UE21CS351A: Database Management System

MINI PROJECT: BLOOD DONOR SYMBIOSIS

Pranav Sridhar: PES1UG21CS432

Pravard M: PES1UG21CS446

1. Introduction

1.1 Project Overview

Blood Donor Symbiosis is a Database Management System (DBMS) project aimed at creating an efficient and user-friendly system for managing blood donation activities. The system provides functionalities for maintaining donor information, managing blood requests, tracking patient records, and facilitating seamless communication between healthcare professionals and blood donation organizations.

1.2 Objectives

The main objectives of the Blood Donor Symbiosis project include:

- Creating a centralized database to store and manage donor, patient, and healthcare professional information.
- Streamlining the process of blood donation by providing an easy-to-use interface for donors, doctors, and organizations.
- Ensuring the availability of blood by efficiently managing donations, requests, and transfusions.
- Enhancing the overall efficiency of blood banks and healthcare systems.

2. System Architecture

2.1 Database Schema

The project utilizes a relational database with tables for donors, doctors, patients, donations, and other relevant entities. Relationships are established to maintain data integrity and ensure efficient data retrieval.

2.2 Frontend-Backend Interaction

The system is designed with a frontend built using HTML, CSS, and Bootstrap for a visually appealing and responsive user interface. The backend logic is implemented in a server-side language (Flask), and interactions with the database are managed through SQL queries.

3. Features

3.1 Donor Management

- Registration and profile management for blood donors.

- Tracking donor eligibility criteria and donation history.

3.2 Healthcare Professional Management

- Adding and managing doctor profiles.

- Recording patient information and medical history.

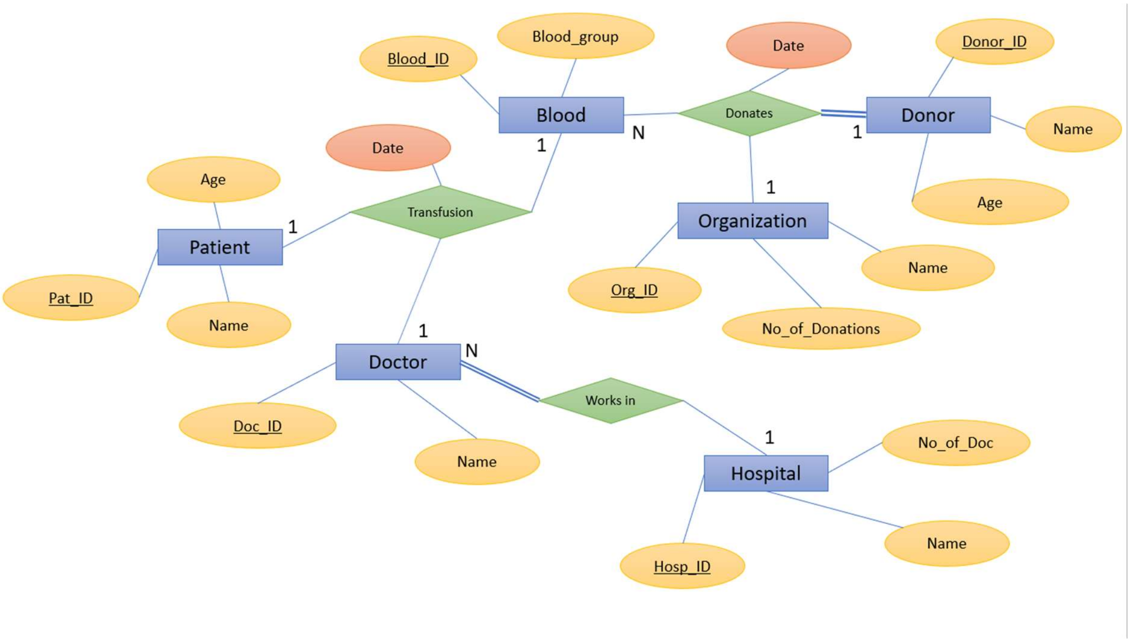
3.3 Blood Request System

- Facilitating blood requests from healthcare professionals.
- Matching available blood types with requested types.

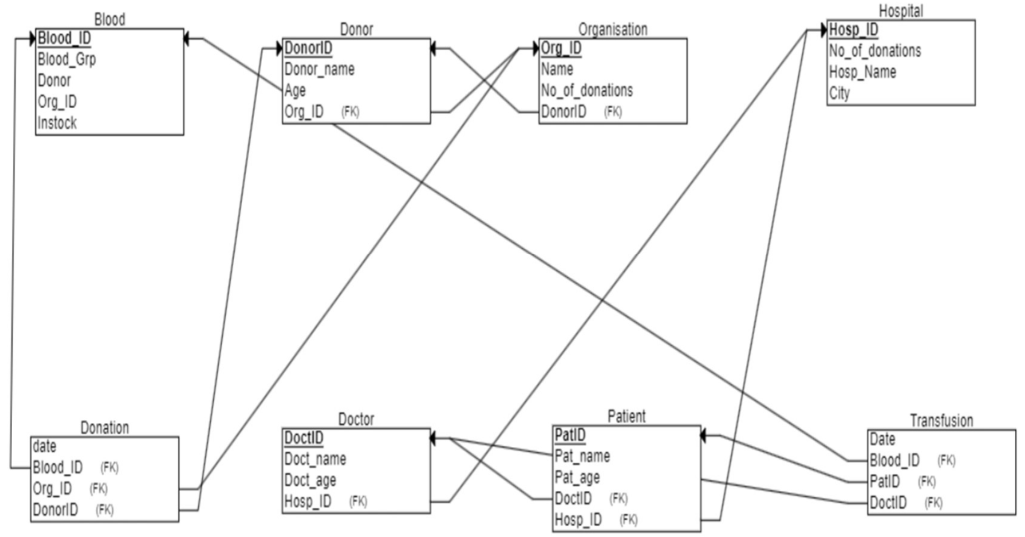
3.4 Donation and Transfusion

- Recording and tracking blood donations.
- Managing blood transfusions and maintaining records.

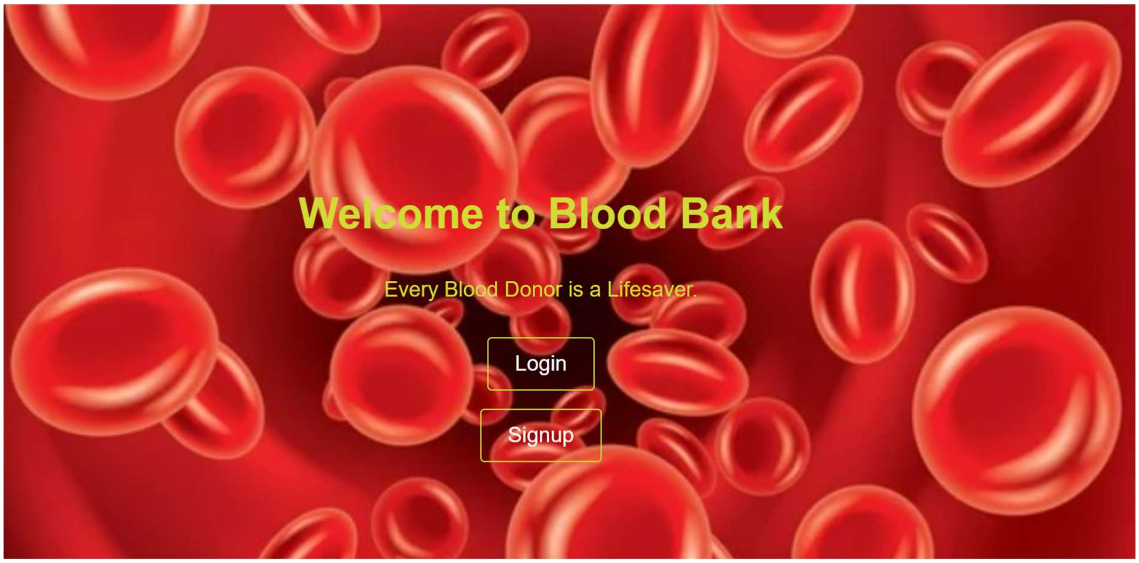
ER Diagram:


Blood_group
Blood_ID
Date
Donor_ID
Blood
Donates
Donor
Name
N
1
1
Date
Age
Age
1
Transfusion
Organization
Patient
1
Name
Org_ID
Pat_ID
Name
No_of_Donations
1
Doctor
N
Works in
Doc_ID
1
No_of_Doc
Name
Hospital
Name
Hosp_ID

Relational Schema:

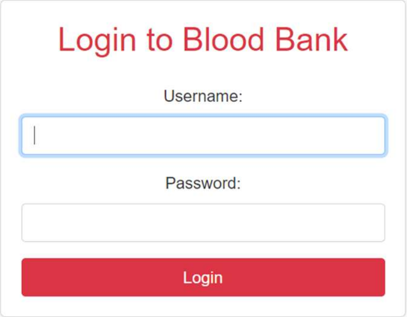


Frontend and Important SQL Queries:


Welcome to Blood Bank

Every Blood Donor is a Lifesaver.

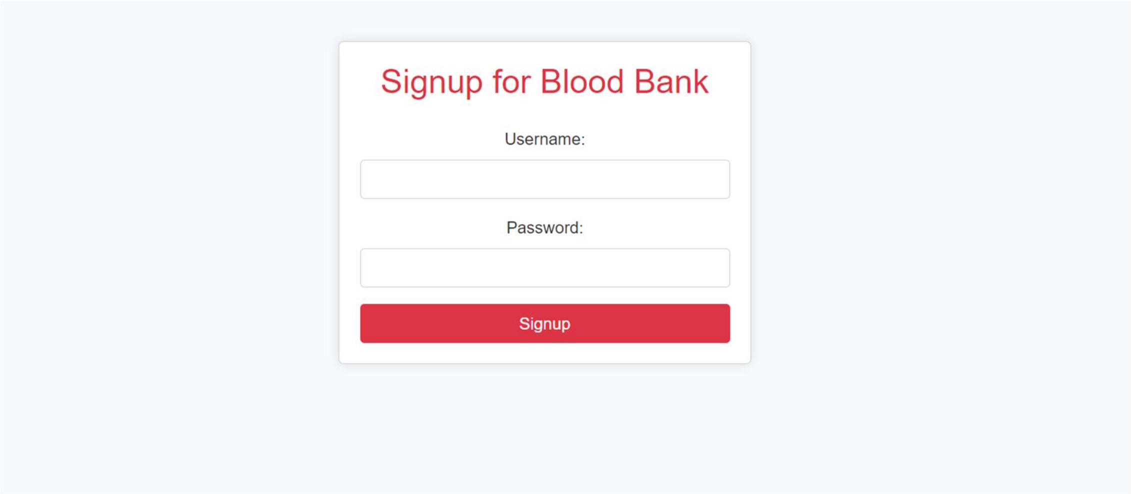
Index page for user login and signup


Login to Blood Bank

Username:

Password:

Login Page

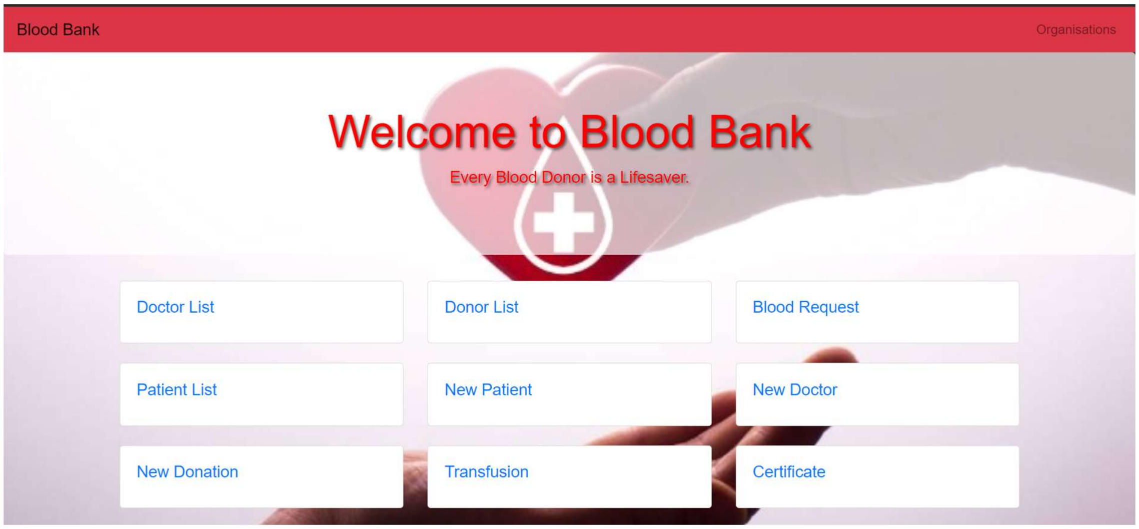


Signup for Blood Bank

Username:

Password:

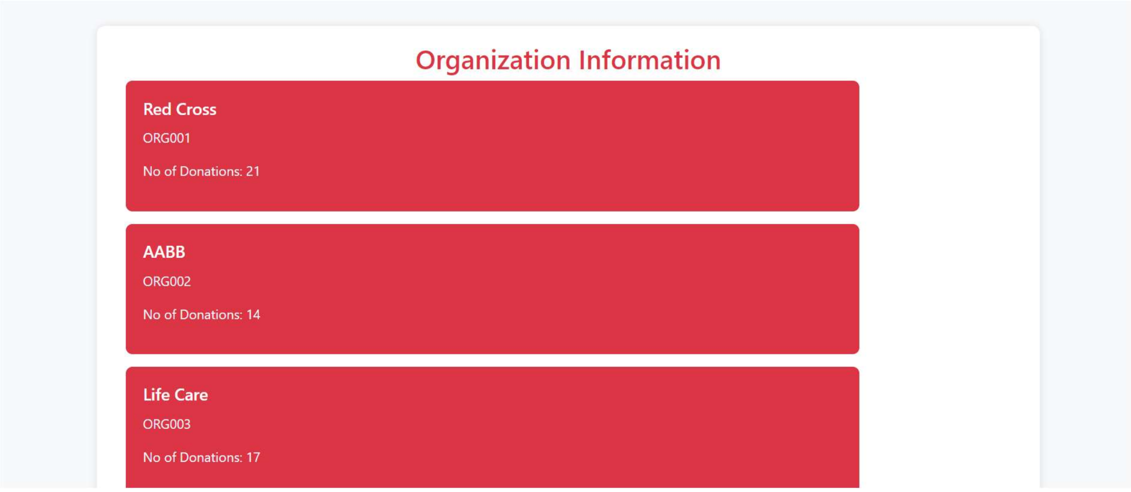
Signup Page



Welcome to Blood Bank

Every Blood Donor is a Lifesaver.

Home Page



Organization Information

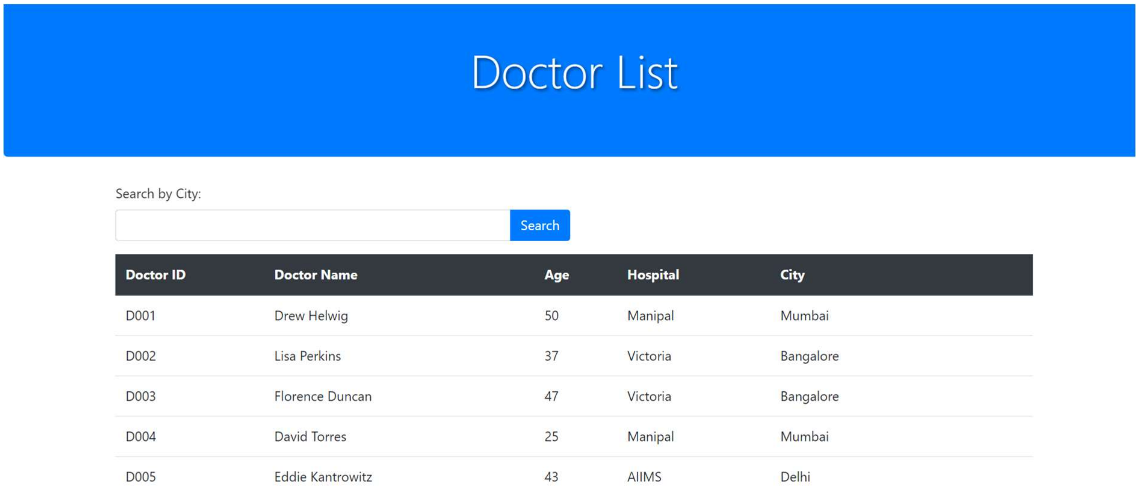
Red Cross
ORG001
No of Donations: 21

AABB
ORG002
No of Donations: 14

Life Care
ORG003
No of Donations: 17

Organization Information:

select * from organisation



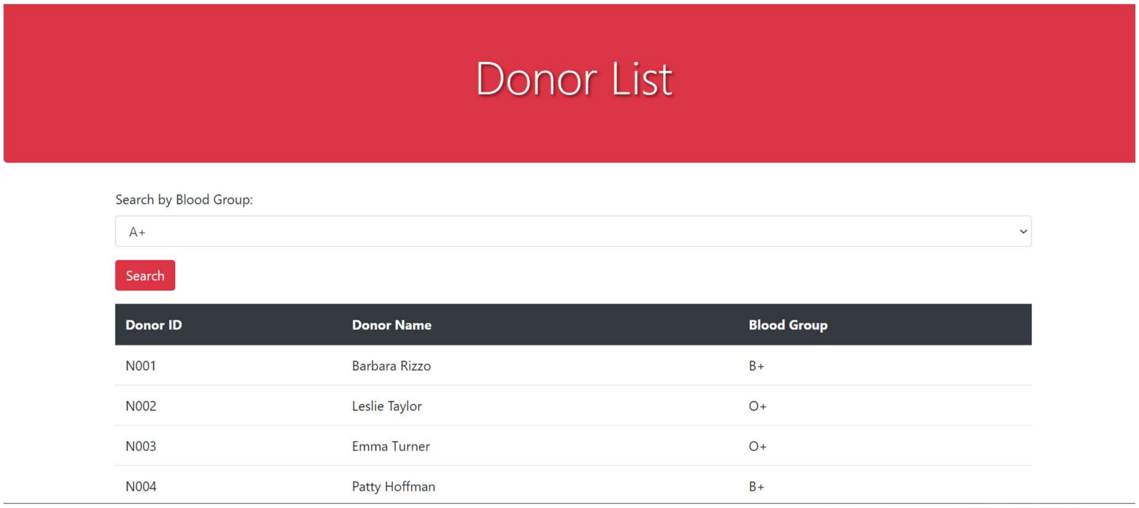
Doctor List

Doctor ID	Doctor Name	Age	Hospital	City
D001	Drew Helwig	50	Manipal	Mumbai
D002	Lisa Perkins	37	Victoria	Bangalore
D003	Florence Duncan	47	Victoria	Bangalore
D004	David Torres	25	Manipal	Mumbai
D005	Eddie Kantrowitz	43	AIIMS	Delhi

Doctor list with search:

1) select d.doct_id,d.doct_name,d.age,h.hosp_name,h.city from Doctor d natural join Hospital h where d.hosp_id = h.hosp_id order by d.doct_id;

2) select d.doct_id,d.doct_name,d.age,h.hosp_name,h.city from Doctor d natural join Hospital h where d.hosp_id = h.hosp_id and h.city like '%{cit}%' order by d.doct_id;

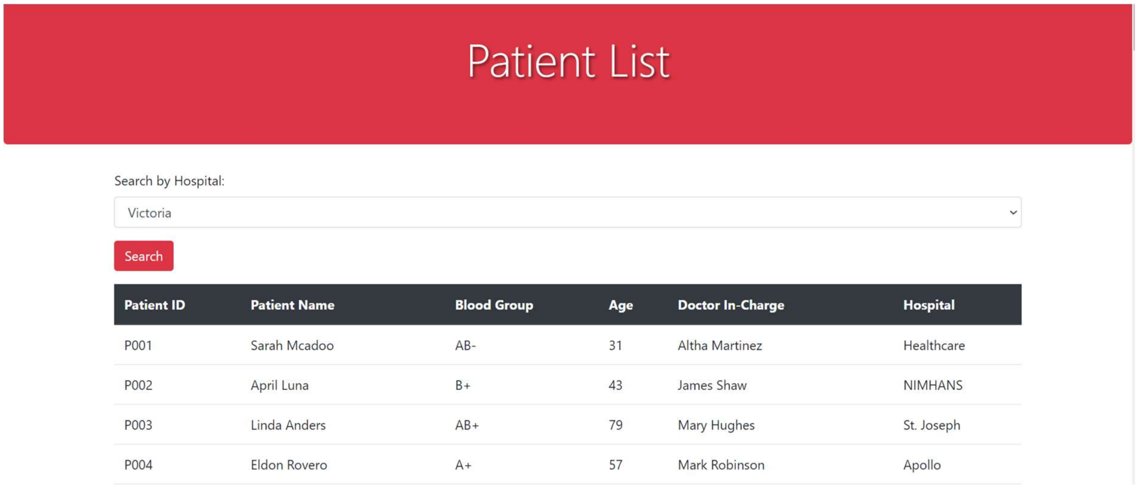

Donor List

Search by Blood Group: A+

Donor ID	Donor Name	Blood Group
N001	Barbara Rizzo	B+
N002	Leslie Taylor	O+
N003	Emma Turner	O+
N004	Patty Hoffman	B+

Donor List with search:

1) select d.donor_id,d.donor_name,b.blood_grp from Donor d inner join Blood b where d.donor_id = b.donor_id order by donor_id;
2) select d.donor_id,d.donor_name,b.blood_grp from Donor d inner join Blood b where d.donor_id = b.donor_id and b.blood_grp = '{bgrp}' order by donor_id;



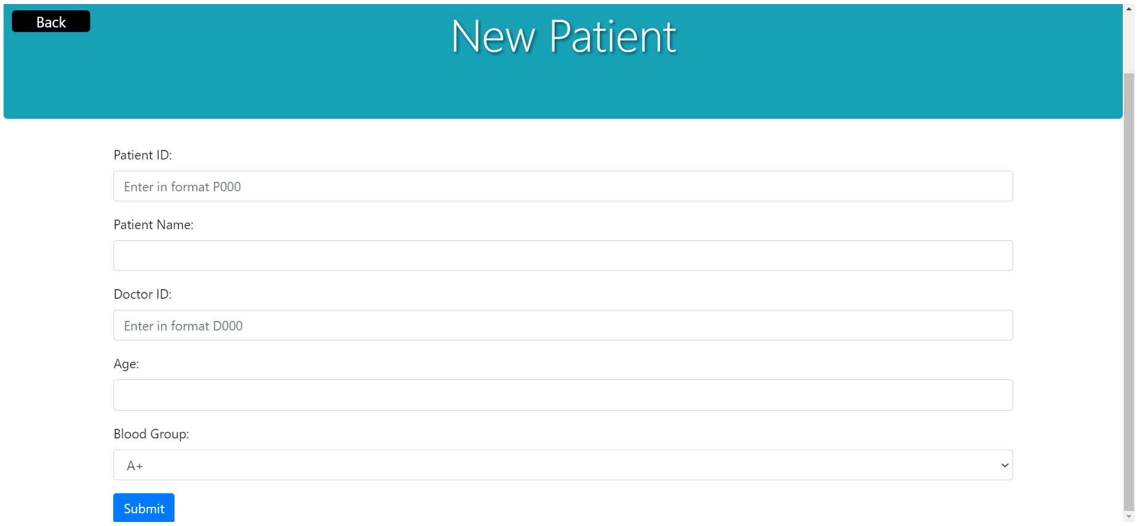
Patient List

Search by Hospital: Victoria

Patient ID	Patient Name	Blood Group	Age	Doctor In-Charge	Hospital
P001	Sarah Mcadoo	AB-	31	Altha Martinez	Healthcare
P002	April Luna	B+	43	James Shaw	NIMHANS
P003	Linda Anders	AB+	79	Mary Hughes	St. Joseph
P004	Eldon Rovero	A+	57	Mark Robinson	Apollo

Patient list with search:

1) **select p.pat_id,p.pat_name,p.blood_grp,p.age,d.doct_name,h.hosp_name from patient p inner join doctor d on p.doct_id = d.doct_id and p.in_patient = 1 inner join hospital h on h.hosp_id = d.hosp_id order by p.pat_id;**



New Patient

Patient ID: Enter in format P000

Patient Name:

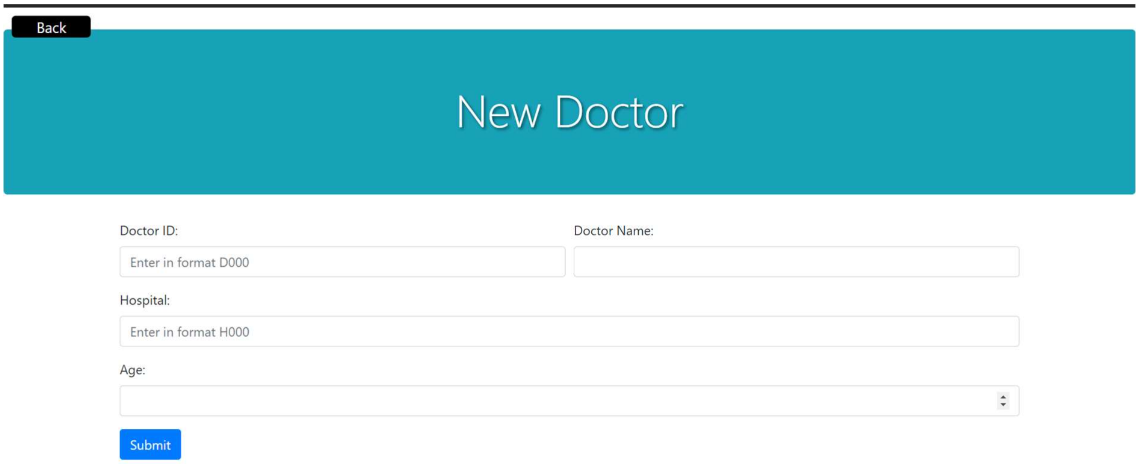
Doctor ID: Enter in format D000

Age:

Blood Group: A+

Patient registration page:

1) **insert into patient values ('{pid}','{did}','{pname}',{page},1,'{pbg}’);**
2) **select * from patient where pat_id = '{pid}';**



Back

New Doctor

Doctor ID: Enter in format D000

Doctor Name:

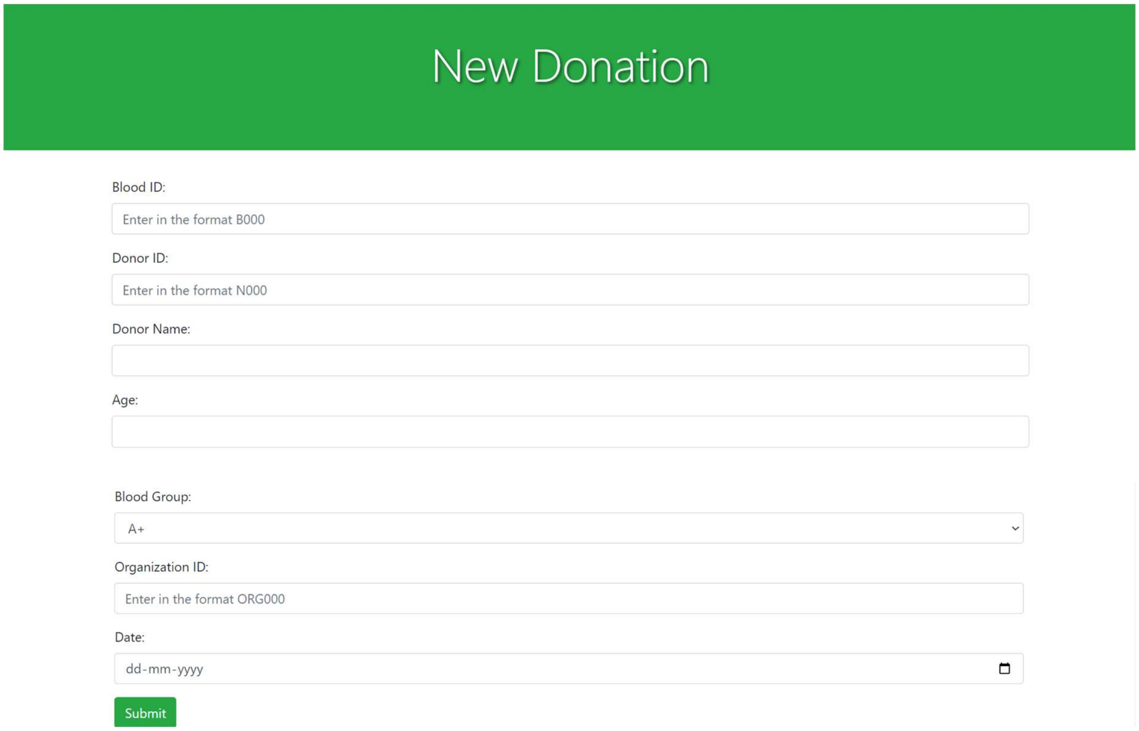
Hospital: Enter in format H000

Age:

Submit

Doctor registration page:

1) select * from Hospital where hosp_id = '{h_id}';
2) insert into Doctor values ('{d_id}','{d_name}',{age_1},'{h_id}');



New Donation

Blood ID: Enter in the format B000

Donor ID: Enter in the format N000

Donor Name:

Age:

Blood Group: A+

Organization ID: Enter in the format ORG000

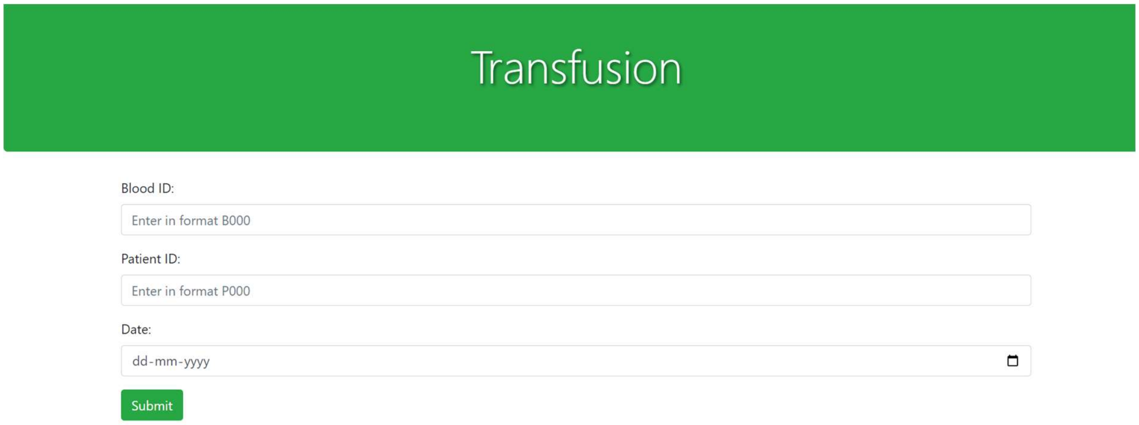
Date: dd-mm-yyyy

Submit

Donor registration:

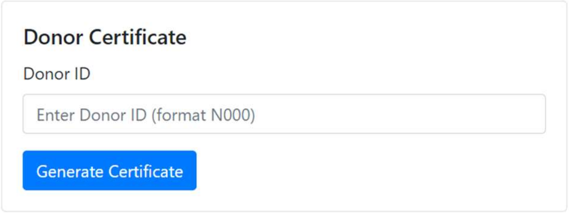
1) select * from Blood where blood_id = '{b_id}';

2) select d.donor_id,d.donor_name,d.age,b.blood_grp from Donor d inner join Blood b on d.donor_id = b.donor_id and d.donor_id = '{don_id}';

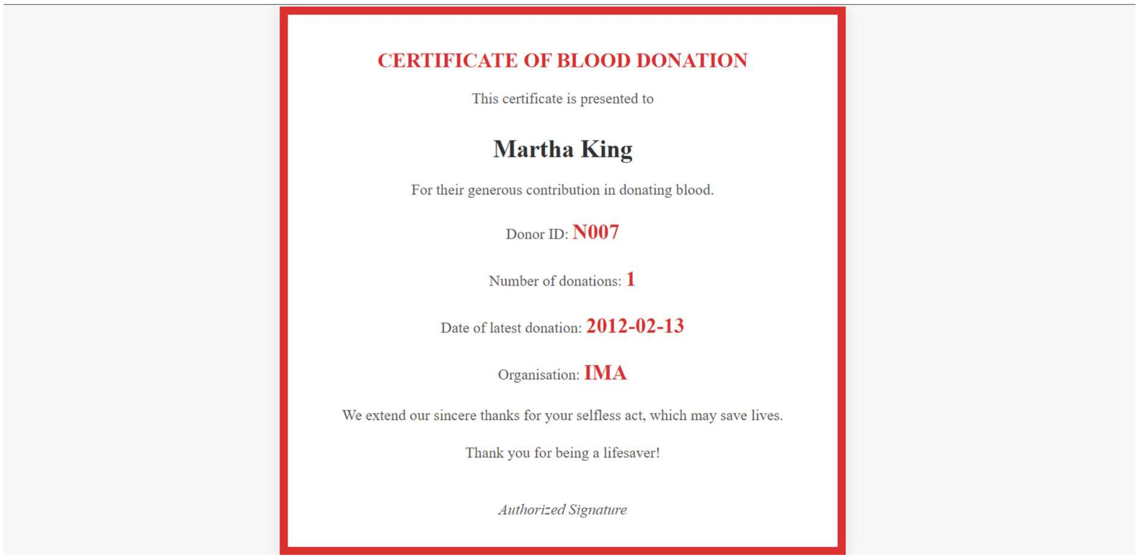


Transfusion page:

1) select * from patient where pat_id = '{pid}';
2) insert into transfusion values ('{bid}','{pid}','{date}');



Certificate generation page



CERTIFICATE OF BLOOD DONATION

This certificate is presented to

Martha King

For their generous contribution in donating blood.

Donor ID: N007

Number of donations: 1

Date of latest donation: 2012-02-13

Organisation: IMA

We extend our sincere thanks for your selfless act, which may save lives.

Thank you for being a lifesaver!

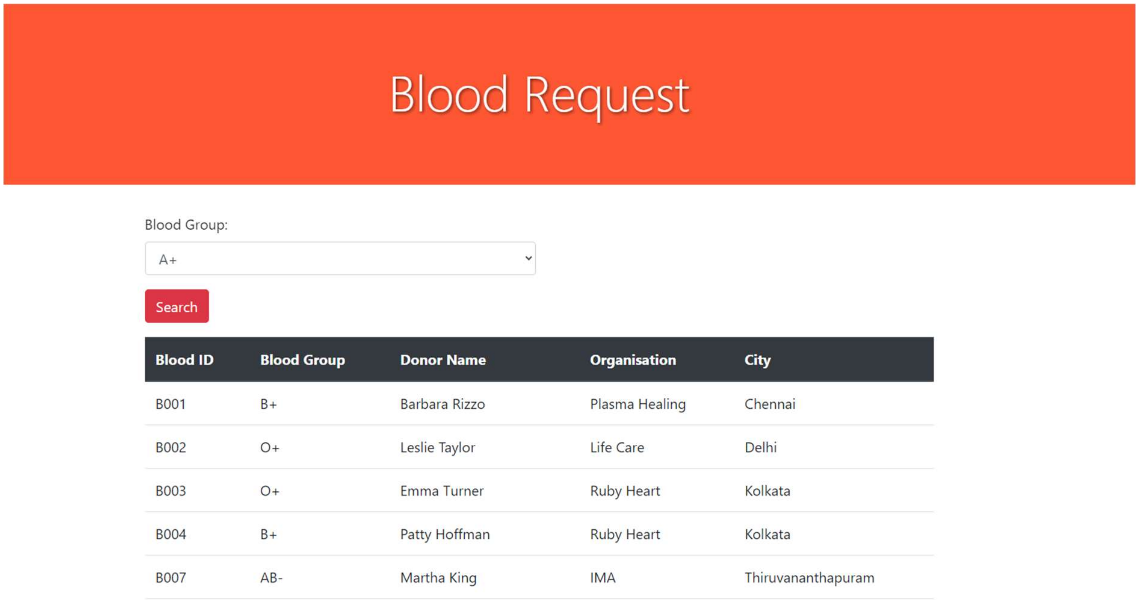
Authorized Signature

Generated Certificate:

1) **select d.donor_id,d.donor_name,n.date_of_donation,o.org_name from donor d inner join donation n on d.donor_id = n.donor_id and d.donor_id = '{did}' inner join organisation o on n.org_id = o.org_id order by n.date_of_donation desc;**

2) **select d.donor_id,count(*) from donor d inner join donation n on d.donor_id = n.donor_id and d.donor_id = '{did}' group by d.donor_id;**

Blood request page



Blood Request

Blood Group: A+

Blood ID	Blood Group	Donor Name	Organisation	City
B001	B+	Barbara Rizzo	Plasma Healing	Chennai
B002	O+	Leslie Taylor	Life Care	Delhi
B003	O+	Emma Turner	Ruby Heart	Kolkata
B004	B+	Patty Hoffman	Ruby Heart	Kolkata
B007	AB-	Martha King	IMA	Thiruvananthapuram

Procedure used:

```
CREATE procedure blood_req3(IN b_grp enum('O-','O+','A-','A+','B-','B+','AB-','AB+'))

BEGIN

IF(b_grp = 'O-')

THEN

CREATE OR REPLACE  VIEW foo as select b.blood_id,b.blood_grp,d.donor_name,b.in_stock,o.org_name,o.city from blood b inner join donor d on b.donor_id = d.donor_id and b.blood_grp = 'O-' and b.in_stock = 1 inner join donation dt on dt.donor_id = d.donor_id inner join organisation o on dt.org_id = o.org_id;

elseif (b_grp = 'O+') THEN CREATE OR REPLACE  VIEW foo as with abc as (select * from blood where blood_grp = 'O-' or blood_grp = 'O+') select a.blood_id,a.blood_grp,d.donor_name,a.in_stock,o.org_name,o.city from abc a inner join donor d on a.donor_id = d.donor_id and a.in_stock = 1 inner join donation dt on dt.donor_id = d.donor_id inner join organisation o on dt.org_id = o.org_id ;

elseif (b_grp = 'A-') THEN CREATE OR REPLACE  VIEW foo as with abc as (select * from blood where blood_grp = 'O-' or blood_grp = 'A-')  select a.blood_id,a.blood_grp,d.donor_name,a.in_stock,o.org_name,o.city from abc a inner join donor d on a.donor_id = d.donor_id and a.in_stock = 1 inner join
```

```
donation dt on dt.donor_id = d.donor_id inner join organisation o on dt.org_id =
o.org_id;

elseif (b_grp = 'A+') THEN CREATE OR REPLACE  VIEW foo as with abc as (select *
from blood where blood_grp = 'O-' or blood_grp = 'O+' or blood_grp = 'A-' or
blood_grp ='A+')  select
a.blood_id,a.blood_grp,d.donor_name,a.in_stock,o.org_name,o.city from abc a
inner join donor d on a.donor_id = d.donor_id and a.in_stock = 1 inner join
donation dt on dt.donor_id = d.donor_id inner join organisation o on dt.org_id =
o.org_id;

elseif (b_grp = 'B-') THEN CREATE OR REPLACE  VIEW foo as with abc as (select *
from blood where blood_grp = 'O-' or blood_grp = 'B-') select
a.blood_id,a.blood_grp,d.donor_name,a.in_stock,o.org_name,o.city from abc a
inner join donor d on a.donor_id = d.donor_id and a.in_stock = 1 inner join
donation dt on dt.donor_id = d.donor_id inner join organisation o on dt.org_id =
o.org_id;

elseif (b_grp = 'B+') THEN CREATE OR REPLACE  VIEW foo as with abc as (select *
from blood where blood_grp = 'O-' or blood_grp = 'B-' or blood_grp = 'O+' or
blood_grp = 'B+') select
a.blood_id,a.blood_grp,d.donor_name,a.in_stock,o.org_name,o.city from abc a
inner join donor d on a.donor_id = d.donor_id and a.in_stock = 1 inner join
donation dt on dt.donor_id = d.donor_id inner join organisation o on dt.org_id =
o.org_id;

elseif (b_grp = 'AB-') THEN CREATE OR REPLACE  VIEW foo as with abc as (select
* from blood where blood_grp = 'O-' or blood_grp = 'B-' or blood_grp = 'AB-' or
blood_grp = 'A-') select
a.blood_id,a.blood_grp,d.donor_name,a.in_stock,o.org_name,o.city from abc a
inner join donor d on a.donor_id = d.donor_id and a.in_stock = 1 inner join
donation dt on dt.donor_id = d.donor_id inner join organisation o on dt.org_id =
o.org_id;

elseif (b_grp = 'AB+') THEN CREATE OR REPLACE  VIEW foo as select
b.blood_id,b.blood_grp,d.donor_name,b.in_stock,o.org_name,o.city from blood
b inner join donor d on b.donor_id = d.donor_id and in_stock = 1 inner join
donation dt on dt.donor_id = d.donor_id inner join organisation o on dt.org_id =
o.org_id;

END IF;

END//
```

Triggers used

```
CREATE TRIGGER doct_hosp
BEFORE INSERT ON Doctor
FOR EACH ROW
UPDATE Hospital SET no_of_doctors = no_of_doctors + 1 WHERE Hospital.hosp_id = new.hosp_id;
delimiter ;

CREATE TRIGGER new_transfusion
BEFORE INSERT ON Transfusion
FOR EACH ROW
UPDATE Blood SET in_stock = 0 WHERE Blood.blood_id = new.blood_id;

CREATE TRIGGER pat_new_transfusion
BEFORE INSERT ON Transfusion
FOR EACH ROW
UPDATE Patient SET in_patient = 0 WHERE Patient.pat_id = new.blood_id;
```