

OOSE Project - LifeLine Blood Donation App

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Introduction

There is an expectation that the blood will always be there when it is really needed. Blood donor volunteers constitute the main supply source in an effective blood supply chain management. They feed blood stocks through their donation. In an emergency situation, if the stocks are insufficient, the only source of blood supply will be the people who come to the health centre and donate the blood on a voluntary basis. With rapid increase in the usage of social networks sites across the world, there is also a steady increase in blood donation requests as being noticed in the number of posts on these sites such as Facebook and Twitter, seeking blood donors. A smart phone application is developed to allow donors to look for hospitals near them to donate blood. Apart from this, the user can also choose to get their blood report generated; by paying online, getting their blood tested, and getting their report on the app.



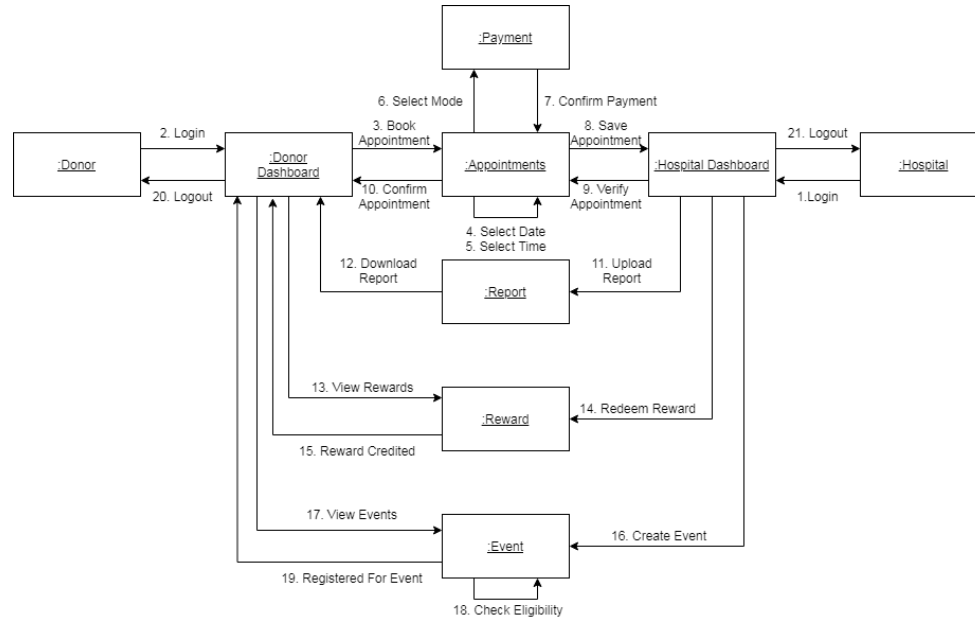
Motivation

Despite all the advances in medicine and technology, an alternative medical way to substitute blood, blood components or blood-derived products have not been found yet. Blood can only be supplied by living donors. Blood transfusion has been responsible for saving millions of lives each year around the world. Yet the quantity and quality of bloodpool available for transfusion is still a major concern across the globe, especially in the developing countries. It is estimated that our country has a blood deficit of between 30% and 35% every year. In a land of 1.2 billion people it's ridiculous to say we can't meet the requirement.

Lifeline is a blood donation app which helps volunteer blood donors to find hospitals in their vicinity to donate blood. Aside from this, one can also get their blood report at the ease of their android smartphones, for which they can pay using the online payment portal, RazorPay.

With incentives and rewards for frequent donors, LifeLine makes blood donation worthwhile.

Flow of Application





Functional Requirements

- User Interface-A good user interface acts as an incentive for the user to keep using our app and also help attract new users
- Profile Login-Helps maintain authenticity of the user
- User Details-This data is only accessible to the Hospital when the user donates blood. This is helpful in case of emergency.
- Separate Portal for Donor and Hospital-Different portal for hospital and donors as different kind of functionalities are offered to both.
- Create Event-Allows Hospital to Give Information about Donation Drives
- Events-Gives user information about donation drives
- Rewards System-Gives user an incentive to donate blood
- Leaderboard-Introduces a competitive spirit to donate blood
- Book Appointment-Saves time of the user by giving them a time slot to donate or test their blood
- Report Generation-Hospital can send users their reports easily with the help of this app in pdf format.
- Payment-Users can pay for their blood reports through our app



Non Functional Requirements

- Security of personal information of the user
- Friendly and easy to use User Interface
- Performance-It should be accessible 24/7 for 365 days.
- Accessibility
- Efficiency
- Profile Setup Stored in Firestore database
- Quality assurance
- Privacy
- Effectiveness
- Portability



System Requirements

- Internet Access
- Android 5.0 and above
- Location Access
- Storage Access
- 25MB free in internal memory to install application



Hardware/Software Used

Hardware Required:

Android Phone with Internet Connectivity

GPS Service

Software Used:

Android Studio

Firebase Firestore - The database for the application

Firebase Storage - Cloud storage used to store event images and PDFs of reports

Firebase Authentication - Used to authenticate users

Glide library - Used to display images stored on the cloud server

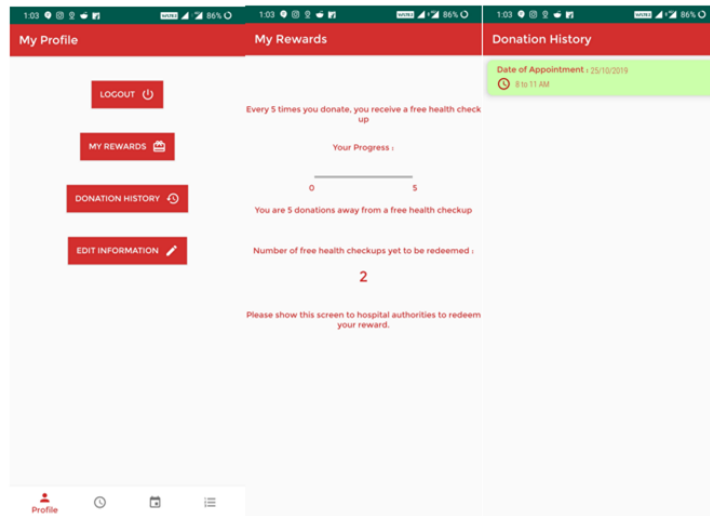
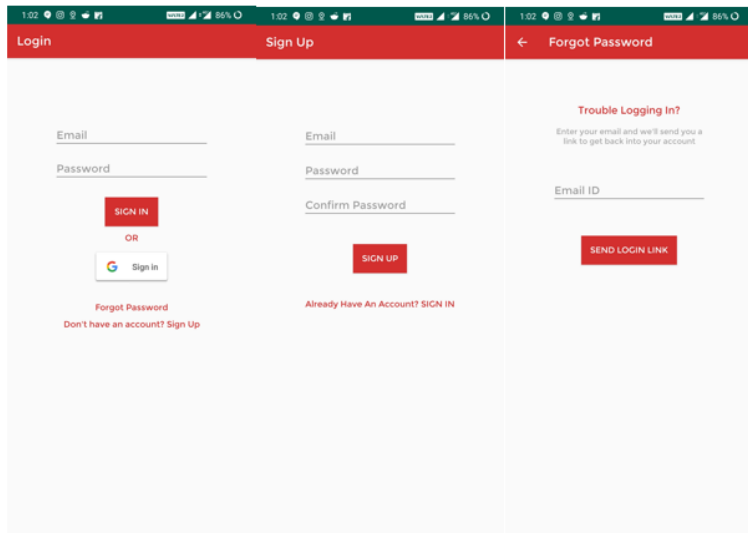
Horizontal calendar library

Google API - Used for Login via Google account and data analytics.

Google Maps - Used to display locations of hospitals and events.

RazorPay API - Used for processing payments made by the donor for the report.

Screenshots

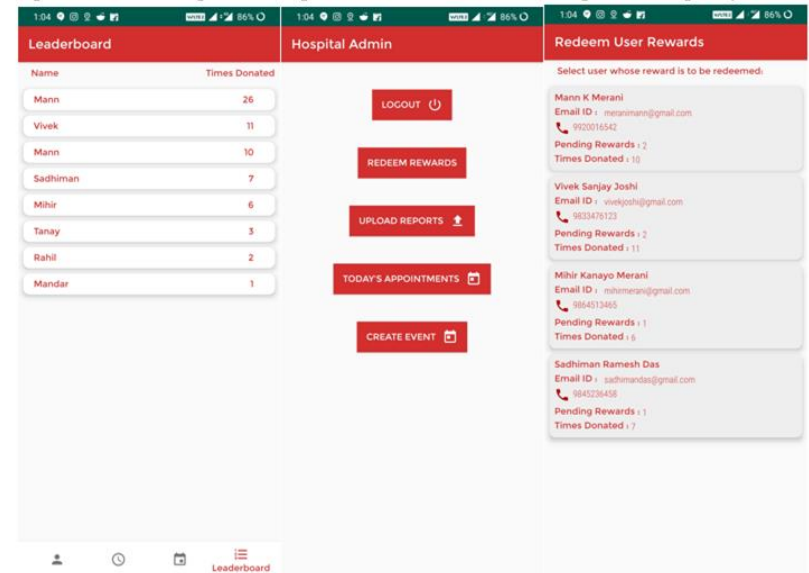
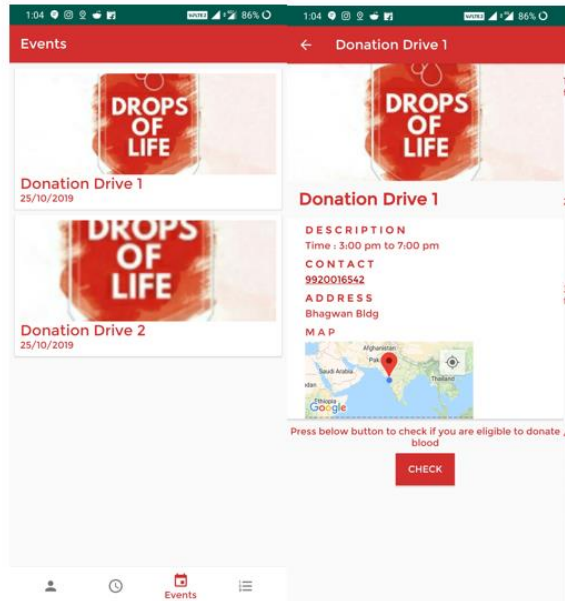


Screenshots Contd.

The first screenshot shows the 'Edit Information' screen with fields for Full Name (Mann K Merani), Gender (Male), Date of Birth (22/5/1999), Contact Details (9920016542), and Blood Group (A). The second screenshot shows the 'Book Appointment' screen with a progress bar and steps: Date And Time, Hospital, and Confirmation. It includes a date picker (Oct 21-24) and a time picker (Morning, Afternoon, Evening). The third screenshot shows the 'Appointment Details' screen with a calendar icon, the date Friday, 25-10-2019, the time Morning, 8 AM to 11 AM, and the location Cooper Hospital, B Swami Mang. Juhu, Vile Parle West, Mumbai.

The first screenshot shows a map of Andheri East with markers for Severn's Hospital, Dhulepat Shree International Airport, Cooper Hospital, Sanyas Ashram, International Society for Krishna Consciousness, and Juhu Beach. The second screenshot shows the 'Book Appointment' screen with a progress bar and steps: 1. Date And Time, 2. Hospital, 3. Confirmation. It includes a large red checkmark icon and the text 'What would you like to do?' with buttons for 'Donate Blood' and 'Blood Test'. The third screenshot shows the 'Razorpay Corp. Donate Blood' screen with fields for Phone (+919920016542), Email (test@razorpay.com), and a section for 'SELECT A PAYMENT METHOD' with options: Netbanking - Kotak Mahindra Bank, Debit card - 1111, and Other Methods (Cards, Wallets, UPI, etc.).

Screenshots Contd.



Screenshots Contd.

The image displays three screenshots of a mobile application interface, likely for blood donation management, showing various screens and a calendar view.

Screen 1: Upload Reports

Mandar Narayanrao Patankar
Email ID : mandar@yahoo.in
Phone : 9833678231
Date of Appointment : 23/10/2019
Time : 8-11 AM

Rahil K Merchant
Email ID : rahilmerchant99@gmail.com
Phone : 9820823645
Date of Appointment : 14/10/2019
Time : 1-3 PM

Screen 2: Today's Appointments

Select donors who have donated blood:

Mann K Merani **Male**
Email ID : meranimann@gmail.com
Date of Birth : 22/5/1999 Blood Group : O +
Phone : 9920016542
Occupation : student Organization : NMIMS
Date : 23/10/2019 from 8 to 11 AM
VERIFY ✓

Screen 3: LifeLine

Title

Description

Event Date:

Month	Day	Year
Sep	22	2018
Oct	23	2019
Nov	24	2020

+91 Enter Phone Number (Please Enter 10 c

Event Location:
Enter location (Type Pincode,before Checking The Location)

CHECK LOCATION



Advantage of System

- Very Secure where all actions are committed at the end of a function call
- Secure login where password is hidden
- Same application for regular customers, admin users
- 24X7 Service
- Rewards and incentives for frequent donors.
- Free-of-cost
- User friendly interface
- Paperless Reports
- Saves waiting time by avoiding queues



Disadvantage of Current System

- No type of reward system
- No geographic availability in India
- No Google Sign In
- No major security systems in place during login
- No type of leaderboard system
- No digital interface to offer communication between hospital and donor
- Limited direct interaction between hospital and donor
- No preparation or relaying of information on large amounts of donation on short notice
- Hospital phone lines may be busy; need another way of interaction



Future Scope

LifeLine can be further developed and expanded to various hospitals in the city, and also other cities.

For this the databases will have to be upgraded and they should be able to handle the load of the thousands of users that will be accessing the application.

We'd also like to add additional features like notifications and reminders, QR codes and reviews to further enhance user experience.

Currently, LifeLine is an android application, and we'd like to develop an online website as well as an iOS application.



Conclusion

Throughout the duration of this course, we learnt how to formulate an idea and implement it in a working sense. We did this for our idea for an Android Application that enables donors to book appointment for blood donation, request and download reports and view blood donation events. We learnt how to translate our problem statement and the various functional and non-functional requirements into various flow diagrams, such as the use case diagram, state diagram, activity diagram, sequence diagram, collaboration diagram and deployment diagrams. These diagrams helped us understand the flow of data and how our application functions. We strongly implemented the concepts of object oriented software engineering such as modularity, reusability and efficiency to develop our application.