Project report
on

Online Blood Bank Management System

A Dissertation submitted in partial fulfillment of the academic requirements for the award of the degree.

Bachelor of Technology
In
Computer Science & Engineering

Submitted by

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19H51A05J2

J. NIKHIL
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Under the esteemed guidance of
Dr. P Chandrashekar Reddy

Department of Computer Science and Engineering

CMR College of Engineering & Technology

(An Autonomous Institution under UGC & JNTUH, Approved by AICTE, Permanently Affiliated to JNTUH, Accredited by NBA.)

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the Mini Project-1 report entitled **"Online Blood Bank Management System"** being submitted by V. Bhuvana Sri(19H51A05J2), J. Nikhil(19H51A05K6) in partial fulfillment for the award of **Bachelor of Technology in Computer Science and Engineering** is a record of bonafide work carried out his/her under my guidance and supervision.

The results embody in this project report have not been submitted to any other University or Institute for the award of any Degree.

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Submitted for viva voice Examination held on _____

External Examiner

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ABSTRACT

Blood banks and hospitals maintain physical records and patient registries to store data regarding blood donations. When a situation arises and the availability of certain blood group within the facility needs to be checked it gets difficult. This is because the required blood donor information is difficult to access in a huge database without efficient tools. To solve this, we have come up with an Online Blood bank management system that can store, process and retrieve information concerning the inventory management within a blood bank. The project is entirely administrative and therefore access is guaranteed only to the administrator. The project's aim is to develop an application system to minimize the manual work for Blood Bank.

CHAPTER 1: INTRODUCTION

Due to the pandemic, the demand for blood donation has increased, and so have the donors. Many of the blood banks in rural areas or underdeveloped areas still use the manual file system for storing the details of donors. We, as a team came up with an online blood bank management system that can be used by various hospitals simultaneously to store the information regarding the available blood units.

1.1 NEED STATEMENT

The manual system of maintaining records must be replaced by a web-based management system that can efficiently store available blood unit details and can be accessed by various hospitals. It is observed that admins in hospitals who maintain records and entries of blood availability etc., don't have knowledge about database or DDL. An online platform can be introduced which can cover all the functions of a database and is easy to use even for the naïve.

1.2 OBJECTIVE, SCOPE & LIMITATION

1.2.1 Objective

Our project aims to design, develop and implement an Online Blood Bank Management system, that performs the following tasks:

- Ensures the hospital can easily check the number of blood units that are available.
- Storing, processing and retrieving information concerning the inventory management within a blood bank.
- Support fast searching to find matching blood bags for the patient.

1.2.2 Scope

Our project covers 3 basic operations of blood banks: hospital registration, monitoring of blood bag inventories, and monitoring of blood bag issuance. The stakeholder of this project is the blood bank/hospital admin.

1.2.3 Limitations

The project doesn't cover the actual blood collection activity, donor details, and blood transfusion operations. The efficiency of the system depends on the admin's efforts to update the data.

CHAPTER 2: BACKGROUND WORK

2.1 Introduction

This section discusses findings and observations done by some research works on web-based blood bank management systems.

2.2 Literature survey

i. According to Teena C.A, Sankar K. and Kannan S. (2014) in their study entitled "A Study on Blood Bank Management", they defined Blood Bank Information System as an information management system that contributes to the management of donor records and blood banks. Their system allowed an authorized blood bank administrator to sign in with a password to easily manage the records of donors and patients who need blood. The system provided many features including the central database, quick access to the system content through the login, includes the search code to find donors on a given basis, and the ease of adding and updating donor data. The main aim of the system was to complete the process of the blood bank. This system was designed to suit all types of blood banks.

ii. "Blood Bank Management System" done by Kumar R.Singh, S. and Ragavi V.A. (2017), the researchers developed a web-based blood management which assists the blood donor records management, and provides ease of control in the distribution of blood products in various parts of the country considering demands of hospitals. The developed system was scalable and adaptable to meet the complex needs usually of a blood bank. Based on this study, since entering the details about the blood donors and related records were done manually, thus, tracking of blood donation activities was difficult and complicated, and even led to erroneous information.

iii. The study entitled “Blood Bank Management System Using Rule-Based Method” undertaken by Liyana, F. (2017), it found out that it is important for every hospital to use an information system to manage data in blood bank. Also, it observed that the manual system has disadvantages for the user and the hospital, the blood bank staff should enter the donor details in each time he/she donate blood in which led to duplicate data of the donor and also the data may be lost or missing after period of time. Thus, the author developed a web-based system to help the blood bank to record the donor details fast and easy. This system can send messages to donors if any particular blood type is needed.

2.3 Existing solutions

i. Manual System:

- In the manual system, separate registers (or files) need to maintained for maintaining donor register, patient register and issue register.
- The maintenance of the bulky registers is tedious, time consuming and space consuming.
- It consists of duplicate data and errors entered manually.
- The data might be lost in due course of time.

Fig 2.1. Maintaining manual systems

ii. Patient registry database:

- It is an organized system that uses observational study methods to collect uniform data to evaluate specified outcomes for a population defined by a particular disease, condition, or exposure.

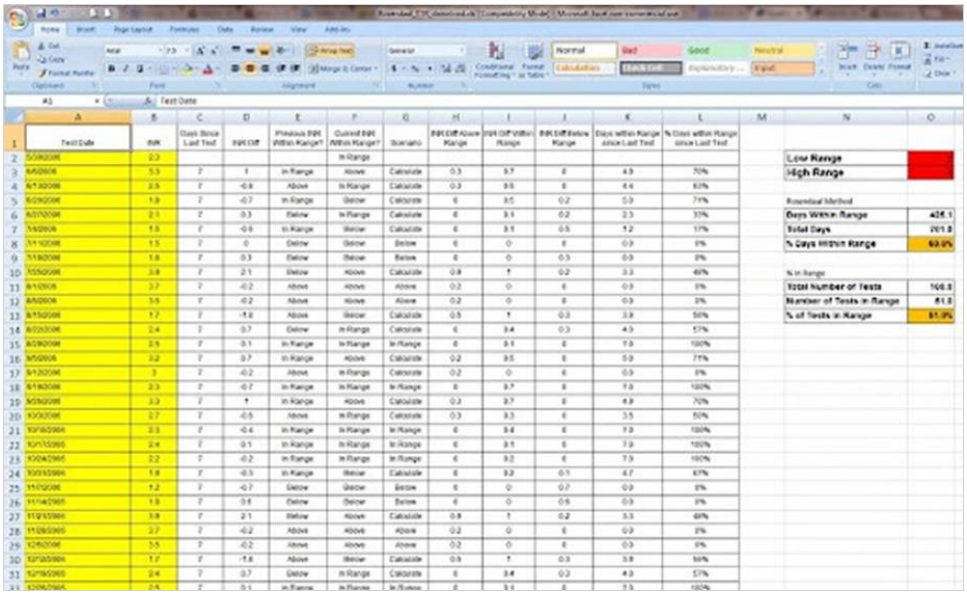

Fig 2.2. File registry using excel sheets

Features of Patient registry:

- It is similar to a database; it is secure and has more security of information as compared to the manual system.
- It keeps the data very consistently.

Disadvantages:

- It has helped reduce duplicate patient data in hospitals but hasn't completely cured the problem.
- Not every hospital has an enterprise master patient index team that cantrack for errors in the acquired data.
- It doesn't have a smooth and interactive user interface

iii. Electronic medical records (EMRs):

- These are a digital version of the paper charts in the clinician's office.
- They can facilitate workflow.
- Due to the integration of data about the patient through the integration of external sources the provider is informed and explained decisions quickly.

Disadvantages:

- Installing a comprehensive EMR system can be expensive.
- The typical cost is factored by Hardware, Software, Training, Installation and System Customization.

Fig 2.3. EMR System

CHAPTER 3: PROPOSED SYSTEM

3.1 Introduction

This section presents the research methodology used in the study, the research design, and the data collection process.

3.2 Theoretical/ Conceptual Framework

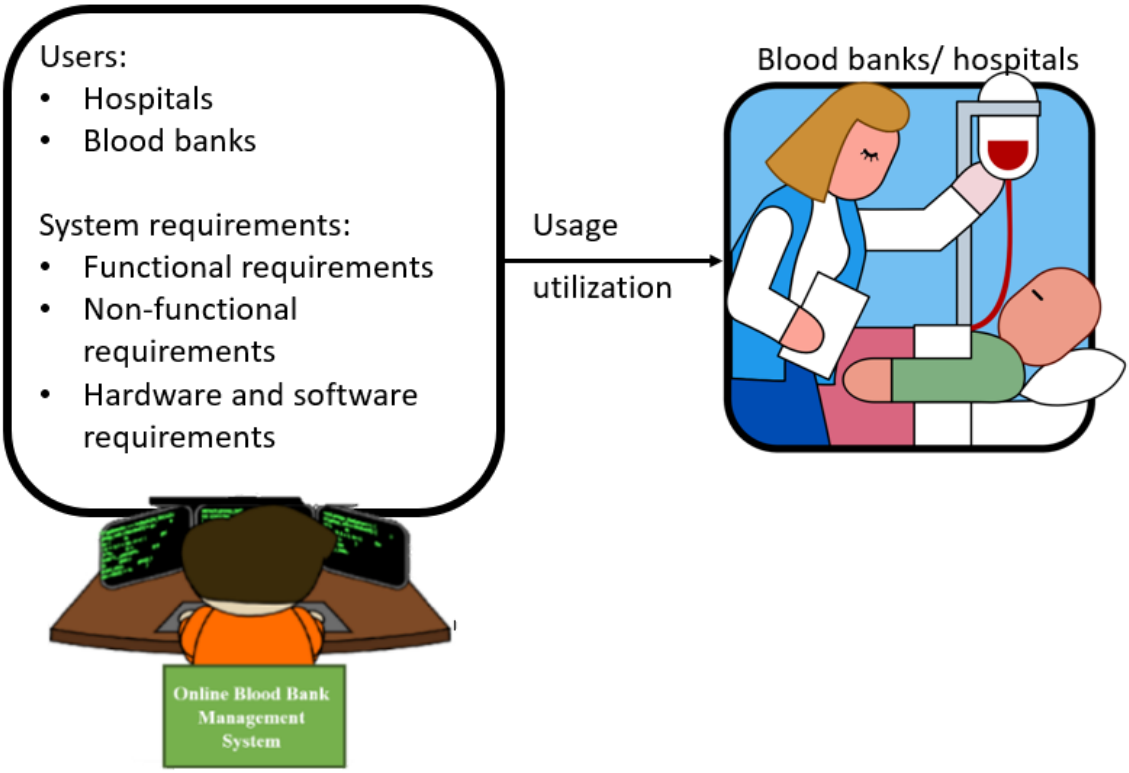

Fig 3.1. Conceptual Framework

The conceptual framework helps illustrate the research design and the relationships of the variables involved. Based on the figure above, the usage or utilization of the online blood bank management system can lead to the enhancement or improvement of the system.

3.2.1 Functional Requirements

- Registration of hospitals.
- Hospital/ blood bank login.
- Making inventories of blood bags in the hospital/ blood bank.
- Displaying available blood.
- Enabling editing of available blood bags.
- Viewing importance of blood donation.
- Checking various blood group compatibilities.

3.2.2 Non-functional Requirements

- **Availability:** The system is available at all times there is a proper network connection. Means 24 X 7 availability.
- **Security:** The admin inventory is safely protected with a password. The system automatically logs out after a period of inactivity.
- **Performance:** The system is interactive and the delays involved are less.
- **Reliability:** The system is reliable for performing it's designated tasks and secures the inventory with a password.

3.2.3 Hardware Requirements

- Platform : **Windows** 2008 R2 (64-bit) and later versions, Intel Core i7, CPU: 4vCPU, Frequency: 2.2 GHz and Threads :16
- RAM : 8 GB
- Storage Configuration : 30 GB
  15000 RPM drive or a tier 1 SAN storage (2-4 GBps SAN dedicated channel)

3.2.4 Software Requirements

- Operating system : Windows 7 and newer versions.
- DBMS : MongoDB.
- Compiler : TurboFan.
- Front-end tools : CSS, JavaScript.
- Language : JavaScript.

3.3 ADVANTAGES

- The model ensures data security.
- It keeps redundancies in check, as compared to the manual system
- It occupies less space and only requires a desktop or laptop.
- Data is organized.
- Simple and efficient user interface.
- It can be accessed from anywhere in the world, at any time and has a quick search.

CHAPTER 4: DESIGNING

4.1 Preliminary design

Tools, which assist in preliminary design process, are UML Diagrams and ER diagrams.

4.1.1 UML Diagrams

i. Use-case Diagram:

The Use Case Diagram graphically depicts the interactions among the elements of Blood Bank Management System. The main actors of this system in this Use Case Diagram are: Admin/ Hospital Management, Blood Bank Management.

The relationships between and among the actors and the use cases of Online Blood Bank Management System:

Admin & Hospital Management Entity: Use cases of Admin are Manage blood group, Manage stock and full system operations.

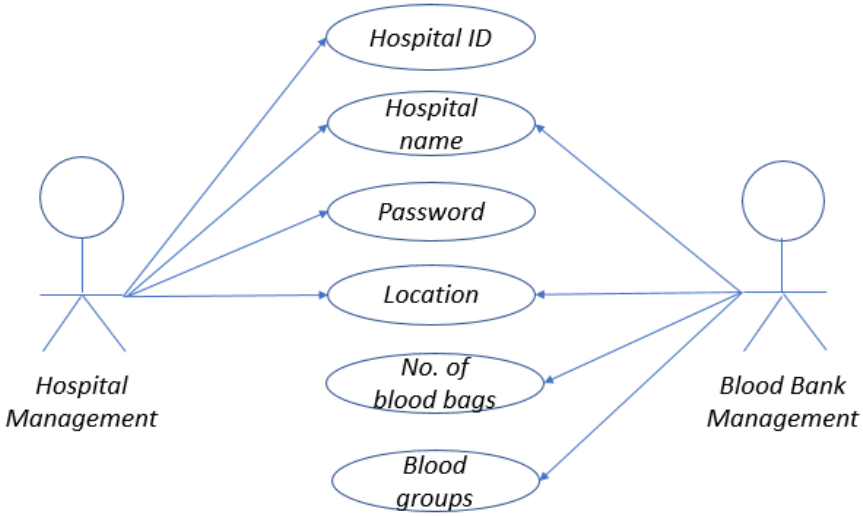

Fig 4.1. Use Case diagram for the system

ii. Component Diagram:

The component diagram of Online Blood Bank Management System shows components, provided and required interfaces, ports and relationships between the blood groups and stock of the blood bags.

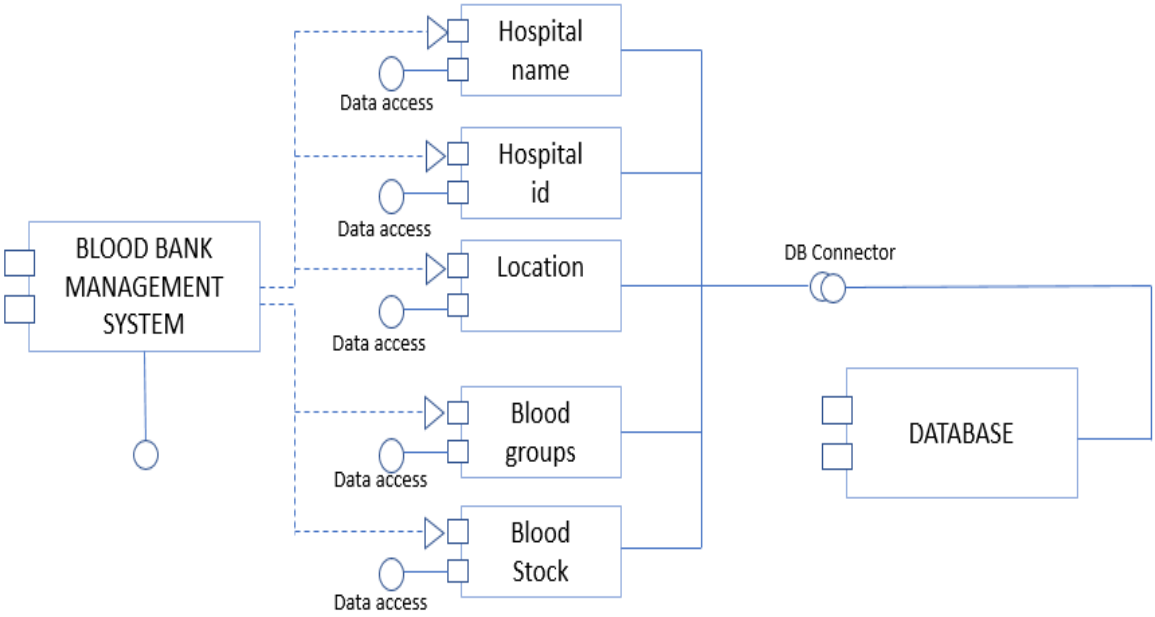

Fig 4.2. Component diagram for the system

4.1.2 ER Diagram

The entity-relationship diagram of this system shows all the visual instrument of database tables and the relations between Blood group management, stock etc. The main entities of the system are Blood bank, Admin/ Hospital schema.

Description:

- The details of Blood groups are stored into the hospital schema respective with each and every registration.
- Each entity contains primary and unique keys.
- All the entities are normalized and reduce duplicacy of records.

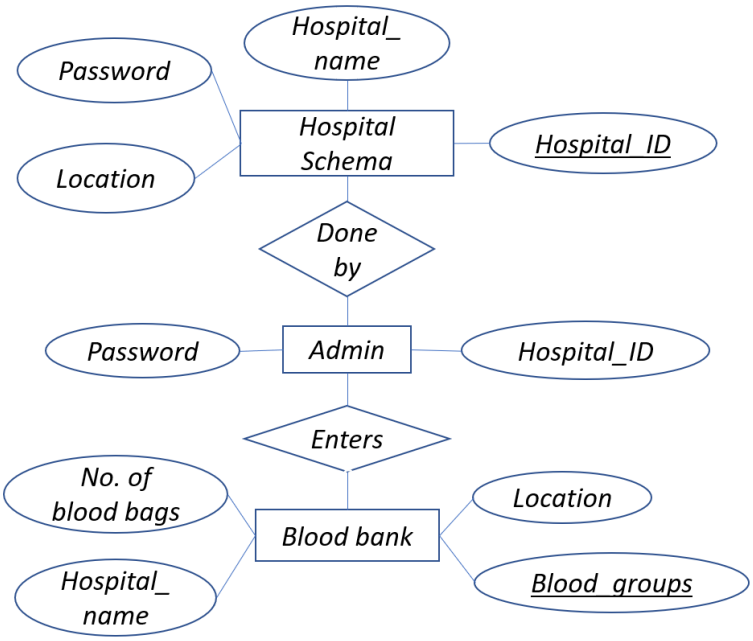

Fig 4.3. ER diagram for the system

4.2 Database design

The database tables used in this system are:

i. Hospital registration:

Used to register the hospitals or blood banks on the website.

Table 4.1. Hospital registration entity

Field Name	Field Type	Field Length
Hospital_name	Varchar2	20
Hospital_id	Varchar2	16
Password	Varchar2	16
Location	Varchar2	20

ii. Admin login:

Used for the admin of the hospital/ blood bank to login.

Table 4.2. Admin login entity

Field Name	Field Type	Field Length
Hospital_id	Varchar2	16
Password	Varchar2	16

iii. Blood bank:

Used to fill and check blood details in one/more blood banks or hospitals as per emergency.

Table 4.3. Blood bank entity

Field Name	Field Type	Field Length
Blood_groups	Varchar2	8
Hospital_name	Varchar2	16
No. of blood banks	Varchar2	16
Location	Varchar2	20

CHAPTER 5: RESULTS AND DISCUSSION

5.1 Implementation

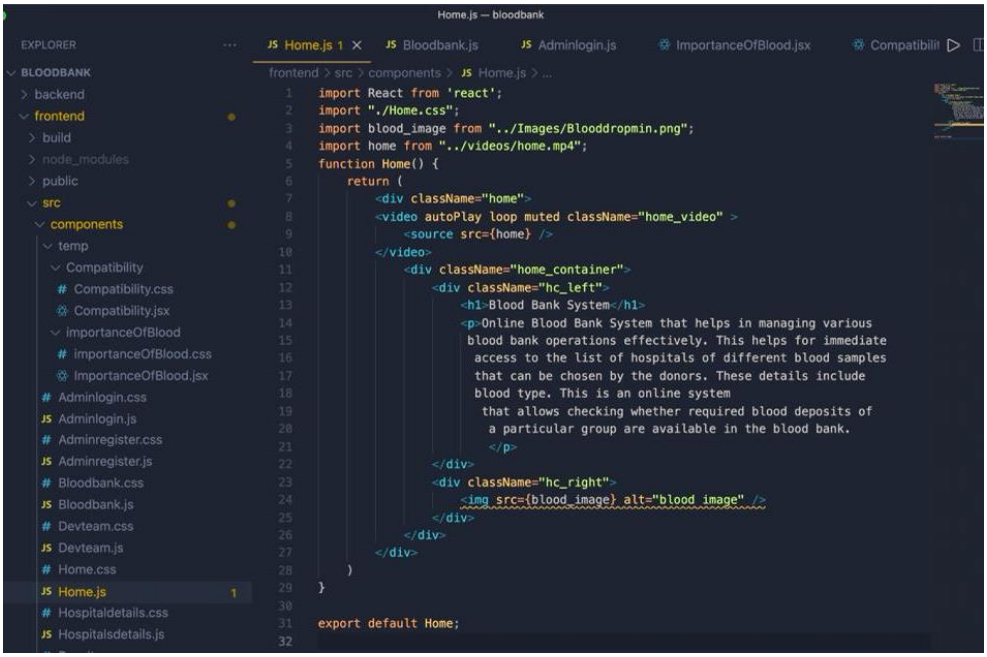

Fig 5.1. Home page

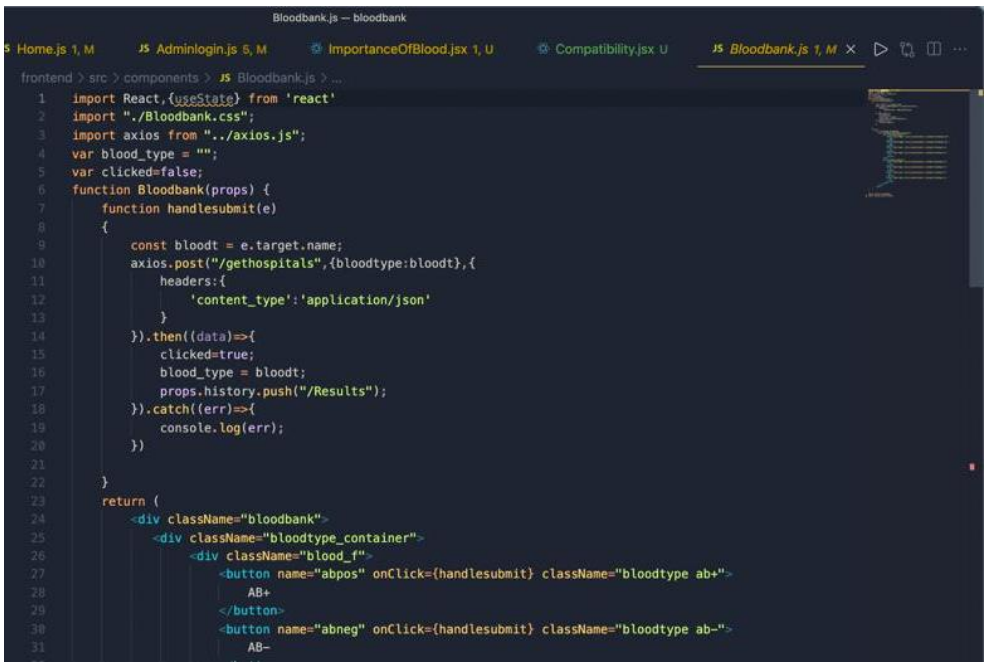

Fig 5.2. Blood bank page

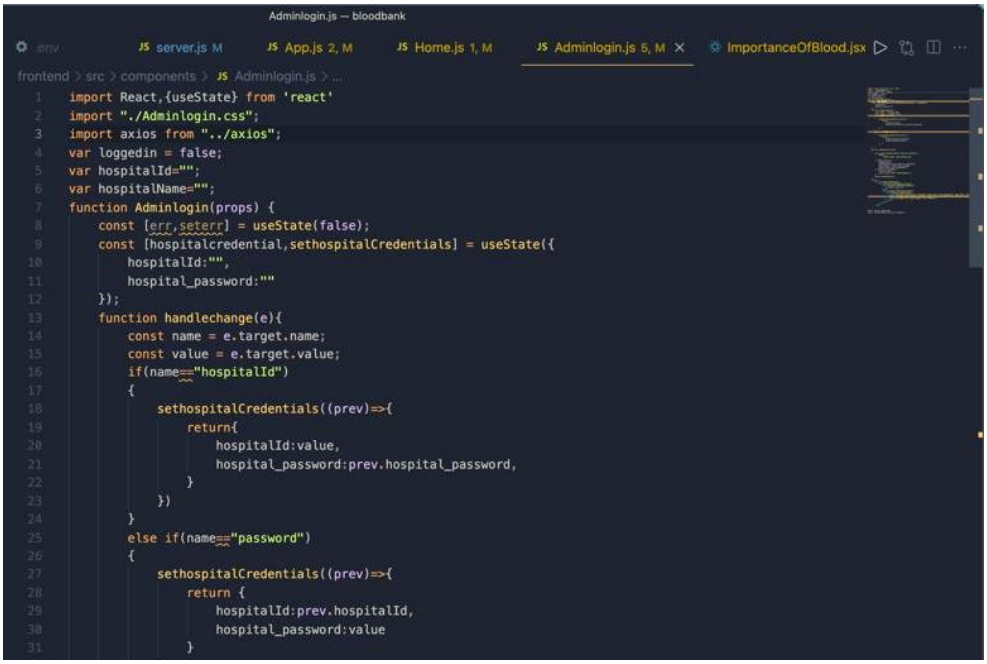

Fig 5.3. Admin login page

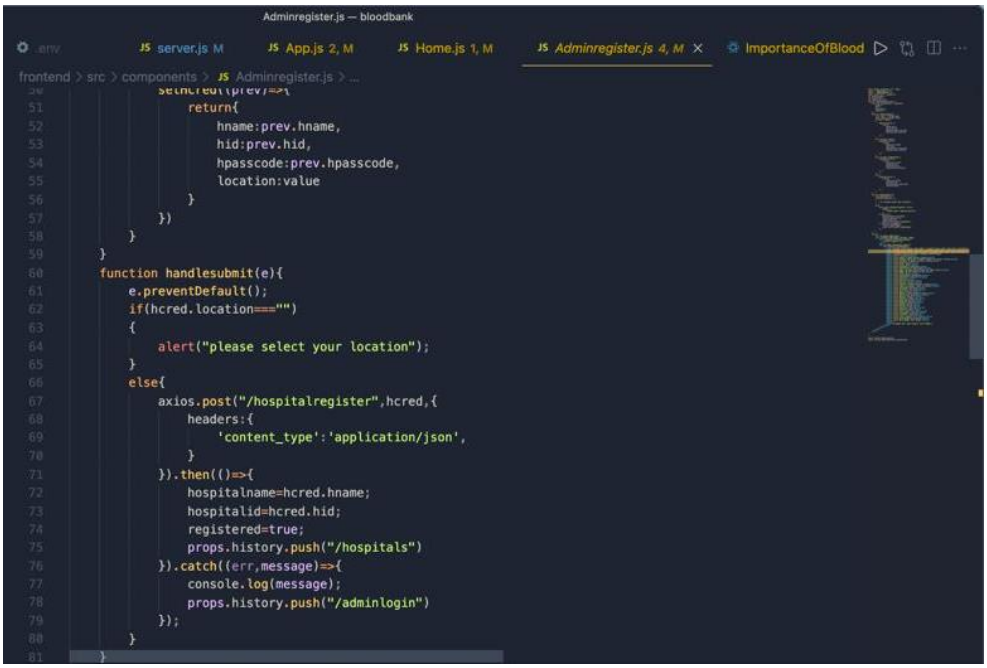

Fig 5.4. Hospital registration page

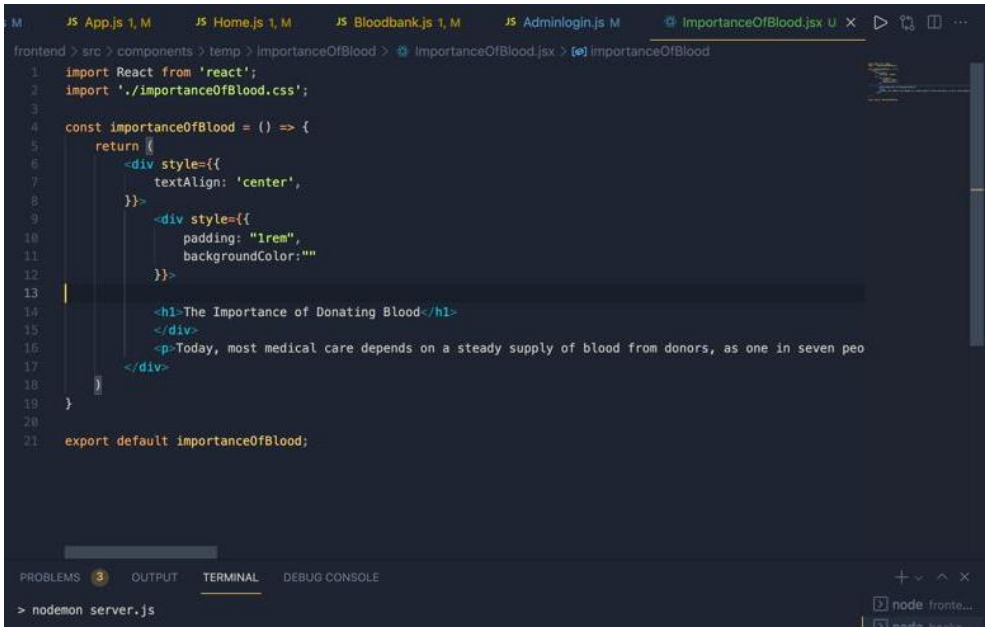

Fig 5.5. Importance of Blood donation page

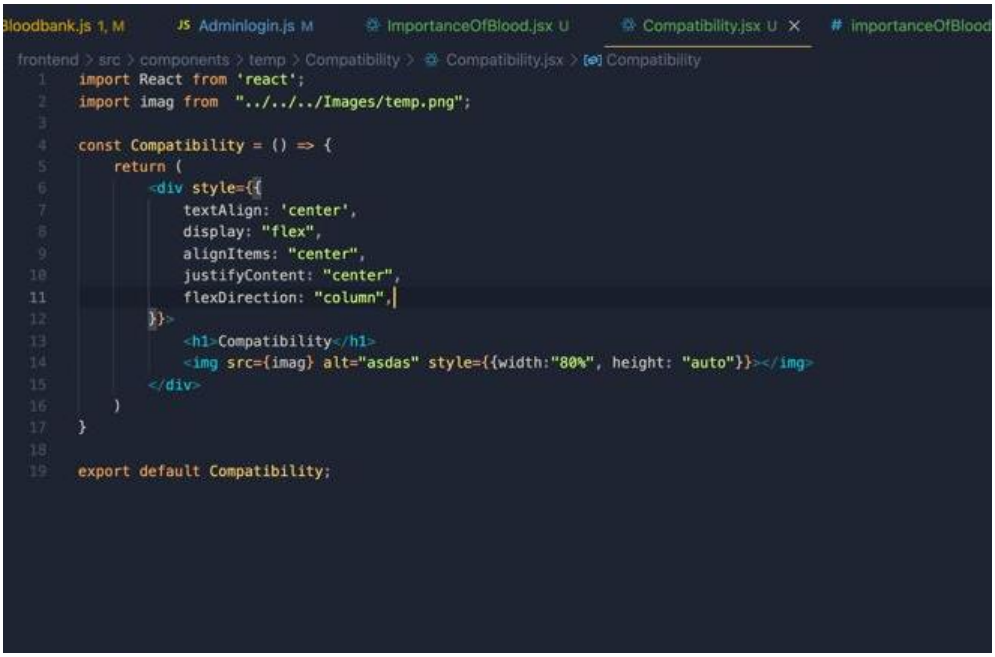

Fig 5.6. Blood group's compatibility page

5.2 Result

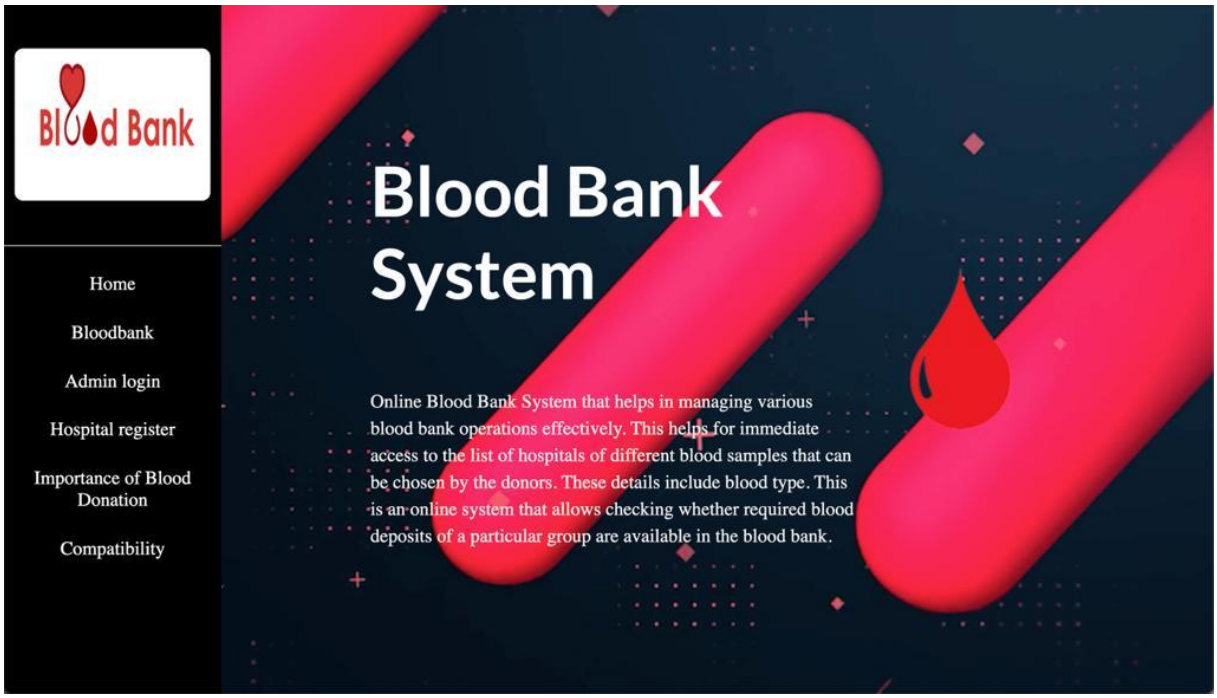

Fig 5.7. Home page

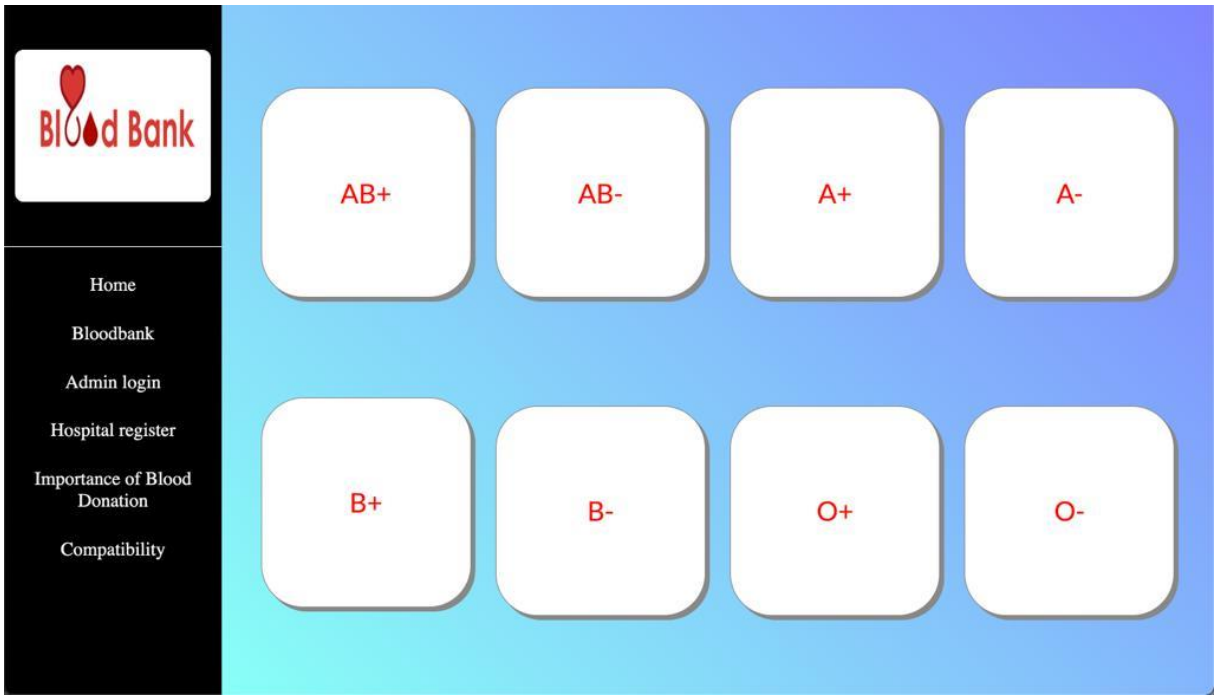

Fig 5.8. Blood bank page, here the admin can choose the blood group for which he wants to check the availability for.

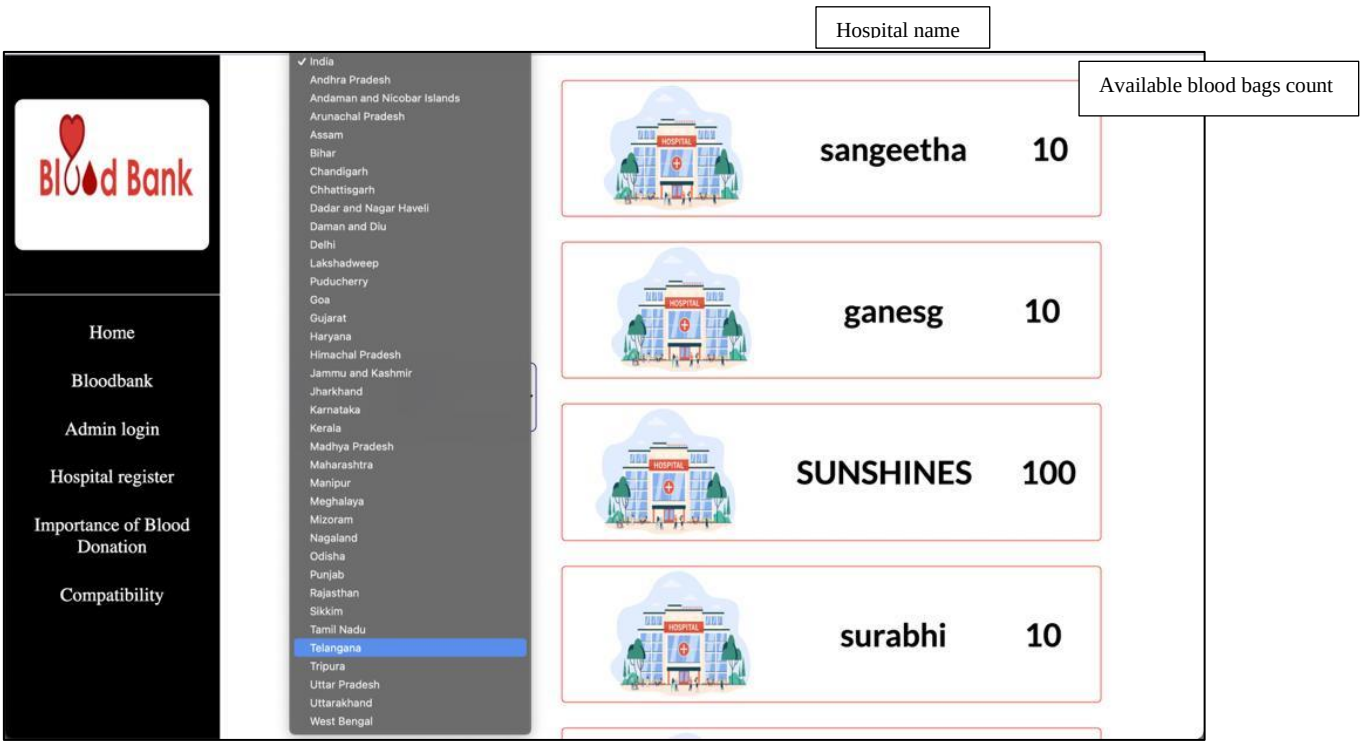

Fig 5.9. The availability of chosen blood group can be checked area wise.

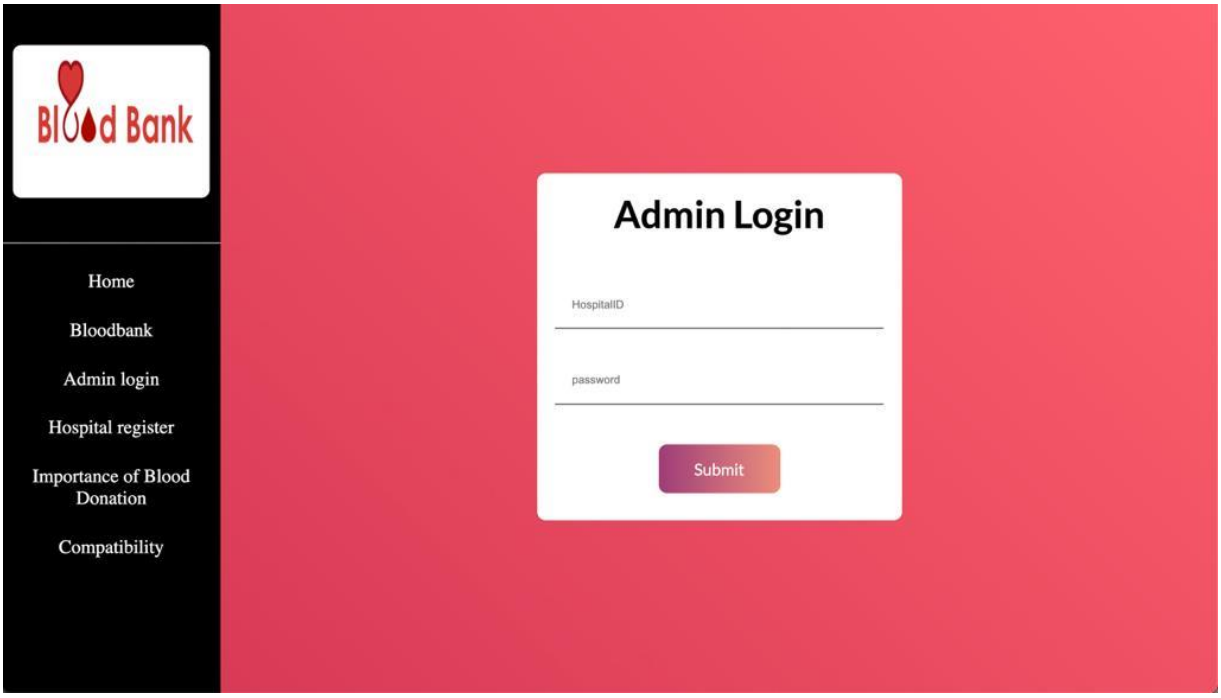

Fig 5.10. Admin Login page

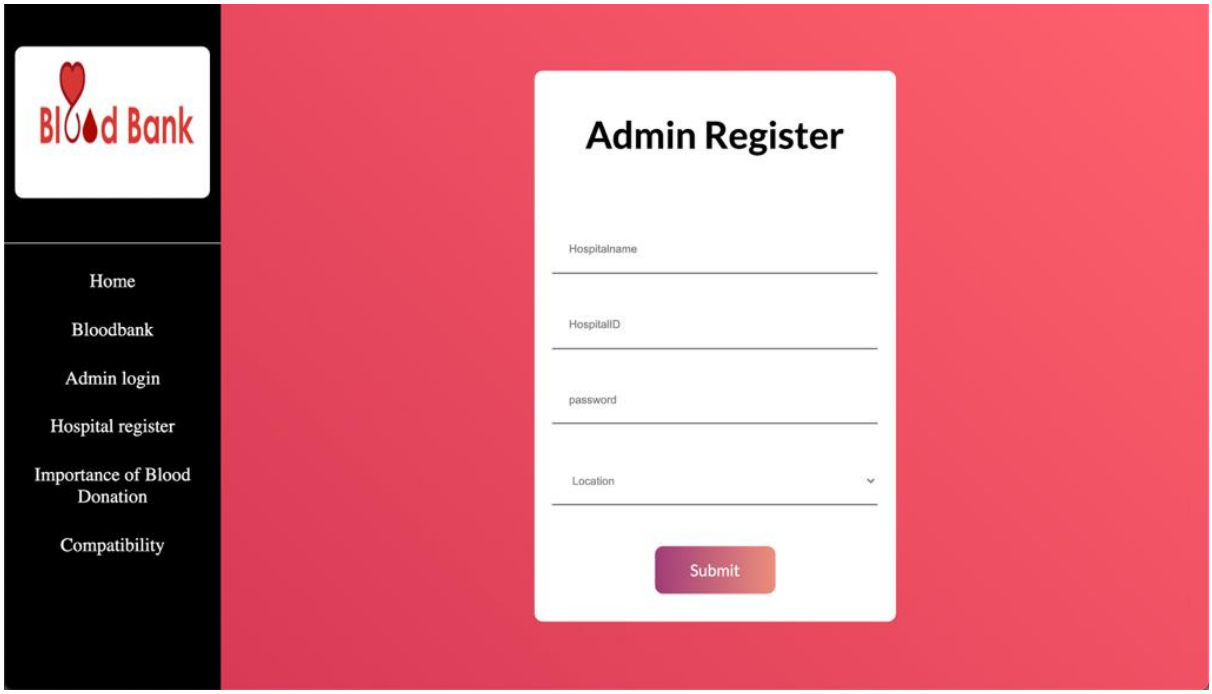

Fig 5.11. Admin registration Page

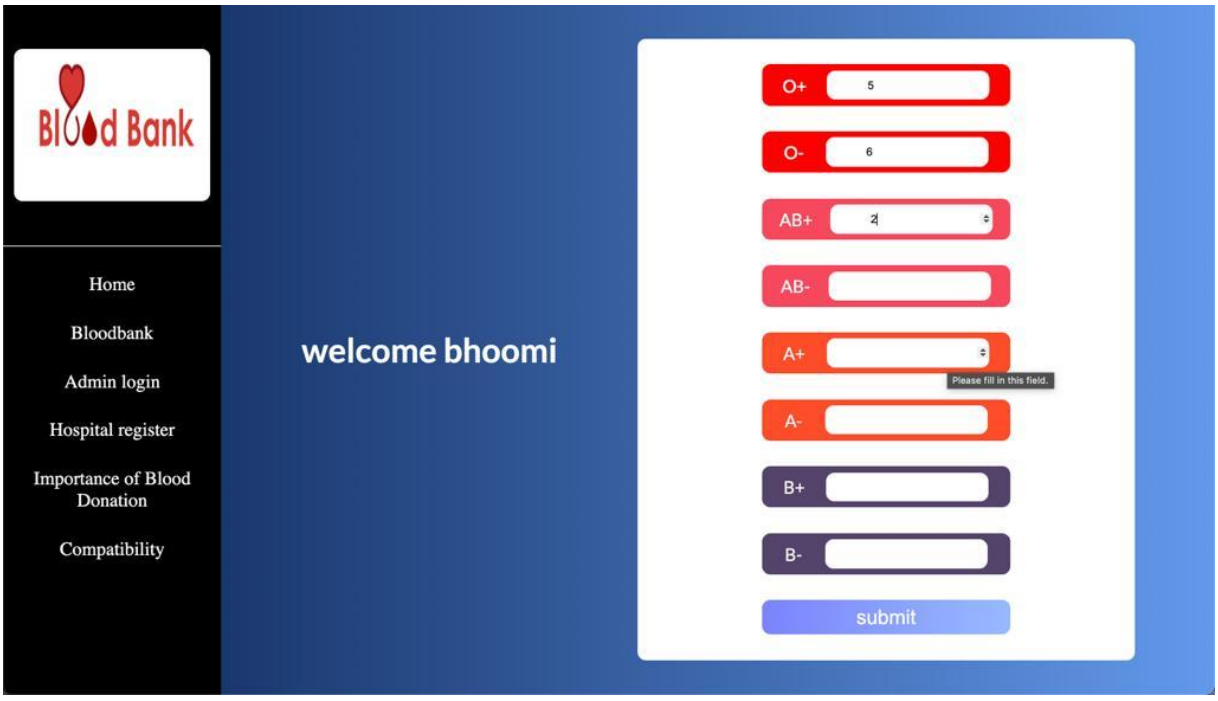

Fig 5.12. Modifying the blood bags count by admin

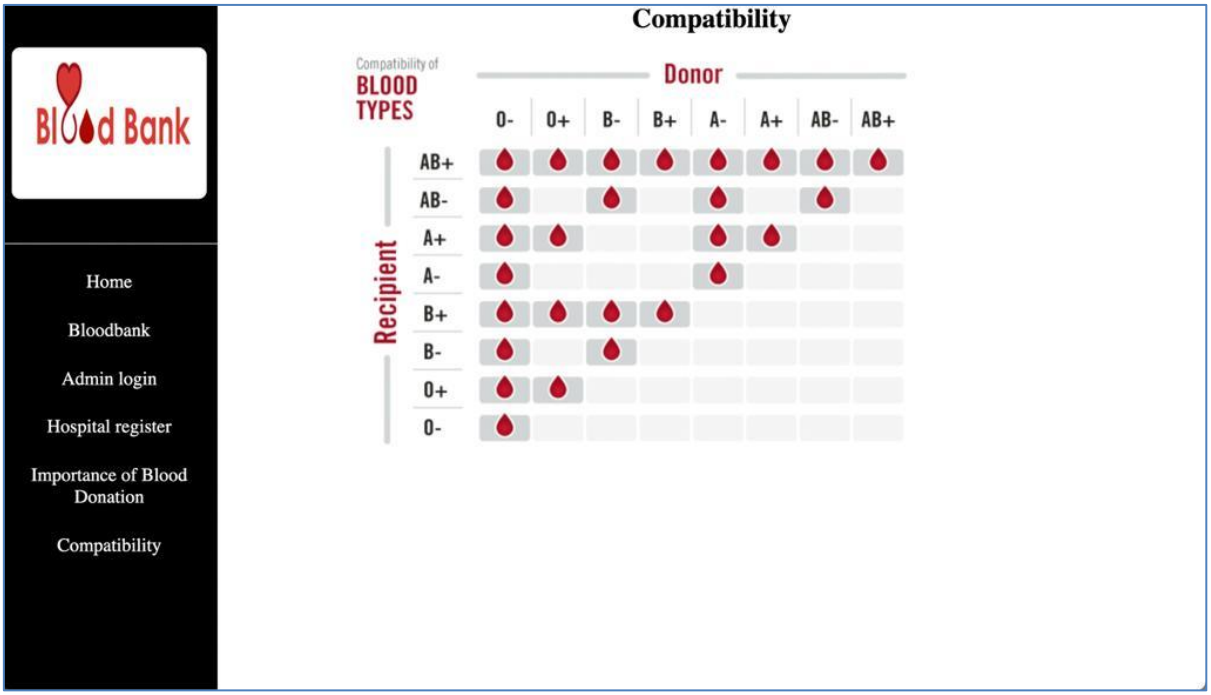

Fig 5.13. Blood compatibility page

CHAPTER 6: CONCLUSION AND FUTURE WORK

6.1 Conclusions

- The model is not completely automated to update the availability of blood in the bank automatically.
- The overall efficiency of the model depends on how frequently the admin updates the entries.
- The project works when connected properly to a network.

6.1 Future works

In the future we can add the following to our project: details of the donor, date of registration, date of birth of the donor, gender of the donor and any proof of health card or ID proof for confirmation of his/her blood group.

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