

Blood Bank Management System

"Every blood donor is a Life Saver."

SOAD Group 28



I) Purpose

Our project is an initiative to connect, digitize and streamline the work flow of blood banks across India. The purpose of the blood bank management system is to simplify and automate the process of searching for blood in case of emergency and maintain the records of blood donors, recipients, blood donation programs and blood stocks in the bank.



II) Problem Statement

In today's world, general society can only know about the blood donation events through ordinary media means such as radio, news paper or television advertisements. Any of the portals provide with very less or no information about the blood donation events on their respective portal.

The current system that is utilized by the blood bank is manual system. With the manual system, there are issues in managing the donors' records. The records of the donor probably won't be kept securely and there may be cases where the donor's records go missing because of human mistake or debacles. Other than that, blunders may happen when the staff saves more than one record for a similar donor.

There is no centralized database of volunteer donors. Along these lines, it turns out to be truly dreary for an individual to search blood if there should be an occurrence of crisis. The only choice he has is to manually look up the register and match the donors individually and call them.

There is likewise no centralized database used to keep the donors' records. Each bank is having their own records of donors. On the off chance that a donor makes donation in various emergency clinic, no past records can be followed aside from if the donor brings along the donation certificate. Henceforth, the donor is thought of to be a newbie in the event that they make blood donation in another place.

Without a computerized administration system, there are additionally issues in monitoring the genuine measure of every single blood type in the blood

bank. Likewise, there is additionally no alert accessible when the blood amount is underneath its standard level or when the blood in the bank has expired.

III) Functional Requirements

- 1) Access Website : User should be able to access the web-application through either an application browser on the mobile phone or computer. There is no limitation for accessing the web-application.
- 2) User Registration: Given that the user has accessed the web-application, then the user can register as a blood bank admin or donor or receiver.
- 3) User Login: Given that the user has registered, then the user will be able to login in the website. Certain pages are login protected like making a blood donation request or registering blood bank page.
- 4) Online Blood Donation Request : Logged in blood donors can make online request, if he/she wishes to donate blood to a blood bank, with all the required details and specifics. He can even search for blood banks and select the blood bank of his choice.
- 5) Management System : The web app will provide an efficient donor and blood stock management system to the blood bank by recording the donor, blood and inventory details.
- 6) Alerting Blood bank : The blood bank will be alerted when the blood quantity is below par level or when the blood stock has expired.
- 7) Blood donation Events: Users will be able to view the upcoming blood donation events, and accordingly plan if they are willing to donate blood.
- 8) Faster Search for recipients : Reduced turnaround time by allowing the logged in recipients to search and find the required blood type in case of emergencies, or make request for blood on social media in case of unavailability.

- 9) Online Payment Portal : The Web app will allow the blood recipient to search the nearby blood banks online and if he is able to find the required blood type, he could buy and reserve the blood packet online and collect it from the respective blood bank.

IV) Non-Functional Requirements

- 1) Correctness : The Blood Unit sent by the Blood Bank should be matched with the requested Blood Unit by the Hospital, which should reach the correct destination(Requested Hospital).
- 2) Maintainability : The Blood Inventory Manager should maintain correct records of the Blood Inventory Stock.
- 3) Usability : The cost of the Blood Units are standardized.
- 4) Extensibility : Requirements for website extensibility in case there is a need to add new functional requirements.
- 5) Performance(Page Loading Time) : The site should load in 3 seconds when the number of simultaneous users are > 1000 .
- 6) Performance(Response Time) : Each request should be processed within 7 seconds.
- 7) Portability and Compatibility : The web-application will be compatible on all operating systems and any web browser.
- 8) Security : Default Django authentication system will be used for user authentication. Users only with API key will be able to access the endpoints.

V) Consumed Services



1) [Paypal\(Payment Gateway\)](#): The users would be provided with an online payment gateway such that any user looking for blood packet could search across the local blood banks on our website and if found, he can buy it online and collect the blood sample from the respective blood bank. We are using Paypal since it has user friendly documentation and easy to implement service along with most of the features.

2) [Facebook\(Social Media Sharing\)](#): The users would be provided with the option to share their actions on social media.

A) A donor can share and inspire other people to donate blood by sharing on social media.

B) In case of emergency any recipient can request for blood donation on social media.

VI) Exposed Services

1) [Blood Bank Module API](#): A service end point to provide list of all available registered blood banks along with its complete inventory information. A user can filter the list of blood banks by providing a city name, which would return list of blood banks in that specific city.

Potential Customers : The hospitals can utilize this endpoint since it is one of the most important places where the blood bank inventory information can be utilized. Instead of calling the blood banks one by one, they can get the information of all the blood banks in a few clicks and proceed to contact the required blood bank.

The Vaccine manufactures can utilize this endpoint too, since they require blood for testing purposes. It will be helpful in pandemics since the manufacturers can find where the desired blood type is available.

2) [Donors Module API:](#) A service end point to provide list of all registered donors who have donated to any of the registered blood banks. A user can filter the list of donors by providing a city name, which would return list of blood donors in that specific city.

Potential Customers : The hospitals can utilize this endpoint since it is one of the most important places where the blood requirement emergency comes up. If the blood banks are out of a specific blood type, they can get the list of blood donors of that blood type with a few clicks and request them for donation.

The Vaccine manufactures can utilize this endpoint too, since they require blood for testing purposes. They can approach the blood donors and request them for blood donation for good cause.

3) [Blood Donation Events API:](#) A service end point to provide list of all the registered blood events on the website with all their respective details.

Potential Customers : News paper companies, magazines and other information source companies can utilize this service endpoint and lets it viewers or readers know about the blood donation event happening near them.

VII) Planned Tech Stack

1) [Frontend:](#) HTML,CSS and Javascript.

2) [Backend:](#)

A) **Web Framework:**Django and Django REST Framework
Because of its ease of use, and its the current industry standard.
Django comes with many inbuilt functions which makes the web application development an easy process.

B) **Programming Language:** Python

C) **Database:** MySQL

Because it is supported by many deployment sites and its the current Industry standard.

D) **Memory and Time Profiling:** Django Debug Toolbar
Easy to use during development.

E) **Deployment Server:** PythonAnywhere

Because its fast to setup and provide insights of user traffic and its free.

- 3) [API Documentation](#): Swagger
- 4) [Testing](#): Django(Unit Test Module) and coverage package(if time permits)
- 5) [Measure Progress](#): Github(version Control)

VIII) Responsibility Division

- 1) [Frontend](#): Pradum Singh (Blood Bank Module)
Sushant Bondle (Informational pages)
Vipul Rawat (User Module)
- 2) [Backend](#): Sumanth Bhat (Blood Bank Module)
Utkarsh Aditya (User Module and Integration)
- 3) [API](#) : Utkarsh Aditya,Vipul Rawat and Sushant(Donor API)
Pradum Singh and Sumanth Bhat(Blood Bank API)
- 4) [Testing and Documentation](#) : Utkarsh Aditya (Swagger API)
Vipul Rawat (Wireframes)

NOTE: In general all the model attributes would be discussed among the whole team and then one of the backend members would work on it. Similar procedure will be followed for all the components of the project. All the attributes of a particular model or element would be discussed among all members and then a particular member will work on it taking into consideration the view of all the other members.

VIII) Risk Ananylsis

- 1) Blood Bank Module:
 - A) [Quality Management](#): Time to time quality Inspection of the blood bank inventory
 - B) [Correctness](#) : Time to time inspection whether correct data is uploaded or not.

C) [Missing Blood Packet](#) : Refund Charged to the blood bank

2) Donor module:

A) [Correctness of blood type](#): Blood type of the donor should be determined before writing on the blood packet.

B) [Correctness of details](#): Donor's ID proof should be checked when he goes to the blood bank for making the donation.