A System for Easy and Fast Procurement of Blood
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Abstract:
In today’s world it is very difficult to procure blood pouches during emergency. If blood pouches of a particular blood group are available then their prices are very high. In order to tackle these problems we are implementing a user friendly system in the form of a web application by the name Blood For You (B4Y). The most important thing in blood donation is communication between donor and blood bank. This communication is easily achieved with the help of the B4Y system.

Keywords: Blood, donors, blood bank, emergency, communication, blood donation.

I. INTRODUCTION:
Our team has faced lot of problems when their family members have been hospitalised and there is an urgent need of blood. We all have gone through the hassles of going helter skelter in order to procure bloods. Also the blood banks exploit their customers by taking advantage of the situation that the family is in by charging an exorbitant amount for something which is free for them. We believe we are not the only ones to face such problems and hence we together decided to solve this real world problem and get real insights of the blood banks and their functioning in our country. To make the system acceptable and genuine, we plan to get the approval of the government authorities. This will help us in getting the private as well as public blood banks on board our system and broaden the horizon of our reach in the country. We plan to link the system with the unique identification number issued to every Indian i.e. the Aadhaar number issued by UIDAI via the Aadhaar API. The cooperation by the Government authorities is vital for the grand success of this project.

II. B4Y SYSTEM FOR BLOOD PROCUREMENT
Our proposed system has the potential to address the problem of blood procurement which is faced by people from all walks of life be it rich or poor. The system will not only make blood available to the needy, but it will also allow the hospitals and the families of the patients to compare prices of blood banks across the city. This will also develop a competitive pricing model among the private blood banks which will ultimately lead in reduction of the price per blood pouch and prove to be a boon for the needy.

A. Working
Donor will enter his aadhar card number on B4Y website for registration. Authentication of the entered aadhar number will be done by the B4Y sever from aadhar API. If the number is valid then it will access donor's information from aadhar API's database. B4Y will generate a One Time Password (OTP). This OTP will be enter by donor for the completion of registration process. Once the registration is complete, the entire donor's information is stored in B4Y’s database. Now for logging in, donor will enter aadhar number, B4Y will search this aadhar number in its database and if number is found, the OTP is sent to the registered donor. After entering the OTP, the donor will be logged in. After logging in, the next step donor will do is to enter his location. Based on the location entered by donor, Blood Banks/Hospitals that are present in that location will be displayed on donor’s screen. Donor will select any of the displayed name where he wishes to donate blood. B4Y will submit the name of the donor to the selected Blood Bank. This Blood Bank will provide date and time at which donor can come and donate. These details are provided to the donor by B4Y. Once the donor donates his blood at the respective blood bank, confirmation is sent to B4Y by the blood bank.

B. Functional Requirements:
I) Registration and login:
- Add donors and acceptors:

The most unique way of registering the users with the system is connecting them usingaadhar number. The users
have to enter the aadhar number and all the users basic details are retrieved from aadhar card’s API.

- Login using aadhar number:

  The users have to just remember their aadhar number while logging in the system. Once aadhar number is entered an OTP is sent to user and after verifying the OTP user is connected with the system.

2) **Check availability:**

- Add blood pouches to the available list:

  The B4Y shall be allowed to put the availability of the different blood pouches as soon as new donation is made. Also the database of all the connected blood banks is connected and as soon as any update is made in blood bank’s database the same is reflected in B4Y’s database.

3) **Compare the price:**

  The B4Y should also be able to provide the number of pouches available and their prices in different blood banks as it will help user to compare the price on their fingertips and can efficiently preserve their money.

4) **Link between user and blood bank:**

- Make an appointment:

  The user will have an option to get an appointment to donate blood in any of the blood banks in the vicinity of his/her residence or place of work.

- Send notifications:

  Old donors will receive an email after 3 months of their last donation stating that they can donate again which will remind and encourage them to do a noble deed.

- Give loyalty points to donors:

  Anyone who donates blood pouch will get loyalty points which that person can redeem anytime if they want blood pouches and will get a discounted price. This will also motivate donors to donate blood more often.

- Connecting acceptor with potential donors:

  Our system will connect the acceptor with the potential donors nearer to their place and reduce the efforts.

5) **Database:**

- User mandatory information:

  Each user shall have the following mandatory information: first and last name, phone number, address, postal code, city, country, aadhar number.

- Update user information:

  The B4Y system shall allow the user to update any of the user’s information.

C. **Non-Functional Requirements:**

1) **Security:**

   The security requirements are concerned with security and privacy issues. All user’s personal and medical information is required by law to be kept private. The private details of user must be hidden from the outside world. The acceptors can only access the required blood which he/she wants and cannot access any of the donor’s information. Similarly, the data of the donors and acceptors can be edited only by that fellow user.

2) **Maintainability:**

   The maintainability requirements are concerned with the maintenance issues of the blood bank management system.

3) **Scalability:**

   The scalability requirements are concerned with the scalable issues of the system. The system shall be able to scale up to support more workstations. System performance shall not degrade if up to 20% more workstations are added.
Fig. 3. Sequence diagram for Acceptor

**D. Constraints:**

1) There are various standards on security, privacy, transaction and code sets, and unique healthcare identifiers to which this system must adhere.

2) Both the donor and acceptor database will need large storage capabilities and a process to archive outdated data.

3) The system must be implemented within the approved budget and within the specified time frame.

**III. CONCLUSION:**

After conducting a holistic survey of the blood bank mechanism, its problems and possible solutions; and reading literature surveys and papers we decided to go ahead with the project keeping the objective of helping and creating a difference in the lives of millions. The system we intend to create is a very flexible system which can adhere to new functionalities easily during the life cycle of the project.

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