Bdonor-Android Based Platform for Effective Blood Donation Management

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Abstract— One of the most vital aspects of our lives is blood. When compared to other nations, our country has a really low number of blood donors. We built a novel and well-organized technique to control such a result in our project. First registered yourself over this app by giving First Name, Last Name, Email, Password, Address Details, State, District, Tehsil, Village, Mobile number, blood group and then verify yourself with OTP. After registration, you will be able to request blood in the district of your choice, or you will be able to donate blood to another individual who has also registered on this platform. The BDonor app shows you a list of contributors who have signed up for the app.

Keywords—Blood, Android Phone, Donor

I. INTRODUCTION

According to a World Health Organization (WHO) report, India need eight crore units of blood in 2019, but only ten lakh units are now available, indicating a significant blood shortage. Because there is no substitute for human blood, blood and its components are essential for human survival. In a hospital or clinic, no important procedure will be performed without the use of blood. The need for blood in India is always increasing due to the country's enormous population. The situation has deteriorated to an alarming level, according to statistics. The quantitative link between the number of accessible blood banks and the number of blood banks necessary is not perfect.

On average, 2,000 donations are required per day, but the remaining is insufficient. In the event of a traffic accident, hospitalizations, or the birth of a child, external blood supplies are still required. Blood-base apps would lower the barrier between people in need of blood. The BDonor App was created to address the above-mentioned social group issue.

The BDonor App was built with Android Studio, Flutter UI Framework for the front end, and Firebase for the backend.

II. LITERATURE SURVEY

Blood transfusions is a critical component of medical care. On a yearly basis, it aids in the saving of lives in both normal and emergency scenarios. It also improves the anticipation and quality of life of patients with a wide range of acute and chronic illnesses. Transfusions make it easier for people to donate blood. To meet the demands of an ageing population, blood delivery will be important in the next five to ten years. Furthermore, medical facility workers may ask the affected individual's loved ones for blood donation during an operation or therapy, or the family may be asked to know of a donor who matches the affected person's blood type. As a result of the emergency situation, a number of difficult situations have arisen in the search for contributors. The demands of society must be met with new techniques.

A Geo-localised Blood Donor Management System [1] Mobile Crowdsourcing is a separate technique. The act of asking or allocating a large number of various sorts of labour to different people is referred to as this. Crowdsourcing approaches solicit the help of a large number of people to solve a wide range of issues. Hundreds of thousands of individuals have come together to produce something that will benefit everyone. Crowdsourcing may be utilized to solve a variety of problems, leading to a host of fascinating technological and societal dilemmas.

M-Health [2] is a revolutionary health-care paradigm that incorporates mobile health-care equipment and network technology. Donating blood for medical reasons is a lengthy process that can take months to find a match for the recipient's blood type. An Android-based blood donation application is an M-Health solution that connects the donor and the requester at any time and from any location.

The Android Smartphone Blood Donation Software [3] is a full-featured Android blood donation app that stores donor information. In the event of an emergency, the request can send a message to all qualified donors, as well as data from the blood centre and clinic. They used cloud hosting architecture to store application data anywhere and at any time. Due to the high quality of our shipment, it is also an optional blood donation for a seeking application. The applicant can submit an urgent blood tag request to registered users, and the message will be disseminated with all willing blood donors. A volunteer is recognized as a donor when he or she validates a blood donation.

III. BDONOR

A. Existing System

People in need of blood are unable to obtain it in their native city. Requesters have no way of getting in touch with them. People must wait a long time to find a blood donor. In the event of an emergency, people scrambled from place to place looking for blood donors. People are sometimes unable to find blood in blood banks.

As a result, the above reason is not present in the current system.

B. Proposed System

The recommended way for creating an Android app that swiftly locates blood donors. When it's time to donate blood, all donors who sign up for this app will be contacted. According to the requesters, blood donors can be found in any district. This app's objective is to make it easier for people to donate blood in an emergency. Anyone who wants to donate blood can use this app to register.

- Types of Bloods:

  Blood is not all the same, even though it is made up of the same basic substances. In fact, blood types are classified into eight categories based on the presence or lack of certain antigens. Certain antigens may induce the immune system of a patient to attack transfused blood. Prior to a transfusion, the blood type of the donor should be identified.

TYPE	YOU CAN GIVE BLOOD TO	YOU CAN RECEIVE FROM
A+	A+, AB	A+, A-, O+, O-
O+	O+,A+,B+,AB+	O+, O-
B+	B+, AB+	B+, B-, O+, O-
AB+	AB+	EVERYONE
A-	A+, A-, AB+, AB-	A-,O-
O-	EVERYONE	O-
B-	B+, B-, AB+, AB-	B-, O-
AB-	AB+, AB-	AB-, A-, B-, O-

- Red blood cells from Group O can be received by anyone. The "universal donor" is what it's called.

- Red blood cells from Group A can be given to As and ABs.

- Those in Group B can help people in Groups B and AB by donating red blood cells.

- Group AB can give to other ABs but cannot receive from any other groups.

IV. System Design

- Android Studio:

  LINUX is the foundation of the Android operating system (OS). Android is open-source software, which means that it is freely available and can be used by anybody. It's made to function on touch displays on mobile devices such as smartphones and tablets. Android's design supports the entire Java language. The initial version of Android, version 1.0, was released in 2008, and the most recent version is Android 11. Android Studio is an IntelliJ IDEA-powered Integrated Development Environment (IDE) (IDE). IntelliJ's advanced code editor and development features benefit Android Studio even more, making it easier to construct Android apps.Figure 1 depicts the Android Studio components:
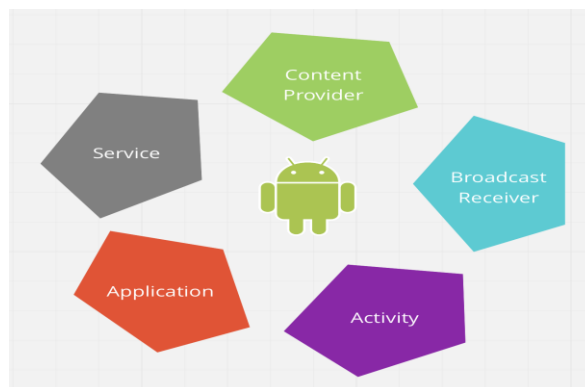

Figure 1

- Flutter UI Framework:

Flutter is a Google-developed open-source mobile user interface framework that was published in May 2017. In a nutshell, a native mobile app may be built from a single source of code. This means that the same programming language and code base can be used to build two different applications (for iOS and Android). Dart is a programming language that may be used to construct programmes with Flutter. Although the language was invented by Google in October 2011, it has improved significantly in recent years. Figure 2 illustrates the Flutter Architecture:
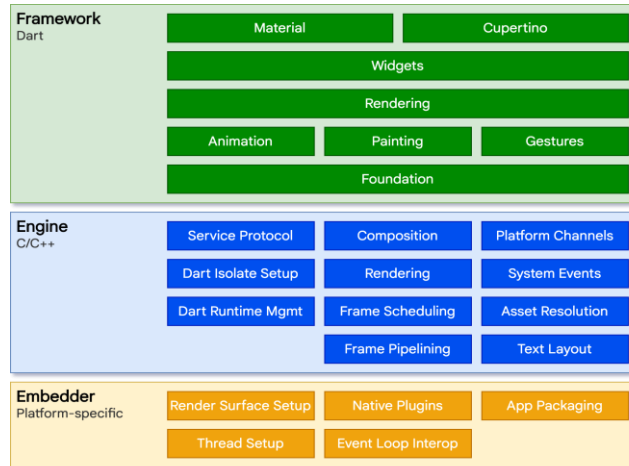

Figure 2

- Firebase:

It's Google's all-in-one app store, which features both mobile and web apps. In 2011, it became a stand-alone company. The platform was purchased by Google in 2014, and it has since become the company's primary software development platform. It's the Web, Android, and iOS backend application. It has its own database, as well as several APIs, authentication methods, and hosting providers.

Figure 3

V. Working

Working Principle of BDonor App:

Step-1: If a person wants to be a donor, he or she must first register.

Step-2: Person must give their address.

Step-3: A one-time password (OTP) provided to the registered mobile number is required for person registration.

Step-4: If someone wants to donate blood, they can go to the blood request page, and if they need blood, they can go to the view donor page.

Step-5: If a person locates a donor in his district, he can contact them directly by mobile phone.

VI. SCREEN LAYOUT

The app's initial page is the Welcome Page (figure 4).

Figure 4. Welcome Page

In Login Page (figure 5), user can regsitered themsleves by clicking on "New Here ? Register ?" and then register page will open as shown in figure 6.
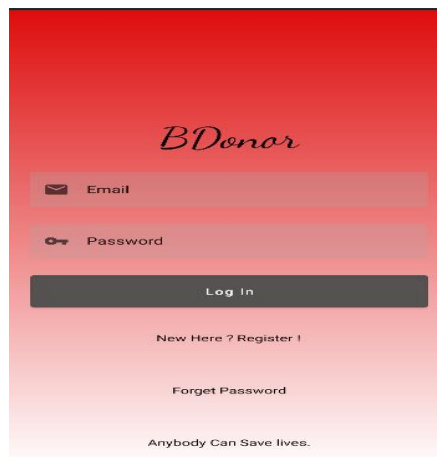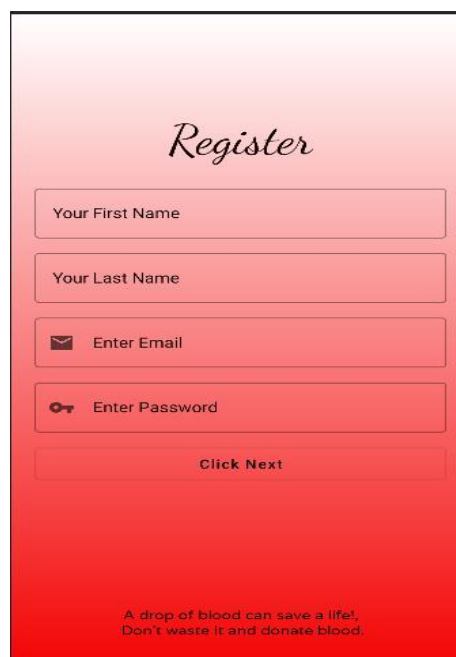

Figure 5. Login Page

Figure 6. Register Page

After filling the First Name, Last Name, Email and password just click on Next to open next page as shown in figure 7.

Figure 7.

As shown in Figure 7, we must fill in the address details (state, district, tehsil, and village). When you click Next, a new page will appear, as seen in Figure 8.
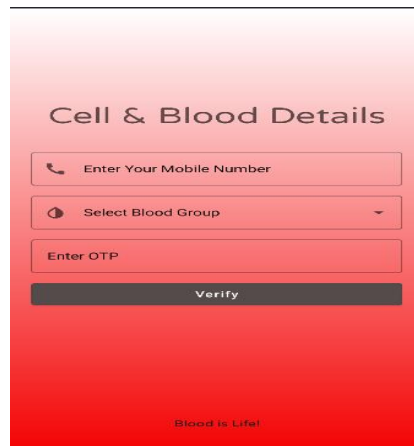

Figure 8

As indicated in figure 8, we must enter our mobile number, pick our blood group, and then click the verify button. Then an OTP will be sent to our mobile number, which we must enter to validate. After that, as illustrated in Figure 9, a new page will appear.
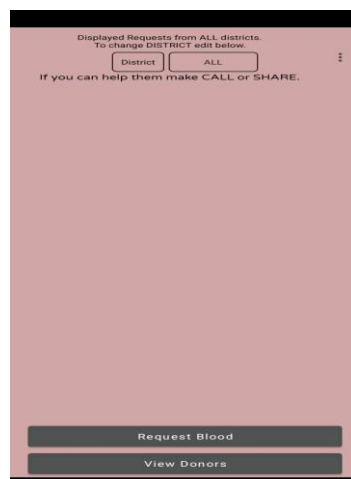

Figure 9.

If he/she needs blood, go to this page Figure 9 and click "Request Blood," then enter the district where he/she needs blood. Then, as seen in Figure 10, a new page will appear. He/she can also call by selecting the call button or share the donor profile by selecting the share symbol.
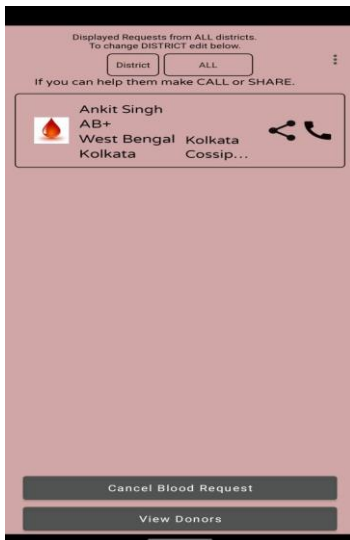
Figure 10.

If a person wants to see a list of donors, he can do so by clicking on "see Donors." Figure 11 illustrates this.

Figure 11.

If he or she wishes to change their password, simply click "Change Password" as indicated in Figure 12, and a reset link will be sent to their registered email address. If he or she wants to logout, they can do so by clicking "Logout" as illustrated in Figure 12.

Figure 12.

VII. Conclusion

Donating blood is a civic duty that anyone can participate in by utilizing our app. This software assures both the safety of requesters and the privacy of donors. The user will search for and contact a few possible blood donors in his or her location. Apps that provide a better option remove the current barrier to blood supply. This software's goal is to make sure the donor gives blood to the community. This model has been tweaked to allow anyone to download and manage their account with ease.

By supporting the disadvantaged in obtaining a free donor, the BDonor app will disrupt the blood supply chain. The project's purpose is to guide new blood banks through the transition from standard to user-friendly components, allowing them to improve their services.

REFERENCES

[1] Das H.D, Ahmed R, Smrity N and Islam L, (2020) 'Bdonor: A Geo-Localised Blood Donor Management System Using Mobile Crowdsourcing', IEEE 9th Int. Conf. on Communication Systems and Network Technologies (CSNT), Doi: 10.1109/CSNT48778.2020.9115776, pp 313-317.

[2] Fahim M, Cebe H.I, Rasheed J and Kiani F, (2016), 'Mhealth: Blood Donation Application Using Android Smartphone', 6 st Int. Conf. on Digital Information and Communication Technology and its Applications (DICTAP), Konya, Turkey, 2016, Doi: 10.1109/DICTAP.2016.7543997 pp 35-38.

[3] Hamlin M.R.A and Mayan J.A, (2016), 'Blood Donation and Life Saver-Blood Donation App', Int. Conf. on Control, Instrumentation, Communication and Computational Technologies (ICCICCT), Kumara coil, India, 2016, Doi: 10.1109/ICCICCT.2016.798802, pp 625-628.

[4] Vikas Kulshreshtha, and Sharad Maheshwari, (2012) 'Blood Bank Management Information System in India', Int. Journal of Engineering Research and Applications (IJERA), Vol .1, No. 2, pp 260-263.

[5] Vikas Kulshreshtha, and Sharad Maheshwari, (2013), 'Benefits of Management Information System in Blood Bank', Int. Journal of Engineering and Science, Vol. 1, No. 12, pp 5 -7.

[6] Tushar pandit et.al ,"A Survey Paper on E-Blood Bank and an Idea to use on Smartphone" , International Journal of Computer Application ,vol 113-no.6, March -2015 ,pp-48-50, ISSN:0975- 8887.