

**CS-6106**

**DATABASE MANAGEMENT SYSTEM PROJECT**

**BLOOD BANK MANAGEMENT SYSTEM**

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# **BLOOD BANK MANAGEMENT SYSTEM**

## **INTRODUCTION**

Blood is the most essential thing for human life. Blood is essential to help patients survive surgeries, cancer treatment, injuries etc. As the population is increasing over the years, the diseases and health issues are also increasing day by day. Now, because of this ever-growing population and advancement in medical science, the demand for blood to save lives are increasing over the year. But in spite of this huge population, not all can donate blood and there is also a need for management of the donated blood. Blood banks is the center where blood is gathered as a result of blood donation and stored and preserved for later use in blood transfusion in case of emergencies. Blood bank involves tasks such as blood collection, processing, testing and storage. In case of emergencies, there is a need for fast action in blood transfusion in order to protect the patient. So, there is a need for proper management and proper access and information to all people regarding blood availability. But due to the lack of proper information and communication, most of the patients do not get the required blood in time leading to life loss. Improper management of the blood leads to wastage of the blood available. Now, all the blood banks are offline based and there is a need to visit blood banks physically in order to get information regarding availability of blood etc. This causes huge difficulties especially in the case of emergencies. The donors are also not given enough information and awareness leading to deficiency in certain blood groups. These problems can be dealt by automating the existing manual blood bank management system. This project in the blood bank management system will develop an efficient system for blood transaction and management. This online management helps to register the donors, blood collection etc. This project helps to manage the requests from normal patients for units of blood in case of emergencies.

This would create an efficient solution to the existing issues making the management of blood efficient and providing enough information regarding blood availability making it easy for general user, patients and even donors to look into and contact the blood bank.

## **ABSTRACT:**

The main reason for implementing blood bank management system is to ensure that proper management of blood takes place and proper information and data are shared in order to prevent any blood related emergencies. This would be a huge benefit the patients as they can request blood just giving few information at their own place and also benefit the regular donors who can look into the blood availability who can further donate in case of deficiency. This transition to online based blood bank management could create more awareness thereby helping in saving lives.

## **Existing Problem:**

Currently, the blood donation is completely offline based. Even for getting information for important emergency situations, there is a need for visiting blood bank directly. Also, in the current structure, most of the blood banks are affiliated with hospitals. Each hospital has its own set of rules and restrictions making it difficult for common people to get the required information. Since there are fewer donors and more blood banks, efficiency and effectiveness are reduced. There is a lack of awareness regarding blood donation amongst the youth because blood banks are totally offline based. Because of this, there is a lack of rare blood groups, shortages during an emergency etc.

## **Challenges:**

Manual labor is still involved in the management of a blood bank.

- The procedure is time-consuming and space-consuming.
- It causes inaccuracies because the data is being entered manually by the individuals.
- It also involves the risk of documents being lost over time, as well as the difficulty of maintaining records.
- The data collected during testing or while obtaining information about various parts of the blood bank management system is not very exact nor is it precise.

**Proposed Solution:**

The primary goal of our project is to provide blood management and donation services online. The Blood Bank Management System is a Web-based application program that stores, processes, retrieves, and analyses data related to administrative and inventory management in a blood bank. This project intends to keep track of all information about blood donors and the various blood groups accessible in blood banks, as well as to assist them in better managing their operations.

**Who can be benefitted by this:**

People who are in urgent need of blood, hospital patients, those who are unable to physically access blood bank immediately are benefitted by this application

**Expected output:**

The proposed application (Blood Bank Management System) is intended to help the blood donation center's executive to satisfy the requests of people in need of blood by sending and additionally serving the demands for blood as and when required. The proposed application gives the solution to overcome any issues between Recipient, Donor and Blood Bank. This project will give a shared platform for every one of the three groups (Beneficiary, Donor, and Blood Bank). The following are the outcomes our project.

**Outcomes:**

- To facilitate the process of blood donation.
- To work on enhancing the existing system.
- To be easily accessible.

## **TABLES USED:**

- **DONOR:**  
Stores the details of the registered donors
- **BLOOD:**  
Stores the details of the blood donated
- **RECEPTION:**  
Stores the details of the employees working in the blood bank
- **CONTACT:**  
Stores the details of the blood requests given by the normal users
- **BLOOD BANK:**  
Stores the details of the blood groups and its availability
- **ADMIN:**  
Stores the credentials of the admin.

## **ENVIRONMENT SETUP:**

### **FRONT END:**

- HTML
- CSS
- JAVASCRIPT
- BOOTSTRAP

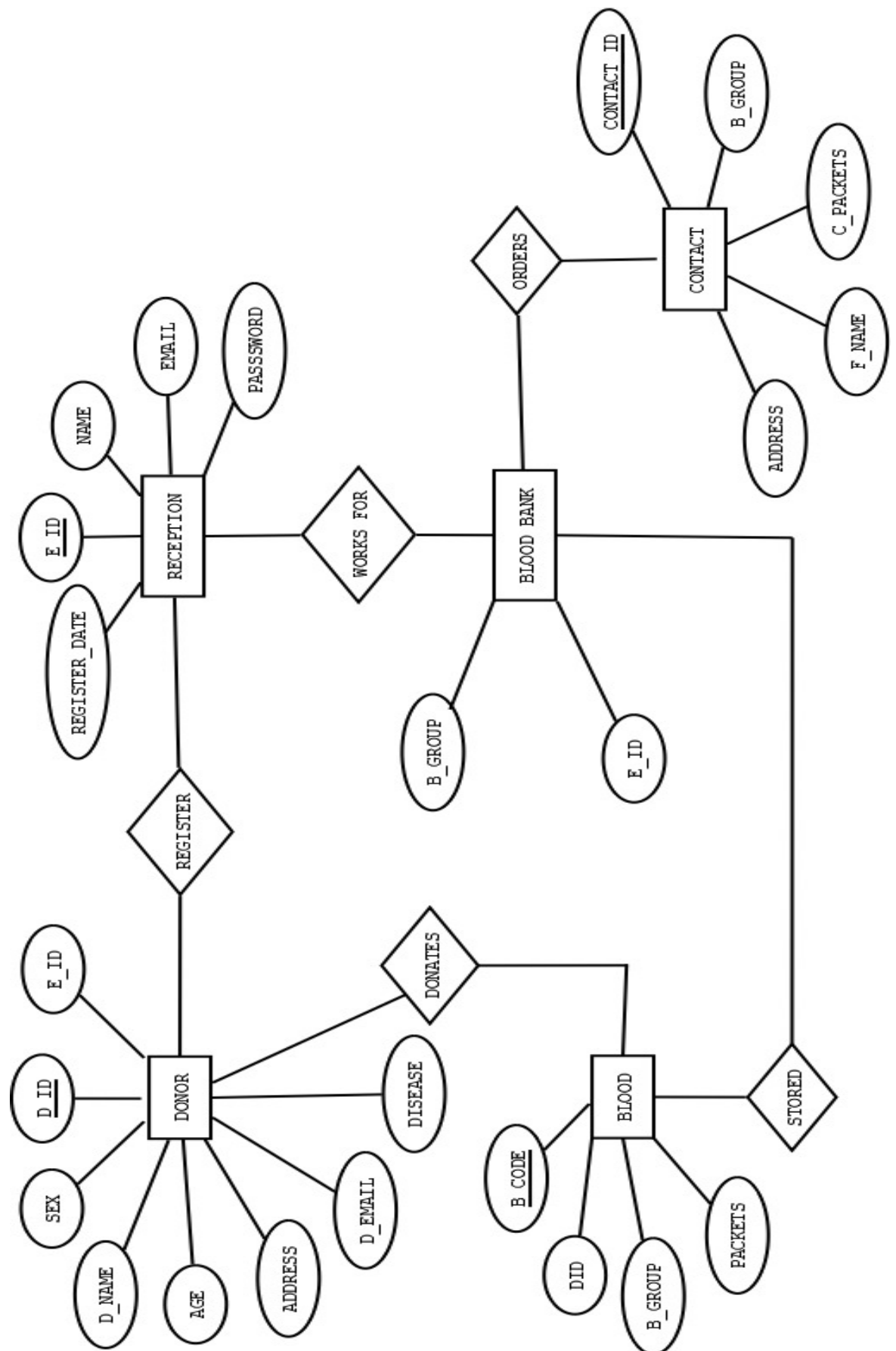
### **BACKEND:**

- FLASK (PYTHON)

### **DATABASE:**

- MYSQL

## ER DIAGRAM



## **IMPLEMENTATION:**

In this project, there are mainly 3 flows. They are admin flow, employee flow and the normal user flow.

### **ADMIN FLOW:**

Here, there is only one admin per blood bank. The main feature of the admin is that he/she can employ the employee to work in the blood bank. In this, there is a separate login for admin where he/she can log-in and do all the features that employee can do but also register employee giving them the user-id and the password.

### **EMPLOYEE FLOW:**

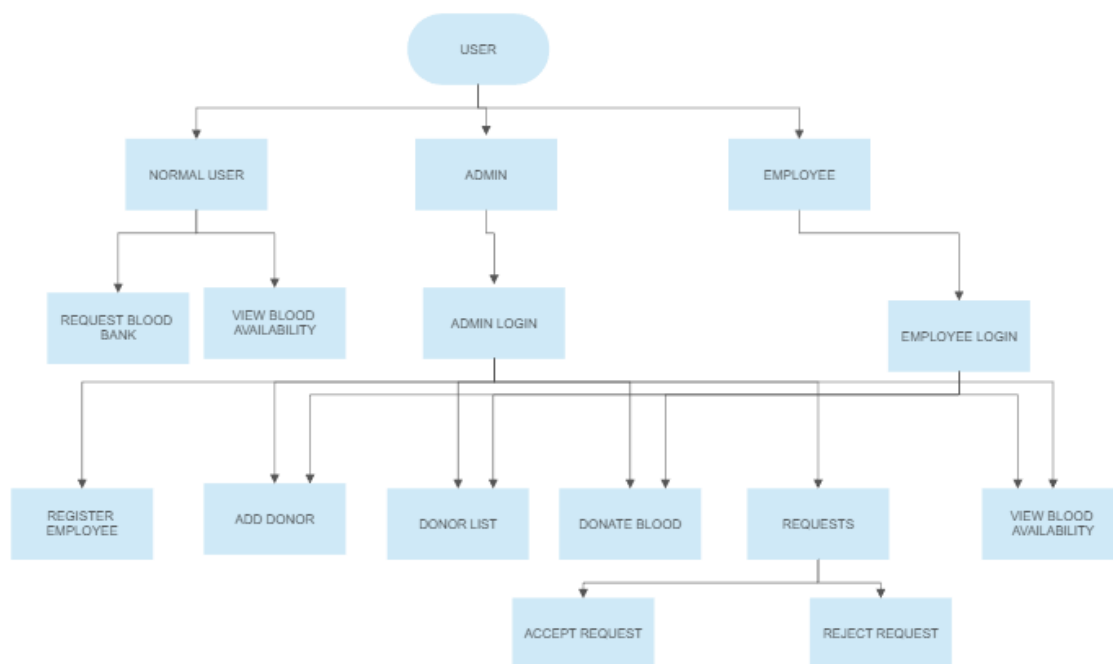
Here, using the user-id and password created by the admin, an employee can log-in to the website. Here employee can add the donors visiting the blood bank which will be stored in the database. After checking the blood of the donors who visited the blood bank, the donated blood details are added which is further recorded in the database and the amount of blood (in units) with respect to the blood group is also updated. The employee can also accept or reject the requests made for blood from normal users depending on certain criteria. On accepting the request, the blood details are updated in the database. If the required blood group is not available in the blood bank right now, the employees are notified with the previous donors with the address and mail id which can be utilized to arrange the requests. The employee can also look into the blood availability in the blood bank and act upon in case of certain blood group deficiency.

### **NORMAL USER FLOW:**

In this, any normal user can request the blood bank for blood in case of emergencies. Also, the normal user can look into the blood availability in the blood bank.

## IMPLEMENTATION- FLOWCHART

Flow of the application:





## IMPLEMENTATION- SNAPSHOTS

Home page:



Fig-1

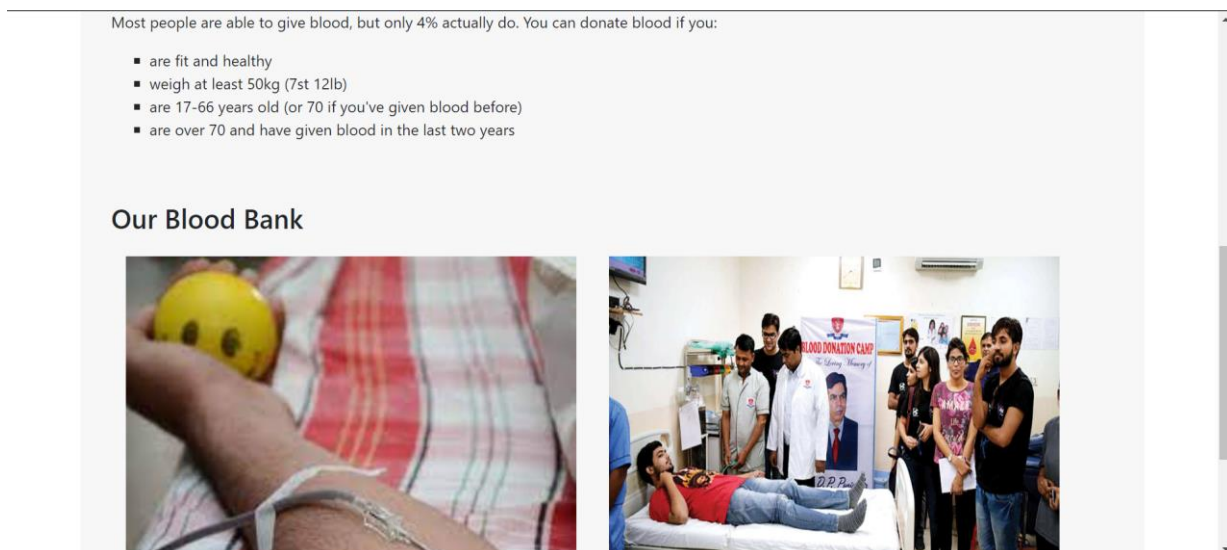


Fig-2

Here Fig-1 and Fig-2 shows the home page of the website. It gives information regarding the blood bank and act as a base for further processes.

## ADMIN FLOW:

### Admin Login:

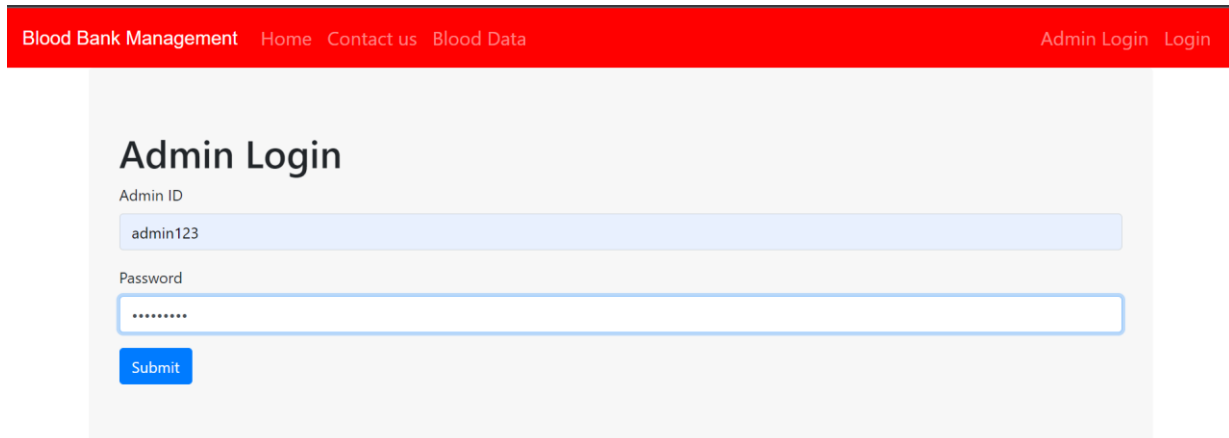


Fig-3

Fig-3 displays the admin login where only the admin can log-in to do his/her work. On clicking the submit button with correct credentials, the admin is brought to the register page.

### Register employee:

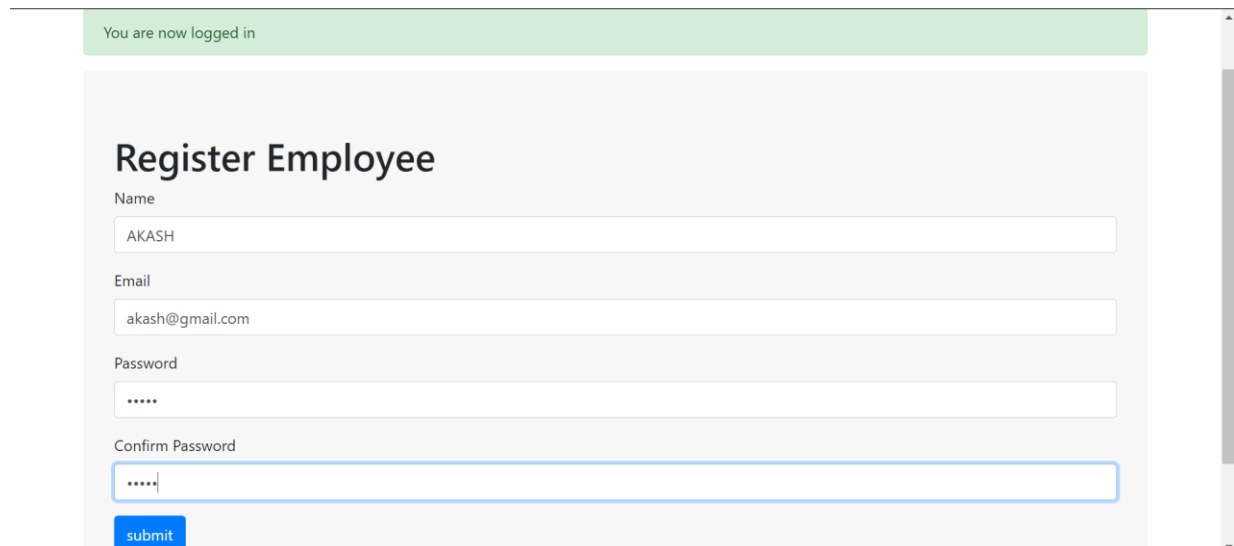


Fig-4

On successfully logging into admin, the admin can register new employees who are going to work in the blood bank. On clicking submit, user-id and password are created for the employee, which can be used for further processes.

Blood Bank Management   Donate   Logs   Add   Requests   Register   Dashboard   Logout

Success! You can log in with Employee ID AKASH2717

## Login

Employee ID

Password

Submit

Fig-5

As we can see in fig-5, on successful submission of register form by admin creates a unique employee id and password which is shared to the respective employee

### NORMAL USER FLOW:

Contact-us or Request form:

Blood Bank Management   Home   Contact us   Blood Data   Admin Login   Login

## Contact us

Contact for blood inquiries. Our 24x7 operated system understands emergencies.

Blood Group

O+

Number of Packets (units)

2

Full Name

ANSEL

Address

MUGADDAIR

MUGAFFAIR

submit

Fig-6

In fig-6, the normal users who are in emergency need of blood can fill the contact form as shown in the above figure.

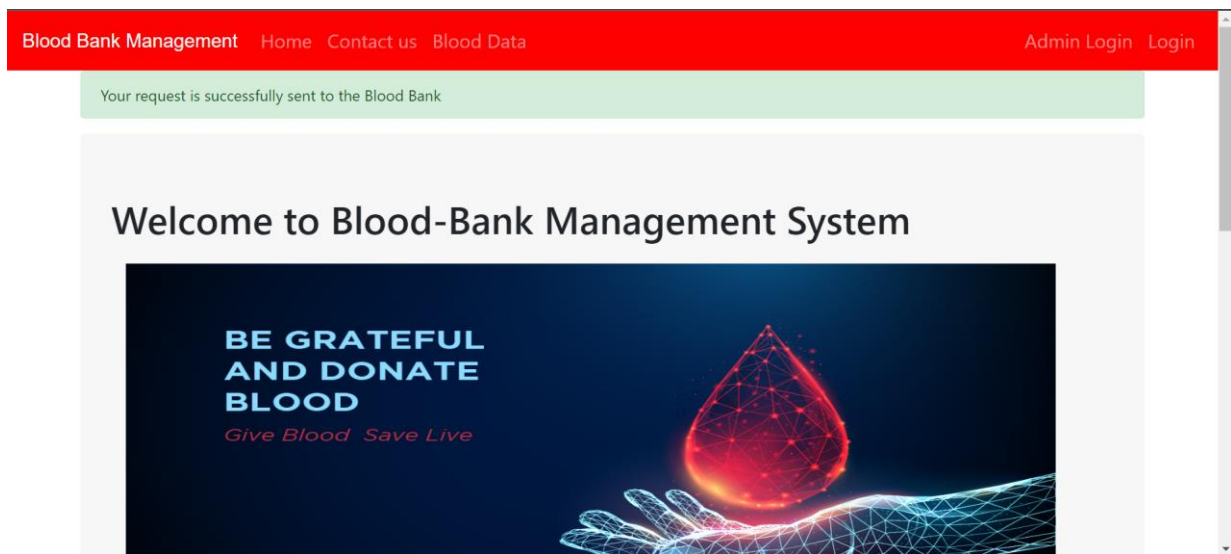


Fig-7

On submission of the contact form in fig-6, the request is sent to the blood bank which is notified via a flash message.

Blood data:

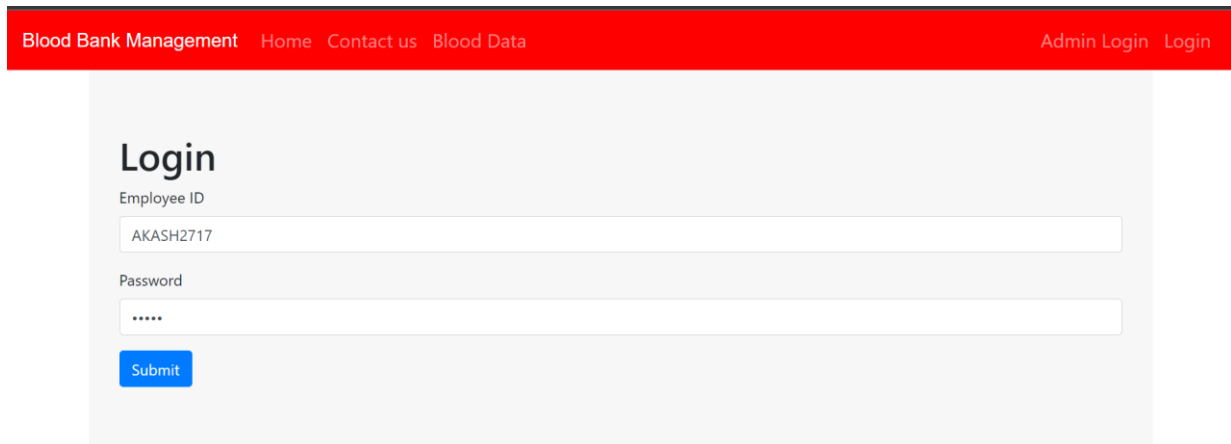
Blood Availability	
Blood Groups	Volume (units)
A-	0
A+	3
AB-	2
AB+	2
B-	0
B+	6
O-	2
O+	2

Fig-8

In fig-8, it displays the availability of various blood group in the blood bank. This can be utilized by the normal user to request the blood bank for certain blood group

### EMPLOYEE FLOW:

Employee login:

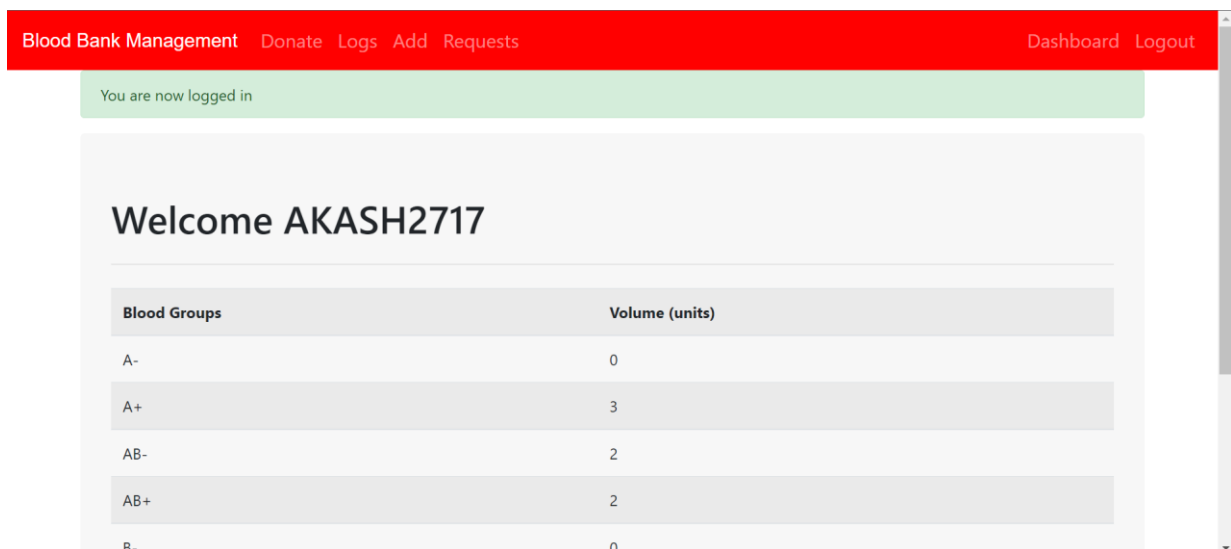


The screenshot shows the 'Login' page of the Blood Bank Management system. At the top, a red navigation bar contains links: 'Blood Bank Management', 'Home', 'Contact us', 'Blood Data', 'Admin Login', and 'Login'. The main content area is light gray and features a 'Login' heading. Below the heading are two input fields: 'Employee ID' with the value 'AKASH2717' and 'Password' with masked characters '\*\*\*\*\*'. A blue 'Submit' button is positioned below the password field.

Fig-9

Fig-9 shows the employee login screen. Here we enter the employee id (refer fig-5) and respective password to log-in.

Dashboard:



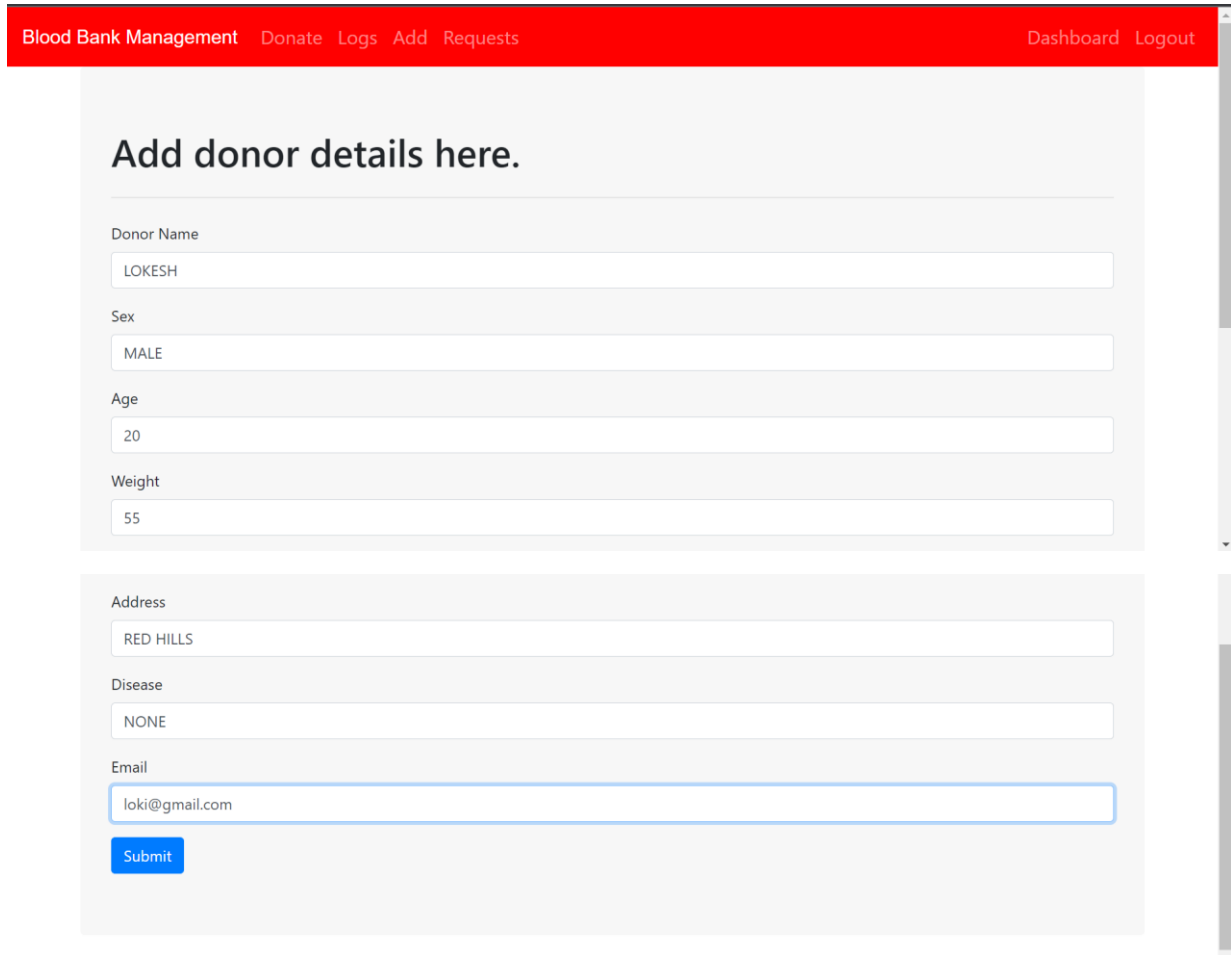
The screenshot shows the dashboard of the logged-in employee, AKASH2717. A red navigation bar at the top includes links: 'Blood Bank Management', 'Donate', 'Logs', 'Add', 'Requests', 'Dashboard', and 'Logout'. A green banner below the navigation bar states 'You are now logged in'. The main content area is light gray and displays a 'Welcome AKASH2717' message. Below the welcome message is a table showing the availability of various blood groups.

Blood Groups	Volume (units)
A-	0
A+	3
AB-	2
AB+	2
B-	0

Fig- 10

On successful verification, the employee is taken to dashboard screen as shown in fig-10 where the details of various blood groups are available

Add donors:

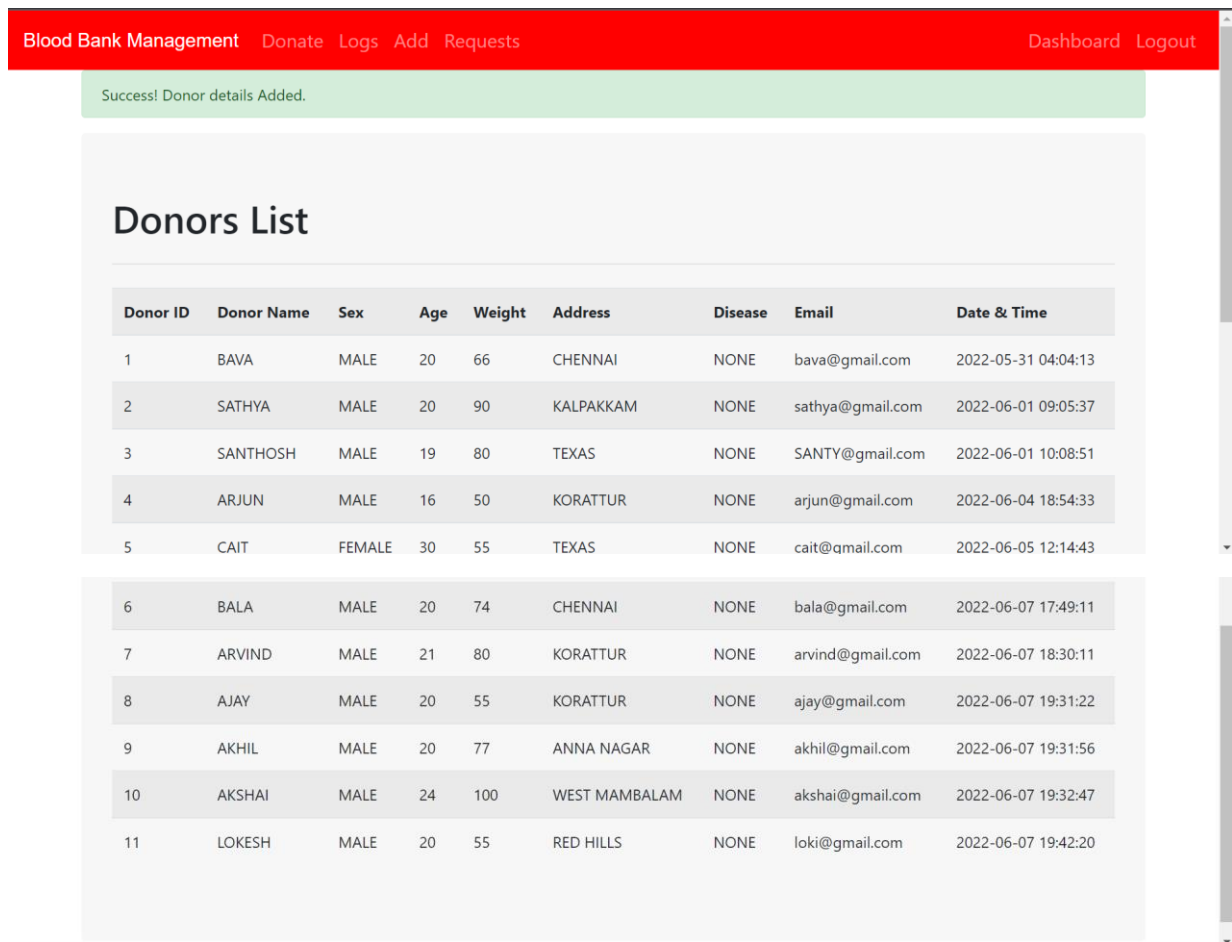


The screenshot displays a web application interface for a Blood Bank Management System. At the top, a red navigation bar contains the text 'Blood Bank Management' followed by links 'Donate', 'Logs', 'Add', and 'Requests'. On the right side of this bar are links for 'Dashboard' and 'Logout'. The main content area has a light gray background and is titled 'Add donor details here.' in a bold, dark font. Below the title, there are several input fields for donor information: 'Donor Name' (containing 'LOKESH'), 'Sex' (containing 'MALE'), 'Age' (containing '20'), and 'Weight' (containing '55'). Below these are three more input fields: 'Address' (containing 'RED HILLS'), 'Disease' (containing 'NONE'), and 'Email' (containing 'loki@gmail.com'). A blue 'Submit' button is positioned at the bottom left of the form area. A vertical scrollbar is visible on the right edge of the form container.

Fig-11

Fig-11 shows the add donor screen where details of donors are added.

Donor list:

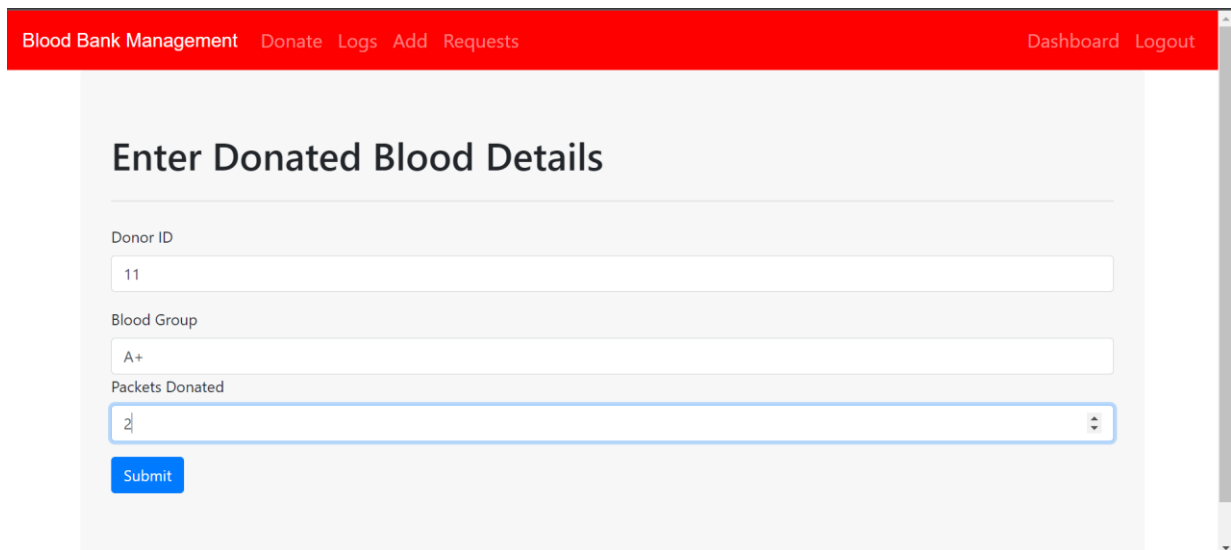


Donor ID	Donor Name	Sex	Age	Weight	Address	Disease	Email	Date & Time
1	BAVA	MALE	20	66	CHENNAI	NONE	bava@gmail.com	2022-05-31 04:04:13
2	SATHYA	MALE	20	90	KALPAKKAM	NONE	sathya@gmail.com	2022-06-01 09:05:37
3	SANTHOSH	MALE	19	80	TEXAS	NONE	SANTY@gmail.com	2022-06-01 10:08:51
4	ARJUN	MALE	16	50	KORATTUR	NONE	arjun@gmail.com	2022-06-04 18:54:33
5	CAIT	FEMALE	30	55	TEXAS	NONE	cait@qmail.com	2022-06-05 12:14:43
6	BALA	MALE	20	74	CHENNAI	NONE	bala@gmail.com	2022-06-07 17:49:11
7	ARVIND	MALE	21	80	KORATTUR	NONE	arvind@gmail.com	2022-06-07 18:30:11
8	AJAY	MALE	20	55	KORATTUR	NONE	ajay@gmail.com	2022-06-07 19:31:22
9	AKHIL	MALE	20	77	ANNA NAGAR	NONE	akhil@gmail.com	2022-06-07 19:31:56
10	AKSHAI	MALE	24	100	WEST MAMBALAM	NONE	akshai@gmail.com	2022-06-07 19:32:47
11	LOKESH	MALE	20	55	RED HILLS	NONE	loki@gmail.com	2022-06-07 19:42:20

Fig-12

On successful submission of the donor form in fig-11, the donor list is displayed with all the registered donors shown in fig-12

Add donated blood details:



**Blood Bank Management** Donate Logs Add Requests Dashboard Logout

### Enter Donated Blood Details

Donor ID  
11

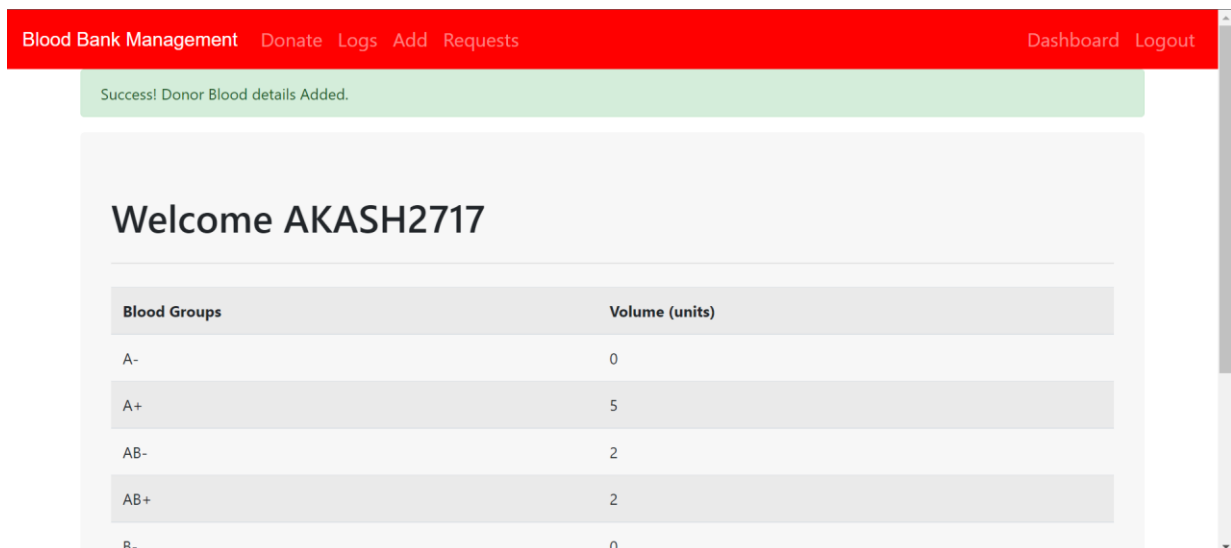
Blood Group  
A+

Packets Donated  
2

Submit

Fig-13

Now after blood check-up and donation of the blood, the donated blood details are entered in the donation form as shown in fig-13



**Blood Bank Management** Donate Logs Add Requests Dashboard Logout

Success! Donor Blood details Added.

### Welcome AKASH2717

Blood Groups	Volume (units)
A-	0
A+	5
AB-	2
AB+	2
B-	0

Fig-14

As we can see in fig-14 (dashboard screen), on successful donation of blood, the units of blood are updated. Here the A+ blood unit is incremented by 2 upon the donation done in fig-13



Blood requests:

Blood Bank Management

Donate

Logs

Add

Requests

Dashboard

Logout

# Blood Requests

Contact Id	Name	Blood Group	Packets	Address		
30	ALLEN	O+	1	DUBAI	Accept	Decline
33	ANSEL	O+	2	MOGAPPAIR	Accept	Decline

Fig-15

The requests sent by the normal user for example in fig-6 and fig-7, are available for the employee to accept or reject.

Blood Bank Management

Donate

Logs

Add

Requests

Dashboard

Logout

Request Accepted

Blood Requests

Contact Id	Name	Blood Group	Packets	Address		
30	ALLEN	O+	1	DUBAI	Accept	Decline

Fig-16

On clicking accept in fig-15 for contact id:33, the request is removed and blood is updated in the database.

Blood not available list:

Blood Bank Management

Donate

Logs

Add

Requests

Dashboard

Logout

# Blood Not Available

Contact Donors Below:

Donor ID	Donor Name	Blood Group	Sex	Address	Email
6	BALA	O+	MALE	CHENNAI	bala@gmail.com
10	AKSHAI	O+	MALE	WEST MAMBALAM	akshai@gmail.com

Fig-17

Now, on accepting the contact id:30 in fig-16 would lead to a blood not available page as shown in fig-17. Since the requested blood is not available, the employee is provided with the previous donors of the requested blood who can be approached by the blood bank.

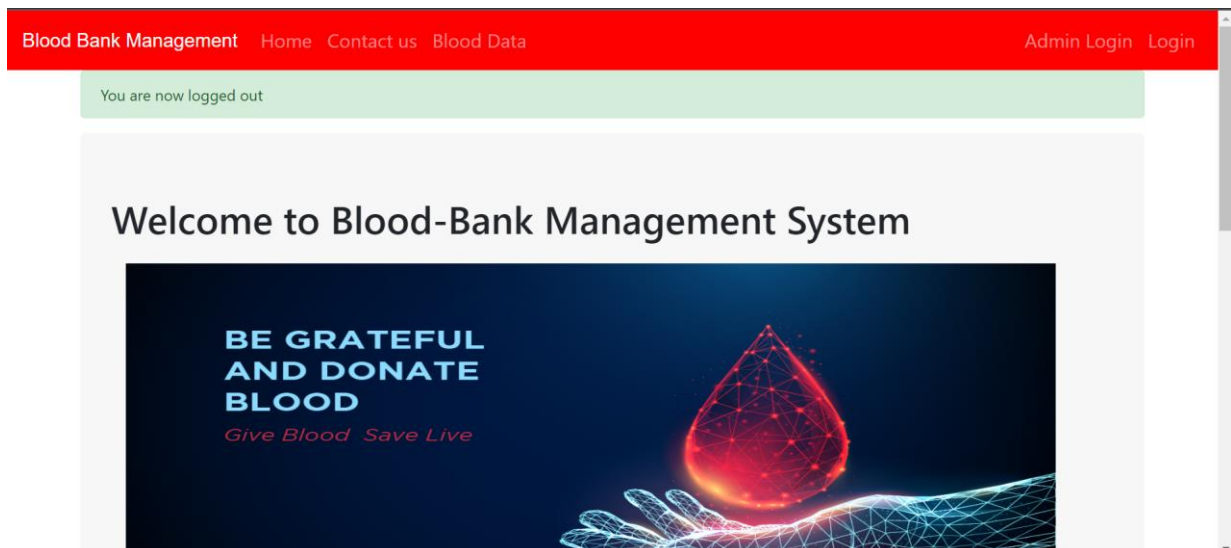


Fig-18

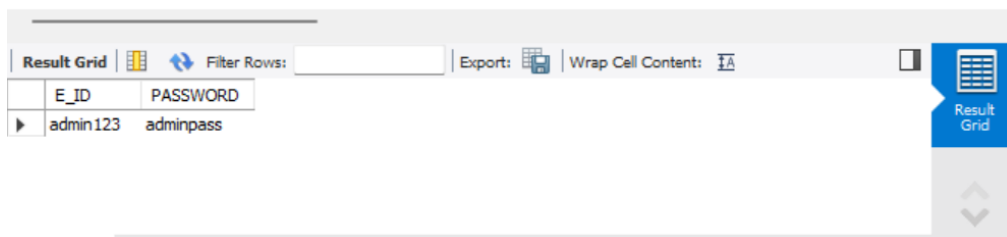
On clicking log-out in fig-17, it takes us back to the home page as shown in fig-18

## DATABASE:

### Admin:

E_ID	VARCHAR
PASSWORD	VARCHAR

```
1 • SELECT * FROM bloodbank.admin;
```

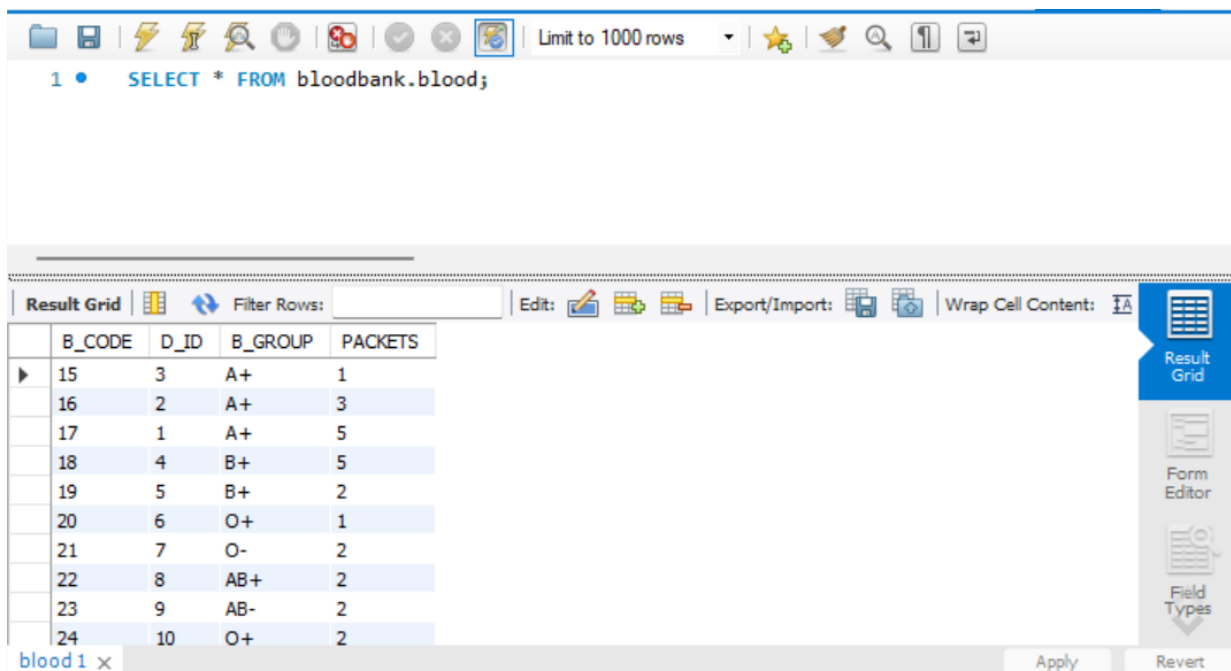


The screenshot shows a database interface with a toolbar at the top containing icons for Result Grid, Filter Rows, Export, and Wrap Cell Content. Below the toolbar is a table with two columns: E\_ID and PASSWORD. The first row of data shows 'admin123' and 'adminpass'.

E_ID	PASSWORD
admin123	adminpass

### Blood:

B_CODE	INT
D_ID	INT
B_GROUP	VARCHAR
PACKETS	INT



The screenshot shows a database interface with a toolbar at the top containing icons for Limit to 1000 rows, Edit, Export/Import, and Wrap Cell Content. Below the toolbar is a table with four columns: B\_CODE, D\_ID, B\_GROUP, and PACKETS. The table contains 10 rows of data.

B_CODE	D_ID	B_GROUP	PACKETS
15	3	A+	1
16	2	A+	3
17	1	A+	5
18	4	B+	5
19	5	B+	2
20	6	O+	1
21	7	O-	2
22	8	AB+	2
23	9	AB-	2
24	10	O+	2

Blood bank:

B_GROUP	VARCHAR
TOTAL_PACKETS	INT

1 • `SELECT * FROM bloodbank.bloodbank;`

Execute the statement under the keyboard cursor

Result Grid

	B_GROUP	TOTAL_PACKETS
▶	A-	0
	A+	5
	AB-	2
	AB+	2
	B-	0
	B+	6
	O-	2
	O+	0
*	NULL	NULL

Form Editor

Field Types

Contact:

CONTACT_ID	INT
B_GROUP	VARCHAR
C_PACKETS	INT
F_NAME	VARCHAR
ADDRESS	VARCHAR

1 • `SELECT * FROM bloodbank.contact;`

Result Grid

	CONTACT_ID	B_GROUP	C_PACKETS	F_NAME	ADDRESS
▶	30	O+	1	ALLEN	DUBAI
*	NULL	NULL	NULL	NULL	NULL

Form Editor

Donor:

D_ID	INT
DNAME	VARCHAR
SEX	VARCHAR
AGE	INT
WEIGHT	INT
ADDRESS	VARCHAR
DISEASE	VARCHAR
DEMAIL	VARCHAR
DONOR_DATE	TIMESTAMP

1 • `SELECT * FROM bloodbank.donor;`

	D_ID	DNAME	SEX	AGE	WEIGHT	ADDRESS	DISEASE	DEMAIL	DONOR_DATE
▶	1	BAVA	MALE	20	66	CHENNAI	NONE	bava@gmail.com	2022-05-31 04:04:
	2	SATHYA	MALE	20	90	KALPAKKAM	NONE	sathya@gmail.com	2022-06-01 09:05:
	3	SANTHOSH	MALE	19	80	TEXAS	NONE	SANTY@gmail.com	2022-06-01 10:08:
	4	ARJUN	MALE	16	50	KORATTUR	NONE	arjun@gmail.com	2022-06-04 18:54:
	5	CAIT	FEMALE	30	55	TEXAS	NONE	cait@gmail.com	2022-06-05 12:14:
	6	BALA	MALE	20	74	CHENNAI	NONE	bala@gmail.com	2022-06-07 17:49:
	7	ARVIND	MALE	21	80	KORATTUR	NONE	arvind@gmail.com	2022-06-07 18:30:
	8	AJAY	MALE	20	55	KORATTUR	NONE	ajay@gmail.com	2022-06-07 19:31:
	9	AKHIL	MALE	20	77	ANNA NAGAR	NONE	akhil@gmail.com	2022-06-07 19:31:
	10	AKSHAI	MALE	24	100	WEST MAMBALAM	NONE	akshai@gmail.com	2022-06-07 19:32:
	11	LOKESH	MALE	20	55	RED HILLS	NONE	loki@gmail.com	2022-06-07 19:42:
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

### Reception:

E_ID	INT
NAME	VARCHAR
EMAIL	VARCHAR
PASSWORD	PASSWORD
REGISTER_DATE	TIMESTAMP

```
1 • SELECT * FROM bloodbank.reception;
```

Result Grid					
Filter Rows:		Edit:		Export/Import:	
Wrap Cell Content:					
E_ID	NAME	EMAIL	PASSWORD	REGISTER_DATE	
AKASH2717	AKASH	akash@gmail.com	\$5\$rounds=535000\$meCc1q2R0l7duDvI\$Kfby4...	2022-06-07 19:2	
ARJUN9427	ARJUN	arjun@gmail.com	\$5\$rounds=535000\$QuRZlXwbCWbd.xu3\$3f21...	2022-06-05 12:1	
Bala aditya4097	Bala aditya	balaaditya8@gmail.com	\$5\$rounds=535000\$9SvIwI8K/0UoAuGU\$szuM...	2022-05-31 03:5	
Harish8887	Harish	harish@gmail.com	\$5\$rounds=535000\$0OwtYvRb.kdKHjZy\$YLIHO...	2022-06-01 09:0	
KATHIR6234	KATHIR	KATHIR@gmail.com	\$5\$rounds=535000\$5Nv/mLyi0leFKxNJ\$DNVkJ...	2022-06-01 10:0	
Suja8393	Suja	suja@gmail.com	\$5\$rounds=535000\$IpSssTPRI7bY.loA\$7V7Fws...	2022-06-07 18:2	
NULL	NULL	NULL	NULL	NULL	

## **FUTURE SCOPE:**

Currently, this project covers only for a single blood bank. But multiple blood banks for example in a city can be grouped together in this project to give a cumulative access to all these blood banks making it easy for those in urgent need for blood.

Also, small features like sending phone messages to the donors and the blood requester automatically can be implemented making the blood donation process faster.

Further, a blood camp feature can be added where donors are sent a messages or notification regarding the camp thereby creating awareness among people.

## **CONCLUSION:**

Due to development in technology, new innovations are being introduced day by day, thus reducing the time required to do certain processes. The proposed system can be used to reduce the time required to deliver required blood to the needy in cases of emergency. The web application provides a way of direct communication between the Donor and the blood bank. It also provides them with the facility of communicating with the donors in case of emergency. If used efficiently, this could be able to save lives. Also modernizing the offline blood banks by making it online would create awareness especially amongst youngsters.