



Full Length Research Paper on Blood bank Delivery Services

K.Harika, M.Gayathri and D.Harika *under the guidance of Mr. B. Lokesh- Assistant Professor in Dept. of IT, MGIT.*

MEDURI GAYATHRI

*Department of Information technology
MGIT*

KUNTA HARIKA

*Department of Information technology
MGIT*

DANDU HARIKA

*Department of Information technology
MGIT*

Abstract-The main aim of this project is to save the lives of people by providing blood. Our project Online Blood Bank system using Android is developed so that users can view the information of nearby hospitals, and blood banks and get blood delivered. This project is developed from three perspectives i.e. hospital, blood bank and patient/donor. We have provided security for authenticated users as new users have to register according to their type of perspective and existing user have to log in. This project requires an internet connection. The application what we are developing helps to select the nearby hospital online instantly by tracing its location using GPS. We are also proving an alert system for severe accidents, as using that function an ambulance will be sent to your destination without any wastage of time. This application reduces the time to a great extent that is searching for the required blood through blood banks and hospitals. Thus, this application provides the required information in less time and also helps in quicker decision-making.

Keywords- Blood banks, Donors, Delivery

Abbreviations- XML- Extensible Markup language, JSON(JavaScript Object Notation)

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1. INTRODUCTION

Blood banks play an important role in patient care. The reason to donate blood is simple, it saves lives. A blood transfusion saves millions of lives. There might be people who must have lost blood from an injury or during a serious surgery, sometimes due to a certain medical condition. Research shows that every two seconds of every day, someone needs blood. Since the blood can't be manufactured outside the body and has a limited shelf life, the supply must constantly be replenished by generous blood donors. Everyday around 12000 people in India die due to the sheer lack of donated blood in India. Over 40 districts in India do not have blood banks and it's extremely important that there's some service that brings such facilities closer

to them. Plus, given the various types of blood groups including many rare kind of blood groups, it's sometimes very difficult to match a patient's blood group. In this process many lose lives, many surgeries have gone unsuccessful, many continue to suffer. All these seem to happen due to lack of proper management and quick transport of the required blood group.

The scope of this project is to provide blood in a very short span to many needy patients. It provides elegant management of blood, a list of hospitals, blood banks and donors online. The main purpose of this project is to interconnect all the blood banks, hospitals, and donors into a single network, validation, and store various data and information on the blood and health of each individual. This system is also used to store data



over a centralised server which consists of a database where the individual's information cannot be accessed by a third party. We aim to create an e-information about the donor and organizations that are related to donating the blood. Through this application, any person who is interested in donating blood can register himself and can make a request for the required blood online with the help of our site. All one needs to do is put a request to the required kind of blood group and the address where the blood needs to be delivered. We will track down the nearest available place and send the parcel as soon as possible.

II. THE STUDY

2.1 Main Questions

The goal of the study were related to the following aspects:

The Structure of the Development Process: The goal was to identify the nearest available blood banks, hospitals or possible donors. The following questions arise when we speak of this project:

- Where can we order?
- How long will someone have to wait until they receive their parcel?
- Is the blood fresh, safe and usable for transfusion?
- Will the blood get transferred safely to the patient?

The use of this application: In our android application we have many options. We support the donation of various kinds of blood from all the generous donors. The ones in need of a particular blood group have to simply give the patient details and be properly prescribed by a doctor. In most cases, one has to give a reason why they need the blood. After that, they have to simply select the type of blood group and type the address where it needs to be delivered. We are open to all feedback so a user can feel free to give any valid suggestions to improve our application. This is all the user needs to do. Now, coming to the backend side of our team, we will track down the nearest available blood bank or a hospital that has the particular blood group as requested by the user. Our delivery agents will get alerted and will quickly pick up the parcel from so and so place and deliver it to the user as quickly as possible. We aim to deliver in less than an hour. As most cases would not like a delay in receiving blood so late, we aim to deliver it as quickly as possible. Our blood banks also have facilities to keep a check on our blood parcels. The date it was donated, the number of days it's being stored and not just that but

it is also temperature controlled. Hence, when all these functions are not satisfied, the blood is automatically discarded from the bank. Our delivery partners will similarly keep a check on the temperature of the box where the blood is placed to deliver it safely.

The Tools used to build the application: Kotlin, XML, Firebase

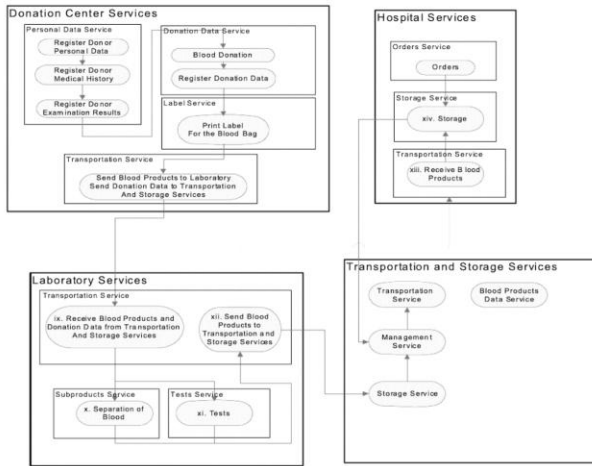
We used the above tools to make the application. We aim to build fine and better applications.

2.2 Data Collection

The tool used to collect the data and to document it was Firebase. It is a cloud-based NoSQL database that manages your data at the blazing speed of milliseconds. In simple terms it can be considered as a big JSON file. It allows one to store, sync, and query through the application on a global scale. It stores data in the form of objects also known as documents. It has a key-value pair and can store all kinds of data like strings, binary data, and even JSON trees. Firebase Authentication service provides easy to use UI libraries and SDKs to authenticate users to your app. It reduces manpower and effort required to develop and maintain the user authentication service. Fireball Cloud Messaging (FCM) service provides a connection between the server and the application end users, which can be used to receive and send messages and notifications. These connections are reliable and battery-efficient.

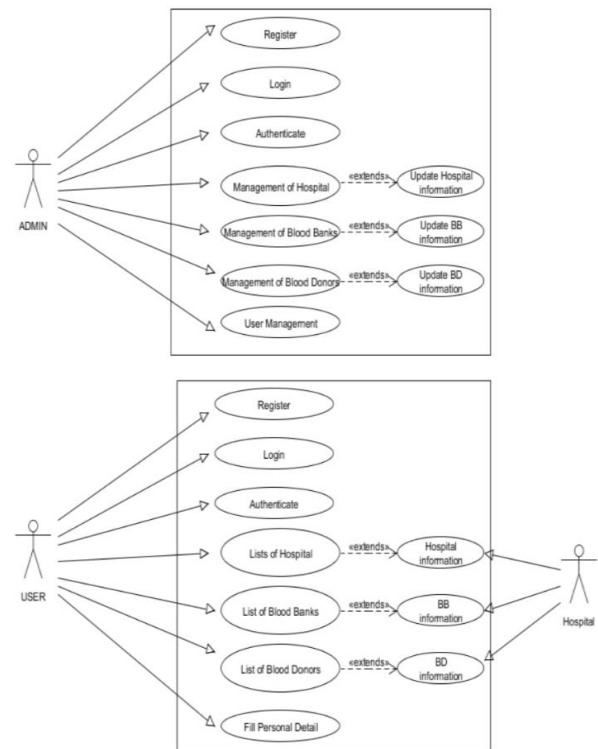


2.3 Architecture



The Transportation and Storage Services group runs the Transportation, Blood Products Data, Storage, and Management Services. The Storage Service provides information about the transportation availability of Blood products, from the Laboratory or from one hospital to another. The Blood Products Data Service stores all the information about Blood products based on the Donation ID. The Management Service checks the availability of Blood products, administrates the orders, and manages the final destinations of the products. The Transportation Service stores the information of the number of Blood products that are on their way, and the estimated transportation time. The Hospital Services group includes the Order, Storage and Transportation Services. The Order Service takes orders for direct donation from the client program of the physicians in charge. The Storage Service manages the Blood products available in the Hospital and forwards the Orders to the Management Service of the Transportation Group.

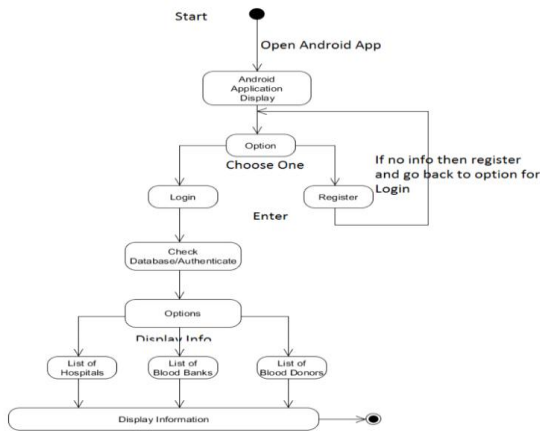
2.3.1 Use Case Diagram



In this we can summarise the details of one's system's users also known as actors and their interactions with the system. We used specialised symbols. These are ideal to represent the goals of system-user interactions, defining and organising functional requirements in a system, specifying the context and requirements of a system and modelling the basic flow of events in a use case

2.3.2 State Transition diagram

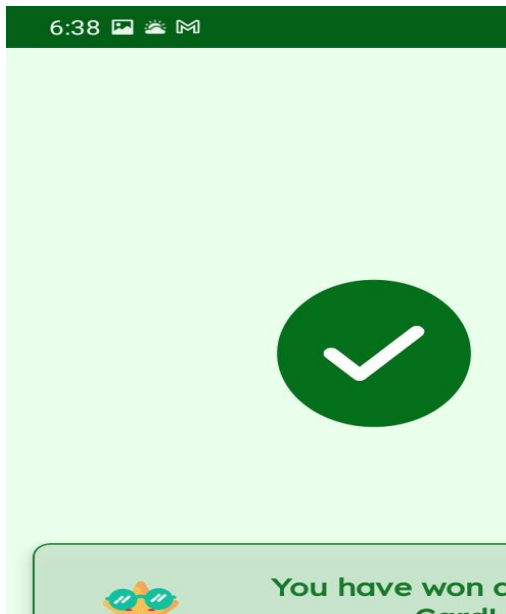
It describes all the states that an object can have, the events under which an object changes state, the condition that must be fulfilled before the transition will occur, and the activities undertaken during the life of an object.



III. RESULTS AND DISCUSSION

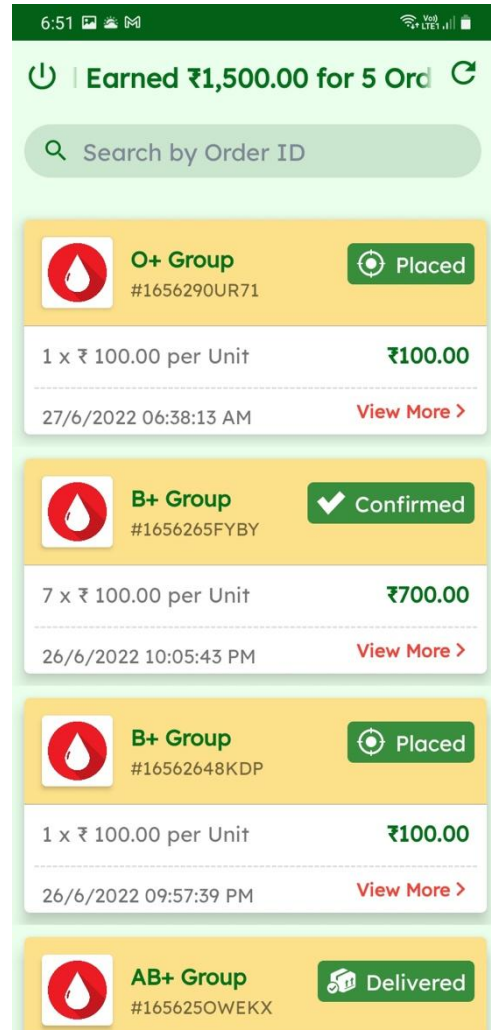
Any person can order any kind of blood group from this android application. One can register themselves in this application to save their information for future purpose. They can register via their phone number.

After registering into the application one can look up into the kind of blood group that the wish to order. Specify the number of units required and the address where it needs to get delivered. Pay the amount and this screen appears as shown below.



One can earn points after every purchase which they can later use during their next purchase. One can also track their delivery and view their previous orders.

A screen similar to the one below will appear.





IV. CONCLUSION

Our android-based application is very useful for emergency services i.e. during blood transfusions while handling any emergency cases, or blood donations., etc

We understand how important one's life can be and the importance of fast delivery of blood for quick surgeries. We often see how doctors hold surgeries for very long waiting for a particular blood group to be delivered. As we all know that most surgeries cannot proceed further without the patient's blood group as surgeries lead to the loss of a lot of blood. This calls for risk in many lives. The main reason is the late transportation of blood, and the lack of being able to identify where one can find a particular blood group. Most of the time people delay because they are not able to identify and by the time one identifies it gets further delayed to get it transferred. We aim to resolve all these problems.

We try to maintain a database which stores all our user's information for quick delivery of blood. We try to provide the best quality blood by keeping a check on the quality of the blood groups that are being stored. It provides knowledge about the latest technology.

This application will help us communicate in a better way and save many lives.

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