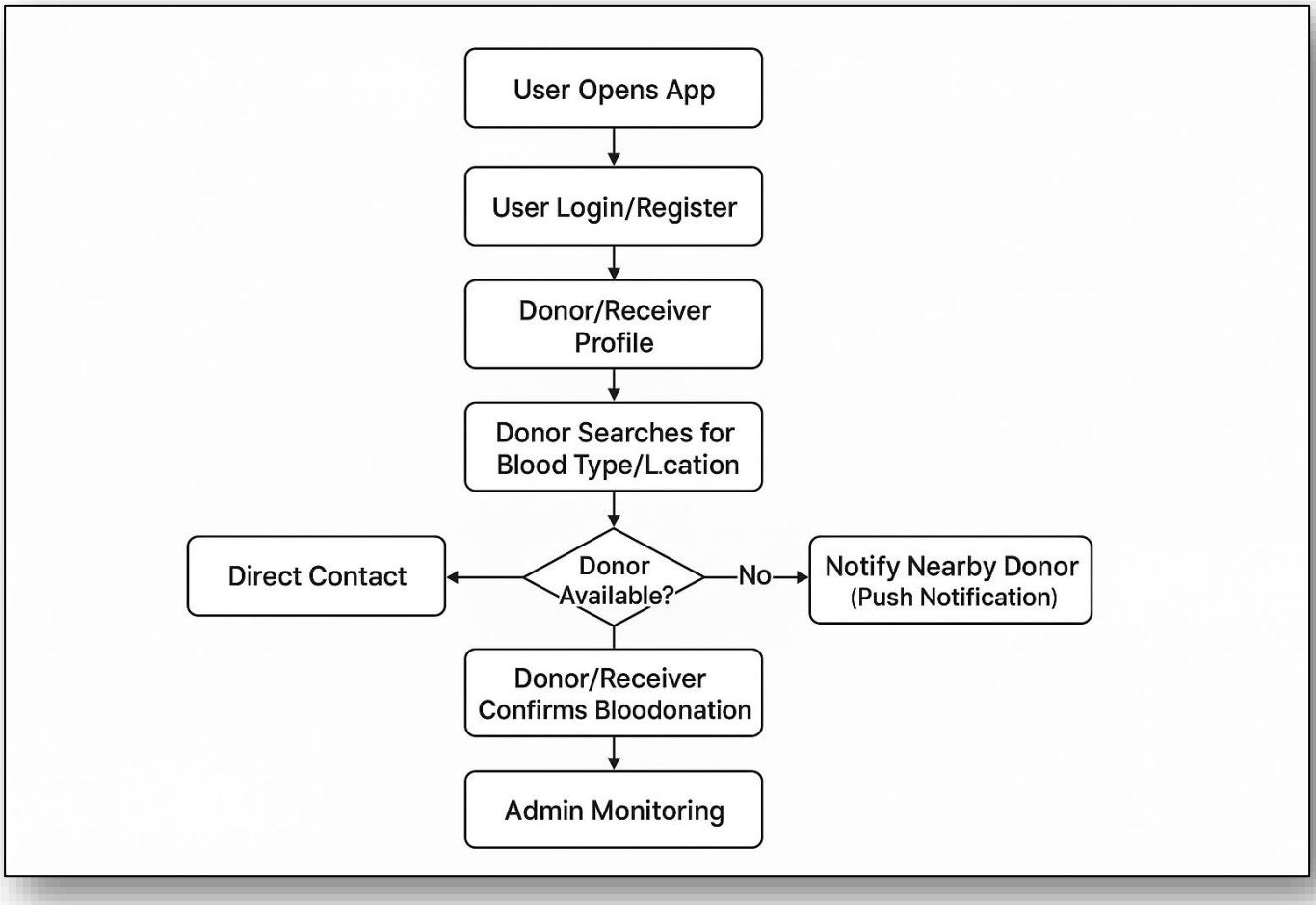
(5) Permission to install application over USB & installation from unknown source from 'Developer Option'.

PURPOSE

"This document provides a base to all the functionalities which should be carried out by the application how that works the output available to the end user"

Analysis & Designs

Donor Pulse uses a user-centric design to provide an efficient, intuitive, and reliable blood donation platform. Below is an overview of the analysis and design of the system.



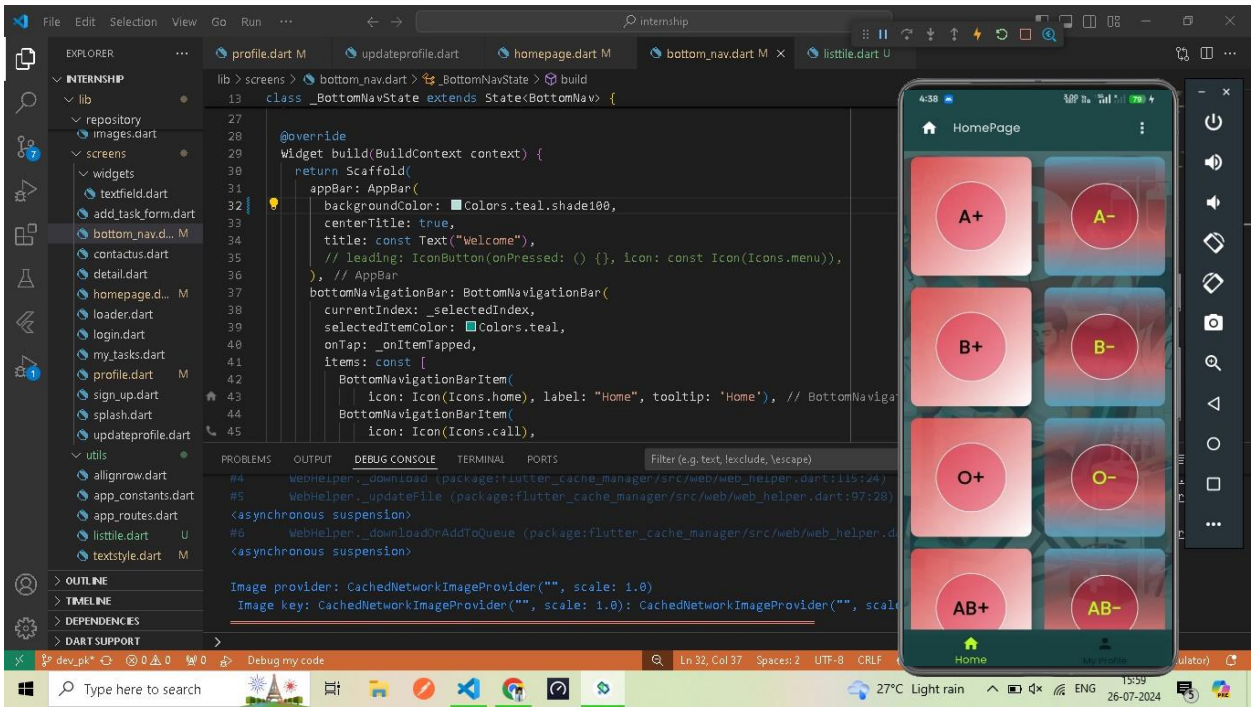
→ System Design:

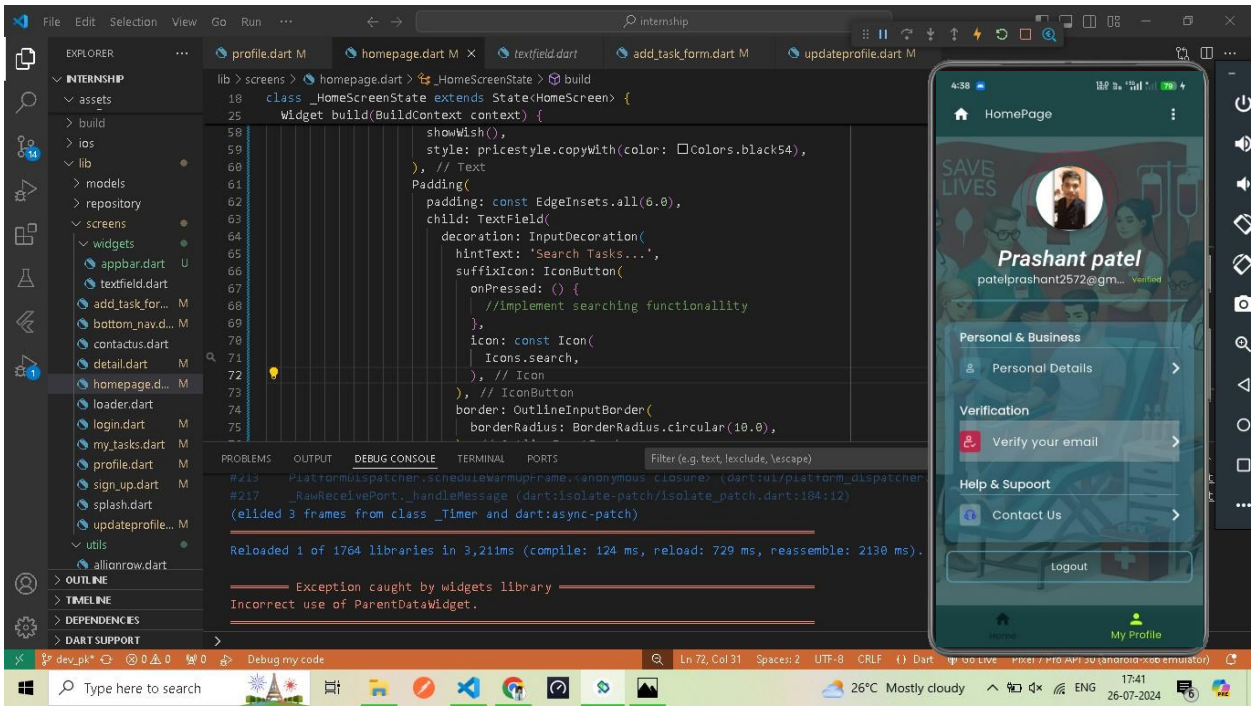
The system needs to handle user data securely, ensure seamless interaction between users, and optimize for performance (especially for real-time features like searching & filtering).

- User Module - Handles user registration, profile management, and search for donors.
- Donor Module - Facilitates the registration and search process for blood donors, managing blood types and availability.
- Admin Module: Enables management of users, reports, and app analytics.

Implementation Or Coding

The **Donor Pulse** app is implemented using the **Flutter** framework, leveraging its cross-platform capabilities to deliver a seamless and responsive experience on Android devices. The app architecture follows a **clean MVC pattern** enhanced by **GetX** for state management, routing, and dependency injection.





Testing

Application testing refers to testing any software application using scripts, tools, or test automation frameworks to identify errors. It helps teams release bug-free and robust software applications into the real world.

5.1 UI Testing:

Flutter automated UI testing bridges the gap between code and user experience, identifying UI issues before they reach the end-user.

Flutter app testing is foundational in the Flutter framework, categorized into three main types: unit tests, widget tests, and integration tests.

- Unit Tests:

  verify the smallest parts of your code, typically methods and functions. The flutter test package, which includes a set of utilities for writing unit tests, allows you to check if the logic in your Flutter app holds up.

- Widget Tests:

  focus on individual widgets, ensuring they work as expected in a controlled, test environment. These tests can simulate user interactions like tapping or dragging and verify that the widgets respond to these inputs correctly.

- IntegrationTests:

  Integration Tests or end-to-end tests, evaluate the app as a whole. They simulate complete user journeys, from launching the app to interacting with it, and even handling asynchronous operations. Integration testing in Flutter often employs the flutter driver extension to automate these tests across real devices or simulators.

5.2 Functionality Testing:

reviews each part of a piece of programming to ensure that it works accurately. Functional testing confirms that a system ought to proceed true to form when its elements are practiced by another system or straight by a client.

The common types of Functional testing are defined below:

- Unit testing:

  It is the process where you test the smallest functional unit of code. Software testing helps ensure code quality, and it's an integral part of software development.

- Integration testing:

  It is a type of software testing in which the different units, modules or components of a software application are tested as a combined entity.

- System testing:

  It is the process in which a quality assurance (QA) team evaluates how the various components of an application interact together in the full, integrated system or application.

- Regression Testing:

  It is a type of testing in the software development cycle that runs after every change to ensure that the change introduces no unintended breaks.

- User Acceptance Testing (UAT):

  It is a phase of software development in which the software is tested in the "real world" by the intended audience or business representative.

Architecture

Application architecture is a structural map that provides a guide for how to assemble software applications. This system defines how apps interact with one another to meet a client's needs.

6.1 Front-end:

- Developing using flutter framework for building native mobile applications.
- UI components are used designed using widgets provided by Flutter.

6.2 Back-end:

- Firebase is used as the backend service for authentication, database & Hosting.
- Firebase Authentication is utilized for user authentication.
- Firebase Fire-store or Realtime database store user Information & other information.

6.3 API Integration:

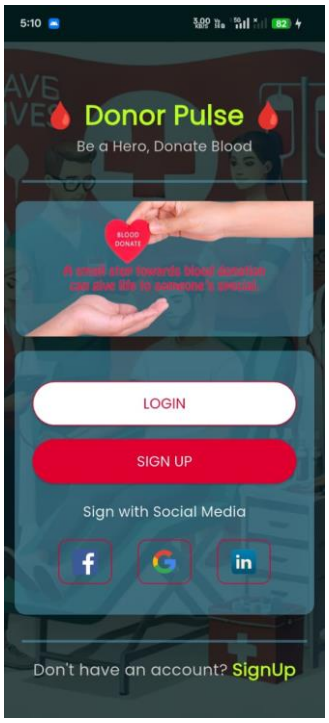
If users are fetched from an external API, HTTP requests are made using packages like HTTP or Dio.

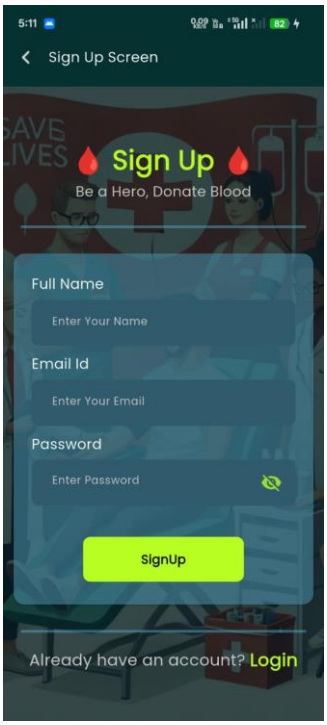
Usage Of Donor Pulse App:

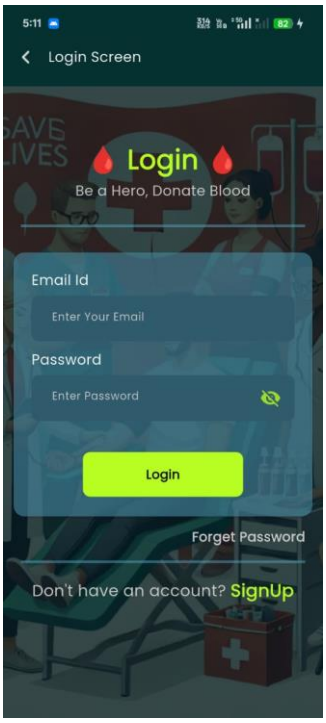
The Donor Pulse app is a health-tech platform designed to facilitate blood donation by connecting potential donors with recipients in real-time. Its primary purpose is to streamline the blood donation process through intelligent features that ensure fast, safe, and reliable access to blood in emergencies.

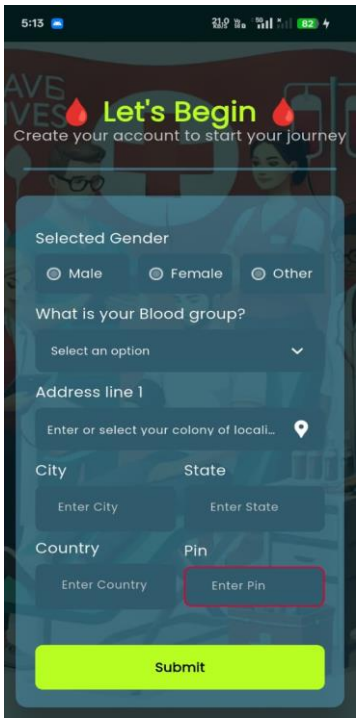
1) Donor Registration and Management -
    - Register as Donor: Users can register by providing essential details like name, blood group, contact info, and availability.
    - Edit Profile: Donors can update their blood group, address, last donation date, and availability status.
2) Search & Match-
    - Location-Based Filtering: Uses GPS to find the nearest available donors quickly.
    - Blood Compatibility Matching: Automatically filters donors based on required blood type compatibility.
3) Real-Time Communication-
    - Direct Contact: Enables users to call or message matched donors through the app.
    - Blood Compatibility Matching: Automatically filters donors based on required blood type compatibility.
4) Documentation & Support-
    - Donation Guidelines: Educates users on donation eligibility, safety, and post-donation care.
    - Help & Support: In-app chat or helpdesk for resolving issues, submitting queries, or reporting misuse.
5) Collaboration & Community Engagement-
    - Volunteer Community: Builds a trusted network of verified donors.
    - User Feedback: Donors and recipients can rate their experiences, building credibility.

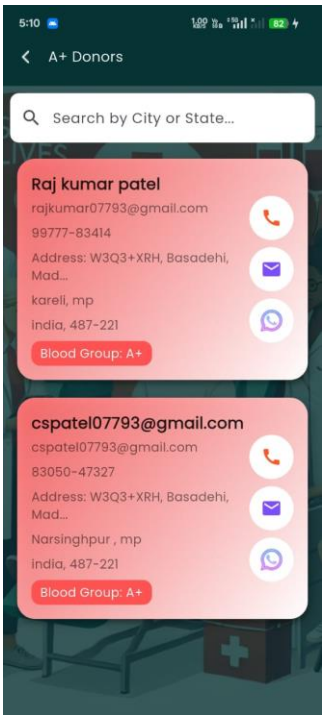
Interface Of App

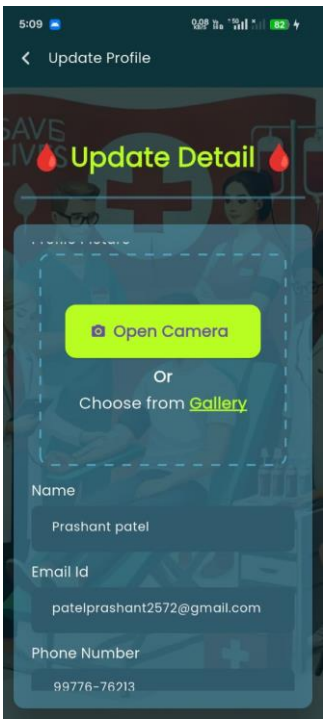


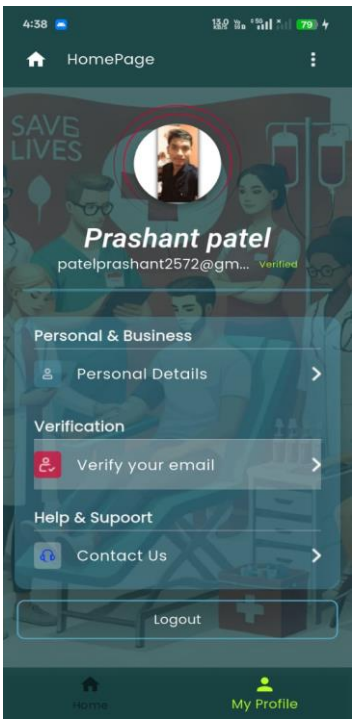












Conclusion:

The Donor Pulse app serves as a vital bridge between blood donors and those in urgent need, offering a fast, reliable, and user-friendly platform for lifesaving connections. Through intuitive design, real-time communication, and intelligent matching based on blood group and location, the app simplifies the complex process of finding and reaching compatible donors.

By integrating features such as donor registration, emergency request handling, GPS-based search, and push notifications, Donor Pulse empowers communities to respond quickly during medical emergencies. The use of modern technologies like Flutter, Firebase, and GetX ensures scalability, performance, and security.

Ultimately, Donor Pulse is more than just an app—it's a step toward building a connected, compassionate society where every drop of blood counts, and no life is lost due to unavailability of donors. It promotes awareness, encourages volunteering, and strengthens the healthcare ecosystem by making blood donation more accessible and efficient. more efficiently.

Thank You

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