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Blood Bank App Management Using Android Application

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Abstract: Blood donations have helped patients with life-threatening diseases and live longer with better quality of life. Blood donations also support many complex medical and surgical procedures as they also play an essential life-saving role in caring for children and mothers, especially during times of natural or man-made emergencies around the world. This blood bank app is based on Android mobile app framework i.e., Flutter, a Google development framework which is a open-source mobile app that can be developed for both IOS and Android devices. To make a blood bank more accessible to all mobile users. An app can also help people in need of blood by providing details and searching for the donor. If there are no donors who have the same group and within their own city, they can access addresses with contact phone numbers. people in big cities. The main goal of this project is to create a suitable and complete system that will provide a solution for managing blood banks for both donors and patients. Design an Android application for blood banks. Create a blood donation system by providing a safe donation process. This application aims to design, develop, and implement an online blood bank management system and allows you to manage your blood donor information.
Keywords: Blood Bank, Android, Flutter, Firebase, Blood Donation.

I. INTRODUCTION

Blood is transfused to replace red blood cells that carry oxygen in a variety of situations, including necessary transfusion blood loss due to bleeding, surgery for any medical procedure, and medical conditions that prevent the body from producing new blood cells, such as anemia, kidney disease, cancer, chemotherapy, and chronic disease. Donor blood and blood bank products save millions of lives every year. Patients with life-threatening illnesses have benefited from blood donation, living longer and with a better quality of life. Blood donation aids numerous sophisticated medical and surgical operations, as well as playing a vital role in child and maternal care, particularly during natural disasters and man-made emergencies around the world. Everyone's most popular misperception is that donating blood will cause them to pass out or make them feel uncomfortable. After a blood donation, nothing happens. Despite substantial research, there has yet to be a viable equivalent for blood and blood components. Donated blood or a blood bag is an important part of illness management. It has shown to be a life-saving notion for people who have lost a lot of blood due to accidents, hemorrhage, or surgery.

II. LITERATURE REVIEW

Kumar, R., Singh, S., and Ragavi, V.A. (2017), analysts, help manage donor records and facilitate the handling and sharing of blood supplies in different parts of the country. I have created a web-based blood manager. The framework created by not only met the needs of banks but was also adaptable and versatile. Almost all blood donations and associated records were made physically, so I stuck to that line of reasoning. Following the blood donation training routine was previously difficult and modern and was in fact underpinned by many facts. In addition, analysts say that manual frameworks are error-intensive, labour-intensive, statistically reliable, and time-consuming to recover data and develop assessments. He pointed out that he could spend a lot of time on it. What happens is much less accurate. Meanwhile, research scientists Vikas Kulshreshtha and Dr. Sharad Maheshwari highlighted the benefits of the latest web-based system for the blood banks. The area of the blood donation facility is specially adjusted for the amount of blood and blood products. The term "blood bank" generally refers to the area of core healing labs where blood android utilities are tested, and android utilities are tested to reduce the risk of blood transfusions. A large cooler keeps these samples at a constant temperature and is always available. The centralized blood donation data framework provides Android software with the ability to access giveaway / donor files collected by country-specific components. This allows you to fully explore the impact and implementation of the pink blood banking application, as well as quantifiable and verifiable club goals. They productively investigate who needs blood, based on in their city, as soon as expected, depending on the situation. Dove Press article on "Android-based blood bank information retrieval system" in the following journal: "Blood Medicine Journal". This research paper solves the problem of improving web-based and Android-based blood bank information retrieval systems. The web utility uses to replace blood information accessible to many blood bank equipment directors with a mobile utility with a search engine used to search blood resources from registered blood banks.

III. TECHNICAL APPROACH

A. Methodology

Our methodology emphasizes on creating a android application using the latest technologies in domain such as Flutter for implementing our design application and using Firebase as a control and connect for user authentication and database.

B. Resources Required

1) Technologies Required
a) Front end / app interface: Flutter
b) Authentication and database: Firebase.

2) Data base
a) Blood bank
b) Hospitals data
c) Blood camps

3) Supporting Software Resources
a) Visual Studio Code
b) Android Mobile Emulator
c) Flutter Design templates

C. App description

In this project, we are providing a quick and efficient solution regarding blood donation system for both blood receivers and donors. Our goal is to make user friendly app to provide quick solution regarding blood donation process. To make sure safe blood donation we can be adding blood checking facilities before donation of blood. Separate class and widgets need to be created for every feature of this blood bank application.

The following android application structure consists of pages where the donor /recipient can register and start the process of blood donation. The user is directed to their login page after home page where the further features can be accessed such as searching for a donor, blood bank locations and contacts. All the data of Both the user's is connected to database with the other information of blood bank information
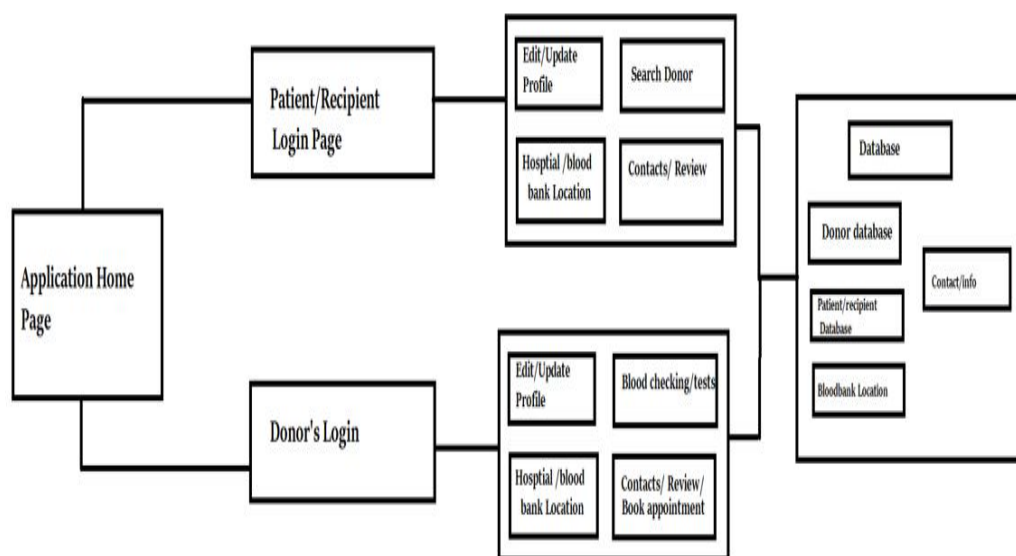
D. Block Diagram

Figure 1. Block Diagram

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue V May 2022- Available at www.ijraset.com

E.   System Design

The first part of the application every User land on the home page consisting of login for both donor and the receiver.

The landing page provides information about the application. This would also redirect the user for login authentication. The landing page is the first page that will be loaded on the user's screen.

The user will be required to first sign up for the application by providing the necessary details such as name, address etc., The user is diverted to the signup page if he/she is registering for the first time, where they can register/sign up for donation/blood requirement.

If the user has already signed up to the application, then he/she can log in directly, the login credentials if the user would be verified. As per the user, they next approach to their interface as donor/patient where there are multiple options for blood donation, blood testing, etc. The donor details and information can be accessed by the patient and can request for blood or can check for nearest locations for hospitals. All the data gets saved in the database specifically.

The user can access the location for blood centers and hospitals from their home page also after signed up.
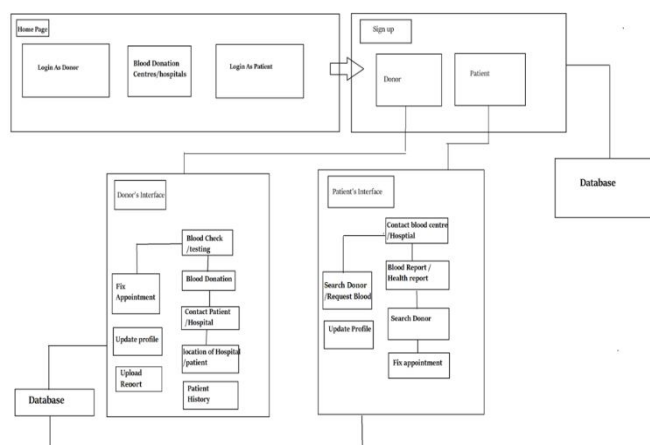

Figure 2: System Design

IV.   SYSTEM IMPLEMENTATION

As discussed in above section we have implemented the design structure for the android application. The structure for our application is designed using flutter which is a open source UI developed by google. All the tabs/application sections are designed using flutter UI which transforms the app development process. Build, test, and deploy beautiful mobile, web, desktop, and embedded apps from a single codebase. The ui begins with a flash screen page which is a welcome page of the android application for blood donation. The flash page is given a timer of 3-4 seconds after which the user lands on home page which consists of user login/signup tabs.
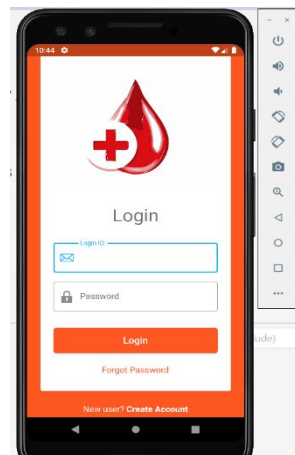

Figure 3 Splash Screen
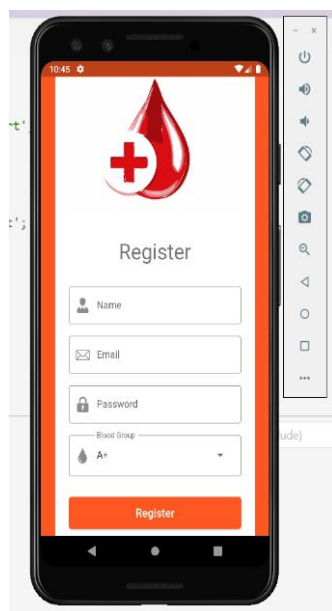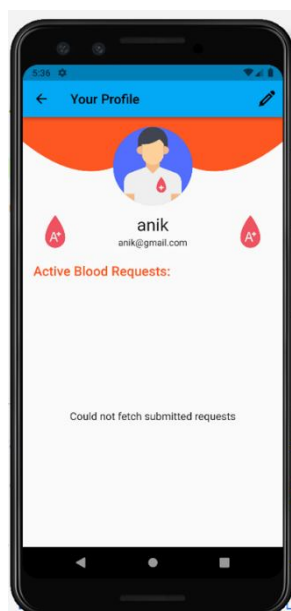

Figure 4 login page
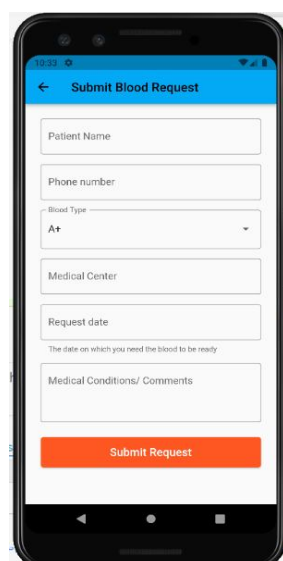
Figure 5 Registration Page
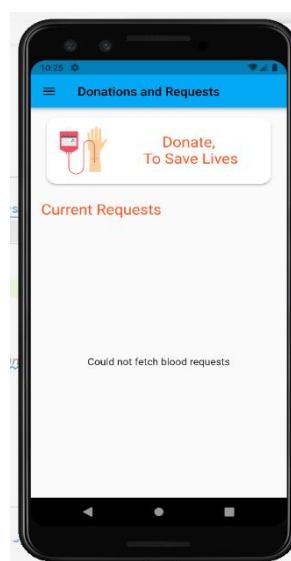

Figure 8 User profile

Figure 4. Donation Request

Figure 5. Home Page

V. RESULTS

The following android application structure consists of pages where the donor /recipient can register and start the process of blood donation. The user is directed to their login page after home page where the further features can be accessed such as searching for a donor, blood bank locations and contacts. All the data of Both the user's is connected to database with the other information of blood bank information. The home page of our website displays the basic information about our project. These Login Pages also Do have Links to redirect to registration page if the user is not a part of the system. The Login is protected by authentication controller which upon successfully login will return a bearer token which will be stored in the local storage. Upon Users successful login the user will land on the user's dashboard where basic information will be displayed. The page will also have a side bar from where user can select various options of blood donation form, User profile, news and updates, hospital, blood donation camp and QNA section. The View Profile section contains all the details of the user where user can also edit the information and view the documents.

VI. CONCLUSION

Health sector is the most important sector in India. Providing efficient solutions for blood donation process will replace regular complicated manual process with easier one. Therefore, this project aims at creating a proper and complete system providing solution in blood bank management for blood donors and patients. This allows secure transactions between the donor and manage its blood donation activities. Support fast searching to find match blood for the right person and provide support of blood bank information The project uses android application interface for the implementation. Various features like login pages for blood donor/receiver, location area, administrator login, and so forth are provided.

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