

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
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**DBMS LABORATORY WITH MINI PROJECT
(17CSL58)**
REPORT ON
“BLOOD BANK MANAGEMENT SYSTEM”

Submitted in partial fulfillment of the requirements for the award of the degree of

**BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE AND ENGINEERING**

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CERTIFICATE

This is to certify that the **DBMS LABORATORY WITH MINI PROJECT** entitled "**BLOOD BANK MANAGEMENT SYSTEM**" presented by **Mr. ASHISH K AMAR, USN: 1KS17CS013** and **Mr. LOKESH B M, USN: 1KS17CS038** of **V semester** in partial fulfillment of the award of **Bachelor of Engineering** in **Computer Science & Engineering** in **Visvesvaraya Technological University**, Belagavi during the academic year **2019-2020**. The **DBMS MINI PROJECT** has been approved as it satisfies the academic requirements in respect of **DBMS LABORATORY WITH MINI PROJECT (17CSL58)** prescribed for the Bachelor of Engineering degree.

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ACKNOWLEDGEMENT

The successful presentation of the **DBMS LABORATORY WITH MINI PROJECT (17CSL58)** would be incomplete without the mention of the people who made it possible and whose constant guidance crowned my effort with success.

We would like to extend our gratitude to the **MANAGEMENT, KAMMAVARI SANGHAM**, Bengaluru, for providing all the facilities to present the DBMS LABORATORY WITH MINI PROJECT.

We would like to extend our gratitude to **Dr. T.V. GOVINDARAJU**, the Principal/ Director, K.S. Institute of Technology, Bengaluru, for facilitating me to present the DBMS LABORATORY WITH MINI PROJECT.

We thank **Dr. REKHA B VENKATAPUR**, Professor and Head, Department of Computer Science and Engineering, K.S. Institute of Technology, Bengaluru, for her encouragement.

We would like to thank our Project Guide's, **Dr. DAYANANDA R.B**, Professor & IQAC Coordinator, and **Ms. MAMATHA.R**, Assistant Professor, Department of Computer Science and Engineering, K.S. Institute of Technology, Bengaluru, for their constant guidance and inputs.

We would like to thank all the **Teaching** Staff and **Non-Teaching** Staff of the college for their co-operation.

Finally, We extend our heart-felt gratitude to our **family** for their encouragement and support without which we would not have come so far. Moreover, I thank all our **friends** for their invaluable support and cooperation.

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ABSTRACT

Our Project ‘**Blood Bank Management System**’ is a computerized system used to store and retrieve information related to Blood donations/inventory. The aim of the project is to expose the relevance and importance of Blood Bank Management Systems.

The system allows the admin/receptionist to store and retrieve the information like blood donor details, blood receiver details, amount of blood present in the inventory of the blood bank store etc.

The system checks for the availability of a certain blood type like A+, A-, B+, B- etc. If the blood type is available ,then the system allows the admin to further proceed with procedure. Otherwise it asks the admin to choose another blood type.

The system asks the admin to enter customer details for further blood transaction.

The main purpose of this software is to reduce the manual/paper work involved in the blood bank management and make it convenient for the admin/receptionist to store and retrieve data as and when they require. The software supports the concept of modifications by admin and allows inserting, modifying or deleting a customer data.

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CHAPTER 1

INTRODUCTION

1.1. Introduction

Considering the volumes of data that needs to be tracked and accessed, it would be very difficult to manage the accuracy and quality of data manually and deliver them accordingly. It would be almost impossible to get the details required in case of manual maintenance of data. The BBMs (Blood Bank Management system) is an innovative solution that helps in managing huge loads of blood bank data. The Blood Bank management system simplifies the manual work and allows smooth administration of the operations of blood transactions.

1.1.1. Purpose

This project is aimed to reduce the manual work involved in data maintenance in the Blood bank management system. This project is developed mainly to simplify the manual work and allows smooth administration of the operations of blood transactions. The purpose of the project is to computerize the administrative operations of a blood transaction and to develop software which is user friendly, simple, fast, and cost – effective. It deals with the collection of Donors, Receivers and Inventory information etc. Traditionally, it was done manually. The main function of the system is to enter and retrieve these details as and when required, and also to manipulate these details meaningfully.

To ease the process of blood donation and reception.

- To improve the existing system.
- To develop a scalable system.
- To be highly available

1.1.2. Scope

- Ensure that all the functionalities of a manual blood bank are covered
- To ensure proper contactable information.
- Make sure the program is simple and easy to use.

1.2. Connection

1.2.1. MY-SQL (BACKEND)

MySQL in July 2013, it was the world's second most widely used RDBMS, and the most widely used open-source client server model RDBMS. It is named after cofounder Michael Widenius's. The SQL abbreviation stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements.

1.2.2. JSP

Java Server pages is a simple yet powerful technology for creating and maintaining dynamic-content web pages. It is based on the Java programming language. It can be thought of as an extension to Servlets because it provides more functionality than Servlets. A JSP page consists of HTML tags and JSP tags. The jsp pages are easier to maintain than Servlets because we can separate designing and development.

We require a JDBC connection between the front end and back end components to write to the database and fetch required data.

1.2.3. XAMPP

XAMPP is a small and light Apache distribution containing the most common web development technologies in a single package. Its contents, small size, and portability make it the ideal tool for students developing and testing applications in PHP and MySQL. XAMPP is available as a free download in two specific packages: full and lite. While the full package download provides a wide array of development tools, XAMPP Lite contains the necessary technologies that meet the Ontario Skills Competition standard.

1.2.4. Apache

The Apache HTTP Server is web server software notable for playing a key role in the initial growth of the World Wide Web. In 2009 it became the first web server software to surpass the 100 million web site milestone. Apache is developed and maintained by an open community of developers under the auspices of the Apache Software Foundation. Since April 1996 Apache has been the most popular HTTP server software in use.

CHAPTER 2

REQUIREMENTS SPECIFICATIONS

2.1. Software Requirements Specifications

The Blood bank donation System operates with client-server architecture, and as such, must have minimum hardware and software to run the server/browser along with all its dependencies.

The system is used by Admin who can add or remove a donor manipulates data using a computer with a HTML compatible browser. The server software runs in a dedicated centralized server hosting center for the blood bank donation. The scripts and http server run on the server, and require a Php interpreter, along with the dependencies for the scripts, as well as the MySQL server.

2.2. Operating Environment

The production ready software is meant to run on a variety of verified hardware and software. As such, many of the required dependencies are available cross platform, both for the front end as well as the backend. Some of the verified software and hardware are specified below, along with software and hardware that are supposed to be compatible.

2.2.1. Hardware Requirements

The Hardware requirements are very minimal and the program can be run on most of the machines.

- | | |
|--------------------|---|
| 2. Processor | - Intel 486/Pentium processor or better |
| 3. Processor Speed | - 500 MHz or above |
| 4. Hard Disk | - 20GB(approx) |
| 5. RAM | - 64MB or above |
| 6. Storage Space | - Approx. 2MB |

2.2.2 Software Requirements

- | | |
|---------------------------|--|
| 7. Technology Implemented | : Apache Server, TomCat Server, MySQL Server |
| 1. Language Used | : JSP |
| 2. Database | : My SQL |
| 3. User Interface Design | : HTML |
| 4. Web Browser | : Google Chrome or any other web-browser |

2.3. Functional Requirements

The functional requirements of this project are:

The project allows login of Admin :

The Admin has a set of functionalities described as:

- > He can login into the system.
- > He can log out from his current account.
- > He can add/delete or modify Donors in the database.
- > He can add/delete or modify Receivers in the database.
- > He can add/delete or modify doctors in the database.
- > He can add/delete or modify Inventory in the database.

2.4. Non-functional requirements

The non-functional requirements of these projects are:

- **Security:**

The website does not allow access to any functionality by directly jumping to any particular link to that function's page. Additionally, anything that is needed to be done can only be done by first logging in.

- **Data Integrity:**

The project does not allow entry of data in case data is invalid. This is very important as if invalid data is added, then it can cause large problems, such as donors who have entered the wrong data as it may cause problem in finding the donor with his proper credentials and also fills and other donors may not be able to register.

- **Automatic data processing:**

A lot of information is processed by the project instead of relying on the user to add perfect information and perform numerous functions each time. Examples include deleting donors

from database, validating and inserting the donors list . This is an important task as it can be performed much more efficiently and quickly by the system than by a human.

2.5. Advantages of Blood Bank Management System

The advantages of the blood bank donation system are:

- It is based on a Client-Server System, meaning multiple Admins can be supported.
- It operates on a minimalistic User Interface so that any user of the system can do what they need to do with almost no training and extreme ease.
- Erroneous data is not entered into the system and rendered invalid
- Admin can automatically remove the registered donors.

2.6. Summary

We have developed a highly comprehensive and easy to use system for any small blood bank management camps. It is easy to implement and requires no training to use. It provides options for Admins . It is error-proof and does large amount of work in the background. Blood bank donation system has the responsibility to collect blood only from donors who are at low risk for any infection that could be transmitted through transfusion and who are unlikely to jeopardize their own health by blood donation.

CHAPTER 3

SYSTEM DESIGN

3.1. System Design:

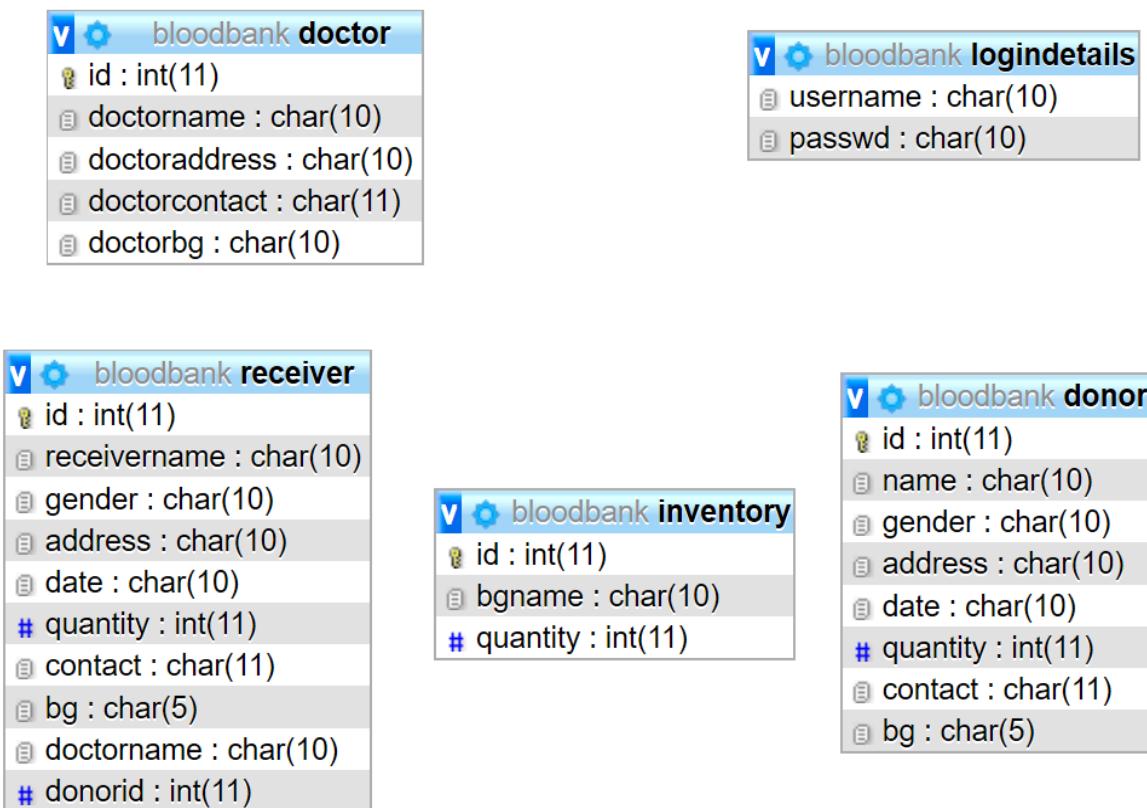


Fig – 3.1

The above Fig-3.1 shows the system design for the blood bank database system.

logindetails: consists of username and password, and these would considerably change depending on the users.

donor: contains the details of the donors.

receiver: contains the details of the receivers.

inventory: contains the details of the blood stored in the blood bank.

doctor: contains the details of the doctors.

3.2. ER Diagram

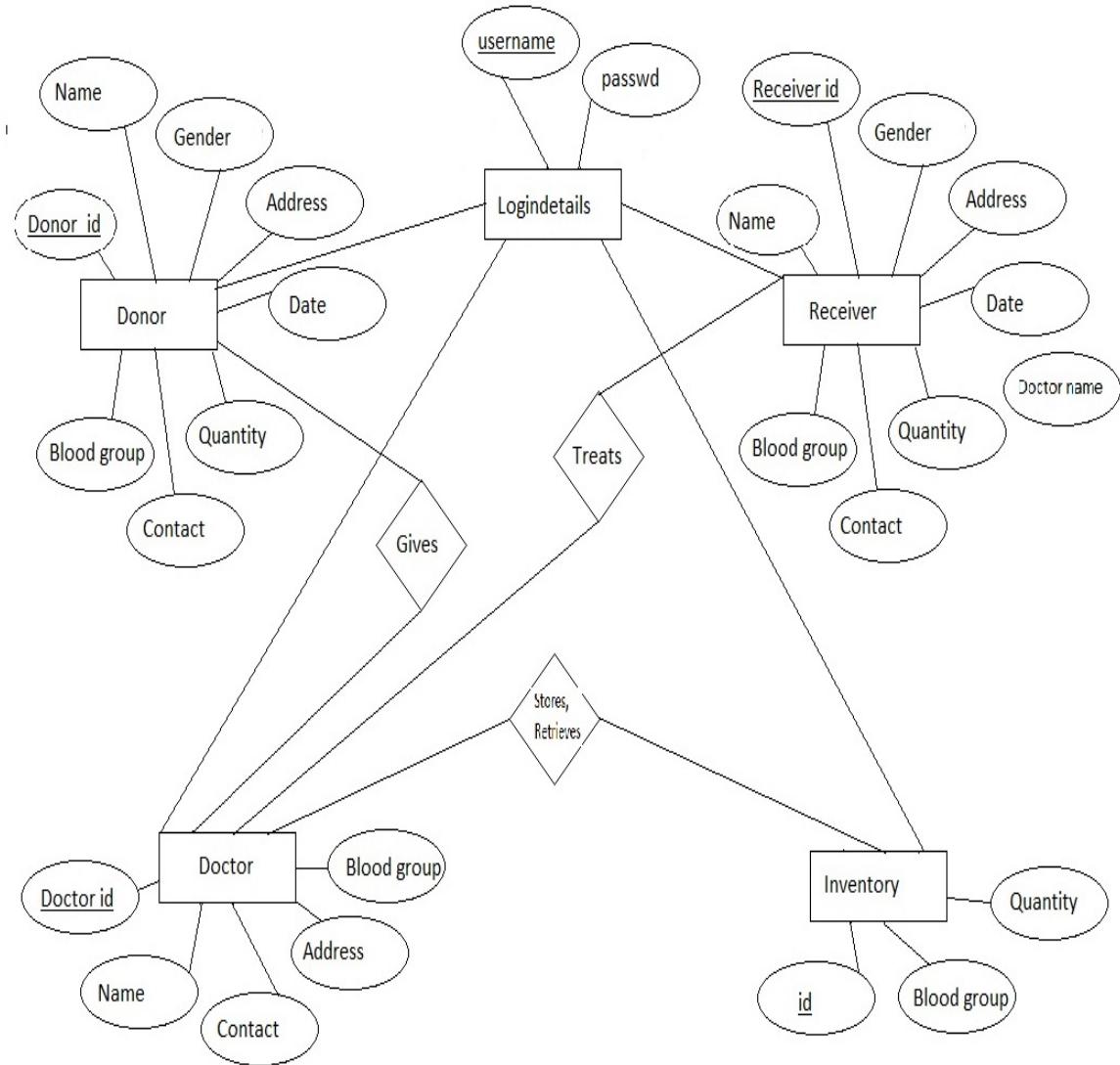


Fig – 3.2

The above Fig-3.2 shows the ER Diagram for the blood bank database system. This shows the relation between the tables of the database.

3.3. Relational Schema

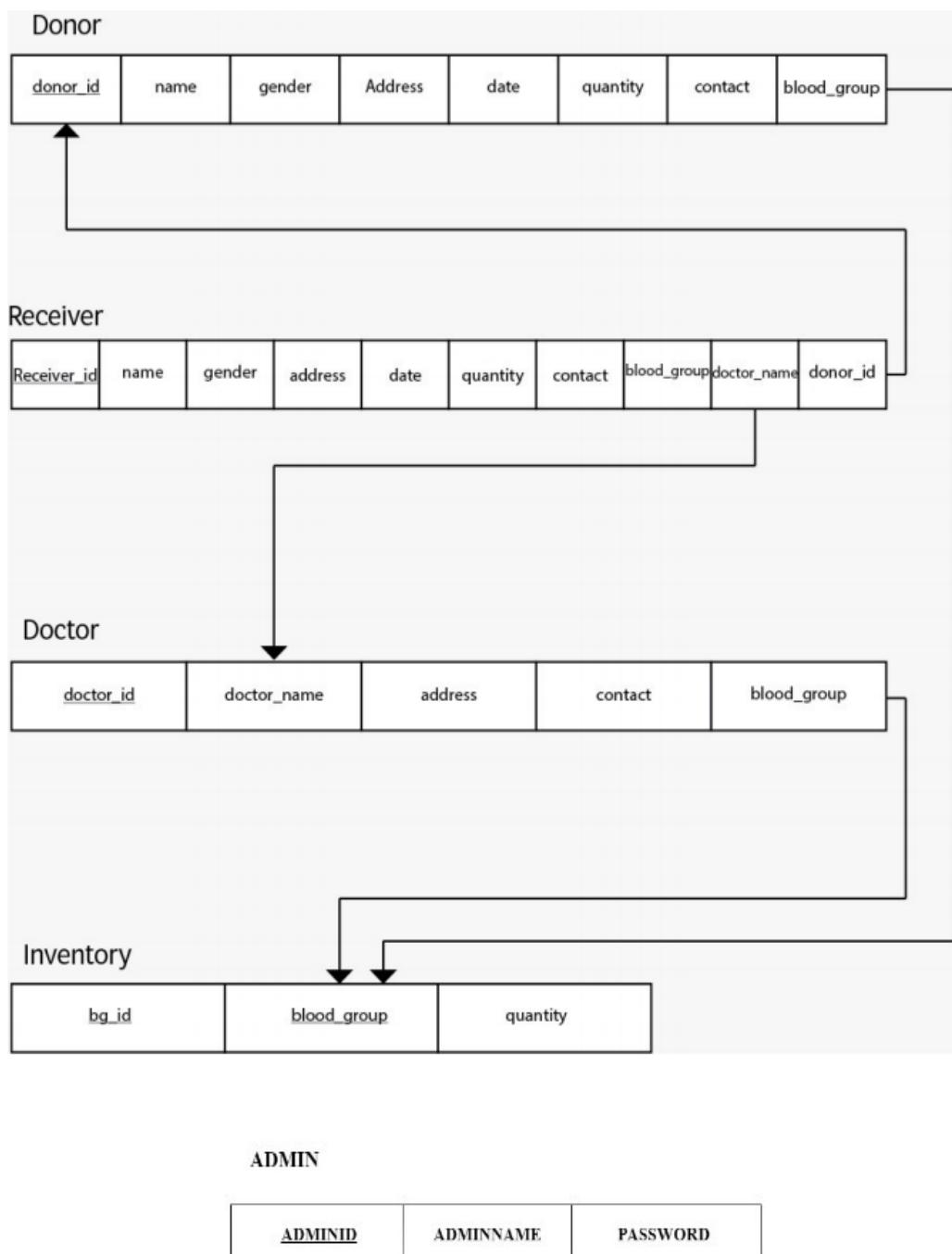


Fig- 3.3

The above Fig-3.3 shows the Relational Schema of the blood bank database. With the tables and their attributes.

CHAPTER 4

IMPLEMENTATION

4.1. Implementation

The project is implemented in HTML, JSP and MySQL for Back-End (database). It has three-tier architecture with Front-End forming Application Layer and Back-End forming Middle Layer and Database. Input validation is done in JSP. JSP communicates with the local server. The server responds with HTML code that is then displayed on the Front-End. The server communicates with MySQL using mysqlconnector.

4.2. Programming Language Selection

The web server needs a JSP engine, i.e, a container to process JSP pages. The JSP container is responsible for intercepting requests for JSP pages. A server (generally referred to as application or web server) supports the Java Server Pages. This server will act as a mediator between the client browser and a database. The following diagram shows the JSP architecture.

Three-tier Client / Server database architecture is commonly used architecture for web applications. Intermediate layer called Application server or Web Server stores the web connectivity software and the business logic (constraints) part of application used to access the right amount of data from the database server. This layer acts like medium for sending partially processed data between the database server and the client. Database architecture focuses on the design, development, implementation and maintenance of computer programs that store and organize information for businesses, agencies and institutions. A database architect develops and implements software to meet the needs of users. Several types of databases, including relational or multimedia, may be created. Additionally, database architects may use one of several languages to create databases, such as structured query language (SQL). SQL is a database computer language designed for the retrieval and management of data in a relational database.

4.3. Snapshot

1. Home page :



Fig 4.1: Home Page

The above figure Fig 4.1: shows the homepage after admin login

2. Admin Login page:

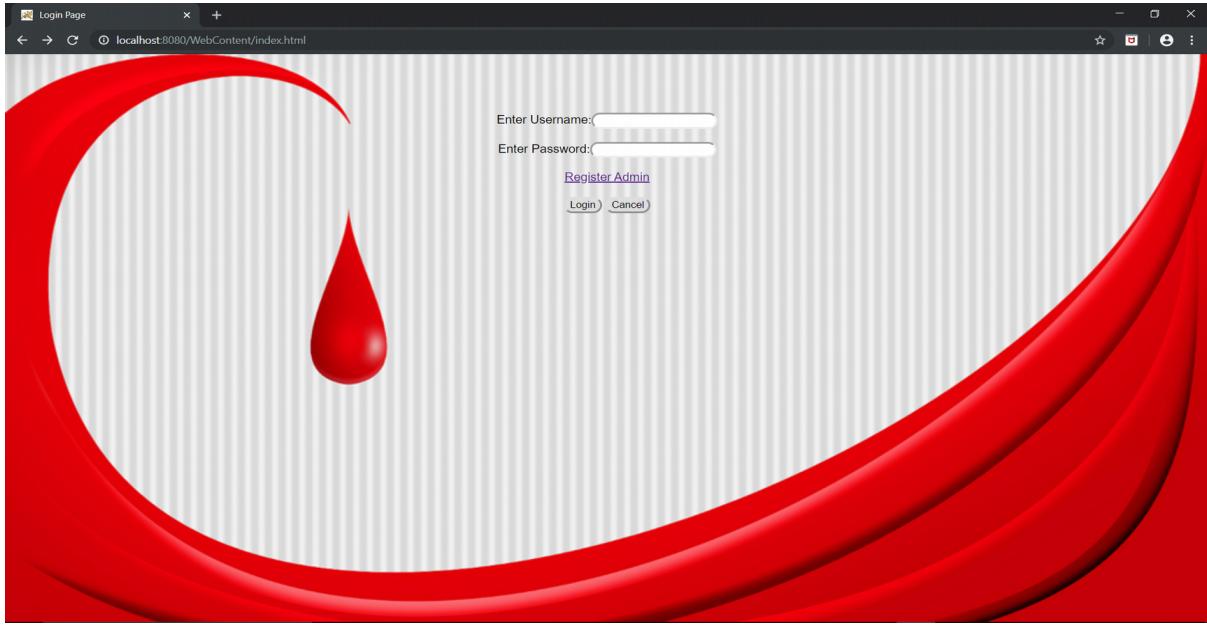


Fig 4.2: Admin Login Page

The above figure Fig 4.2: shows the admin login page which is used to login to the admin page .

3. Donor page:

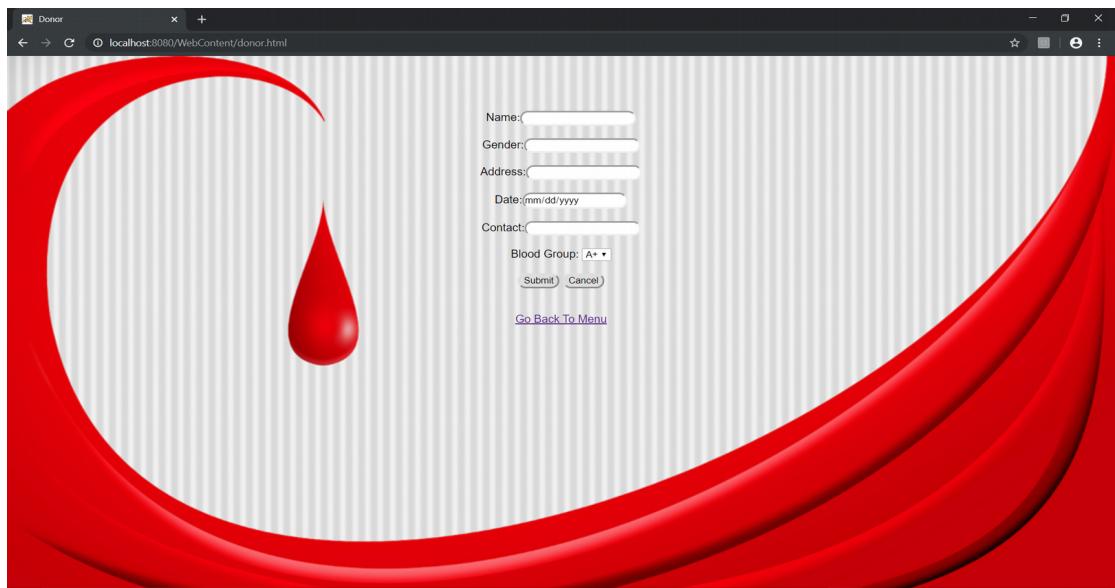


Fig 4.3: Donor Page

The above figure Fig 4.3: shows the donor page which is used by the admin to add donor details in the database.

4. Receiver page:

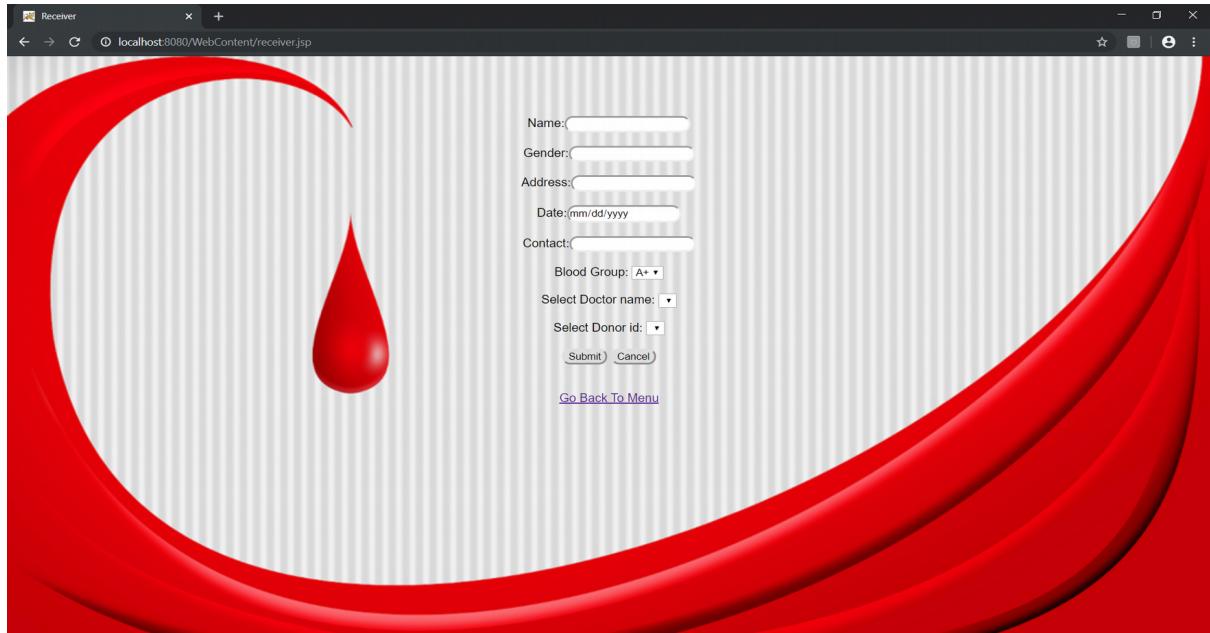


Fig 4.4: Receiver Page

The above figure Fig 4.4: shows the Receiver page which is used by the admin to add receiver details in the database.

5. Doctors page:

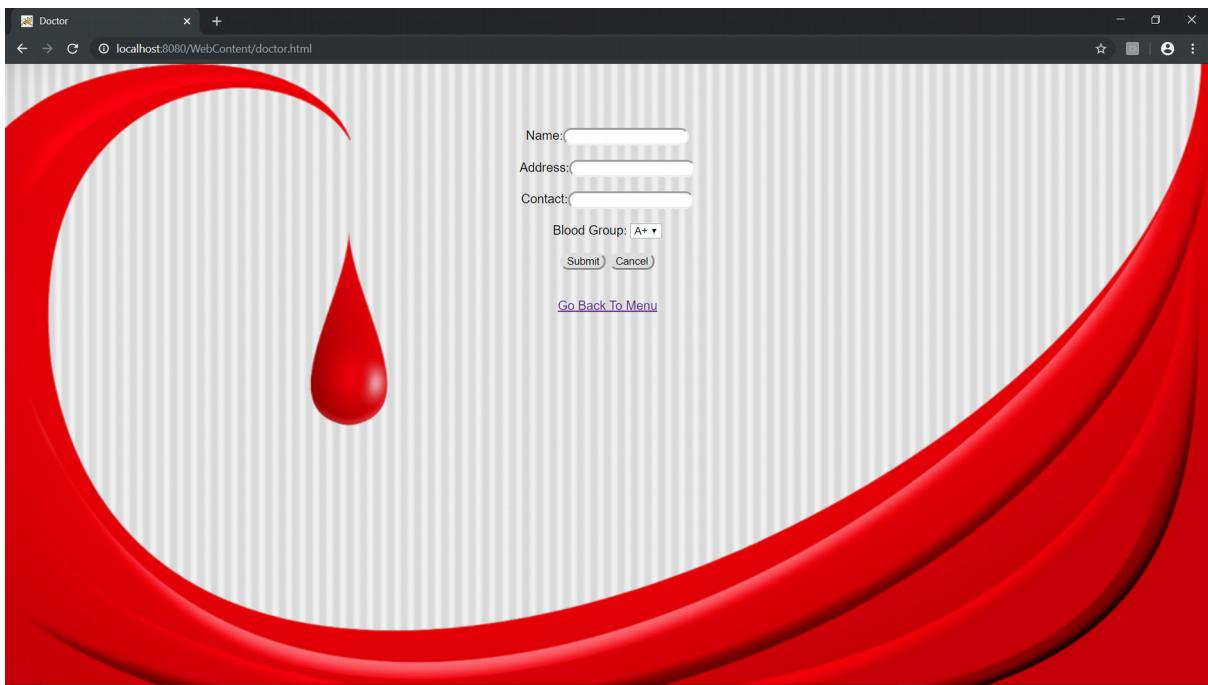


Fig 4.5: Doctors Page

The above figure Fig 4.5: shows the doctors page which is used by the admin to add doctor details in the database.

6. Inventory page:

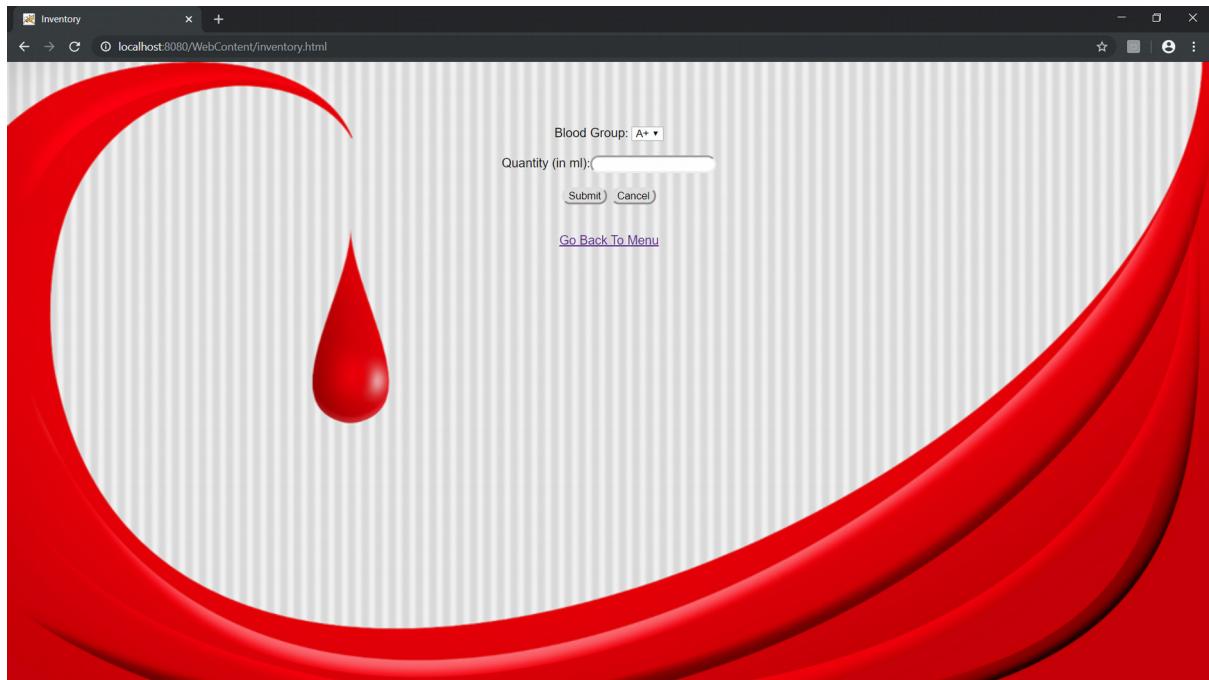


Fig 4.6: Inventory page

The above figure Fig 4.6: shows the inventory page which is used by the admin to access details in the database.

7. Delete page:

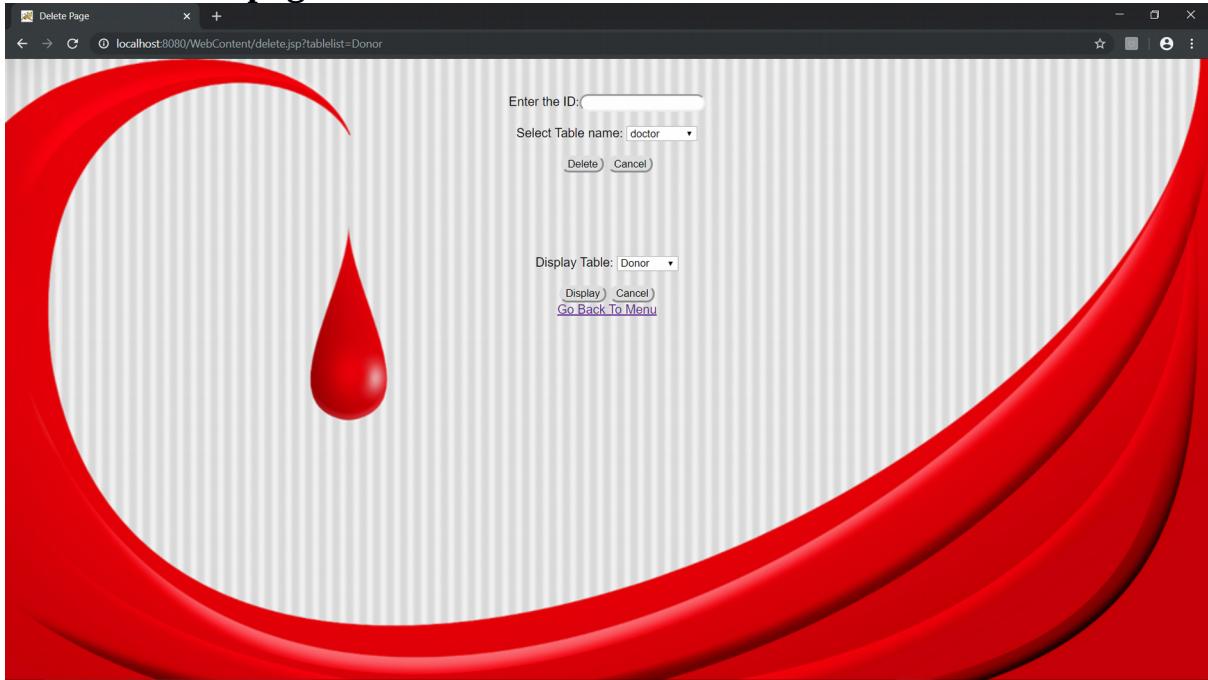


Fig 4.8: Delete Page

The above figure Fig 4.7: shows the delete page which is used by the admin to delete details in the database.

8. Admin Registration page:

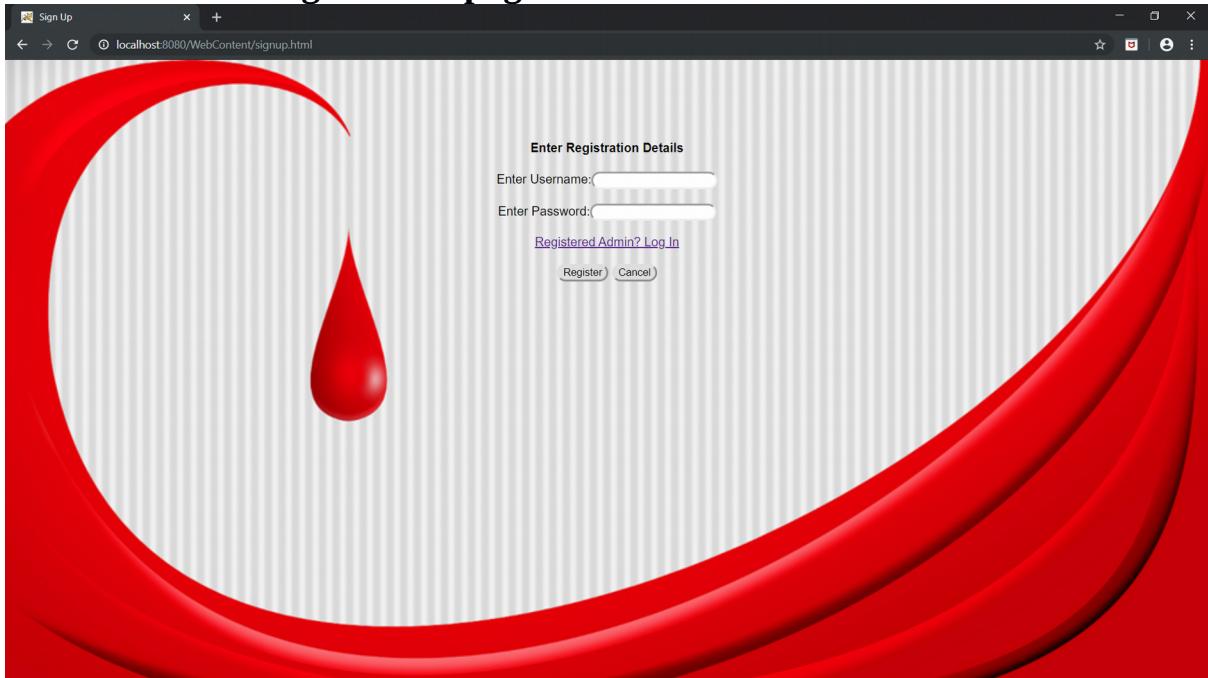


Fig 4.8: Admin registration Details

The above figure Fig 4.8: shows the admin registration page which is used by the admin to register for the admin login.

4.4. Procedures

PL/SQL is a block-structured language that enables developers to combine the power of SQL with procedural statements. A stored procedure in PL/SQL is nothing but a series of declarative SQL statements which can be stored in the database catalogue. A procedure can be thought of as a function or a method. They can be invoked through triggers, other procedures, or applications on Java, PHP etc.

Procedure 1 – Adding (incquan)

```
CREATE PROCEDURE incquan (in dbgname char(5))
BEGIN
declare dquan int default 0;
declare iquan int default 0;
declare totalcount int default 0;
declare bname char(10) default ‘ ’;
select quantity into iquan from inventory where bgname=dbgname;
select quantity into dquan from donor where bg=dbgname;
select bgname into bname from inventory where bgname=dbname;
update inventory set quantity=iquan+dquan where bgname=bname;
END
```

This procedure takes in the blood group of the donor as a parameter and takes the quantity from that record and adds it to the quantity in the inventory where the blood group is the same as that of the donor.

Procedure 2- Subtracting (decquan)

```
CREATE PROCEDURE decquan (in rbgname char(5))
BEGIN
declare rquan int default 0;
declare iquan int default 0;
declare totalcount int default 0;
declare bname char(10) default ‘ ’;
select quantity into iquan from inventory where bgname=rbgname;
select quantity into rquan from receiver where bg=new.rbgname;
select bgname into bname from inventory where bgname=rbname;
update inventory set quantity=iquan-rquan where bgname=bname;
```

END

This procedure takes in the blood group of the receiver as a parameter and takes the quantity from that record and subtracts it from the quantity in the inventory where the blood group is the same as that of the receiver. This procedure is called by the trigger "updateinvdecre".

4.5. Triggers

A trigger is a special kind of a stored procedure that executes in response to certain action on the table like insertion, deletion or updating of data. It is a database object which is bound to a table and is executed automatically. You can't explicitly invoke triggers. The only way to do this is by performing the required action on the table that they are assigned to.

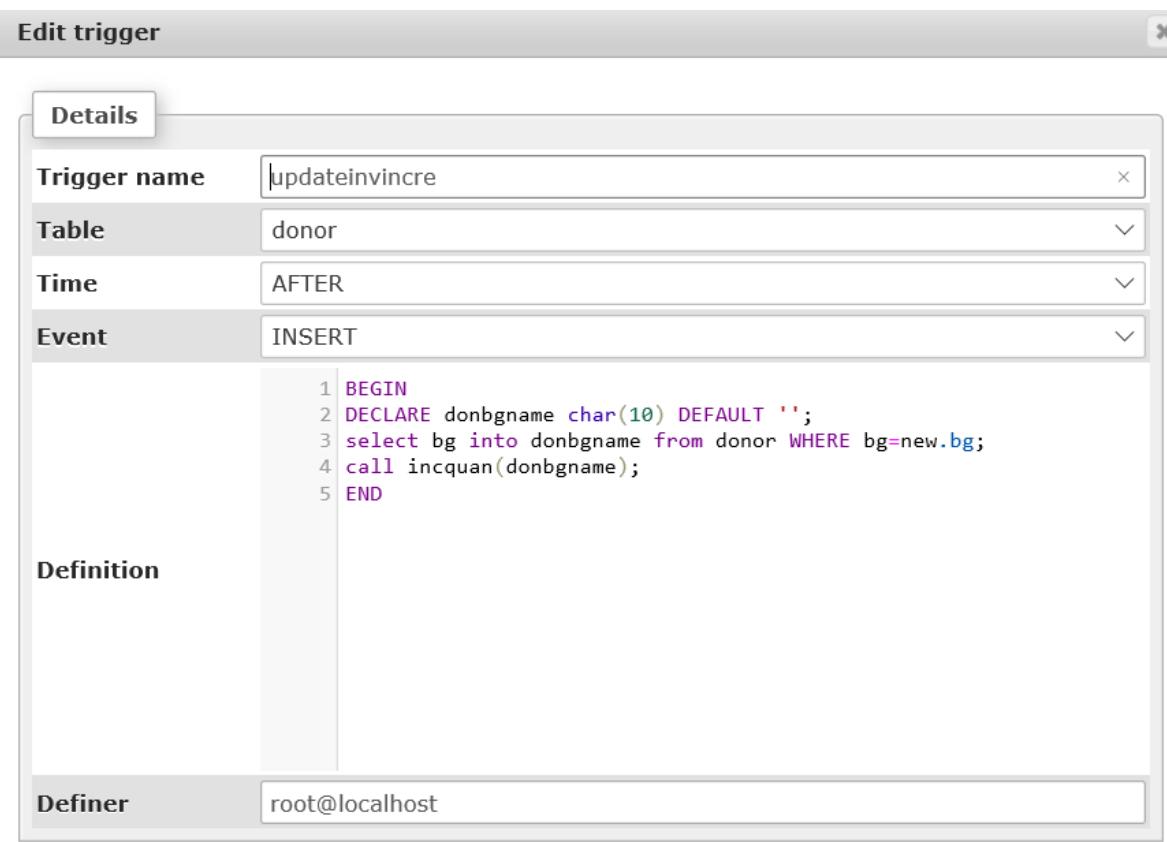


Fig:-4.5.1. Trigger 1

This trigger adds / updates the contents of blood in the inventory whenever a new record of donor is created, by calling a procedure called "incquan" on the newly inserted record which does the job.

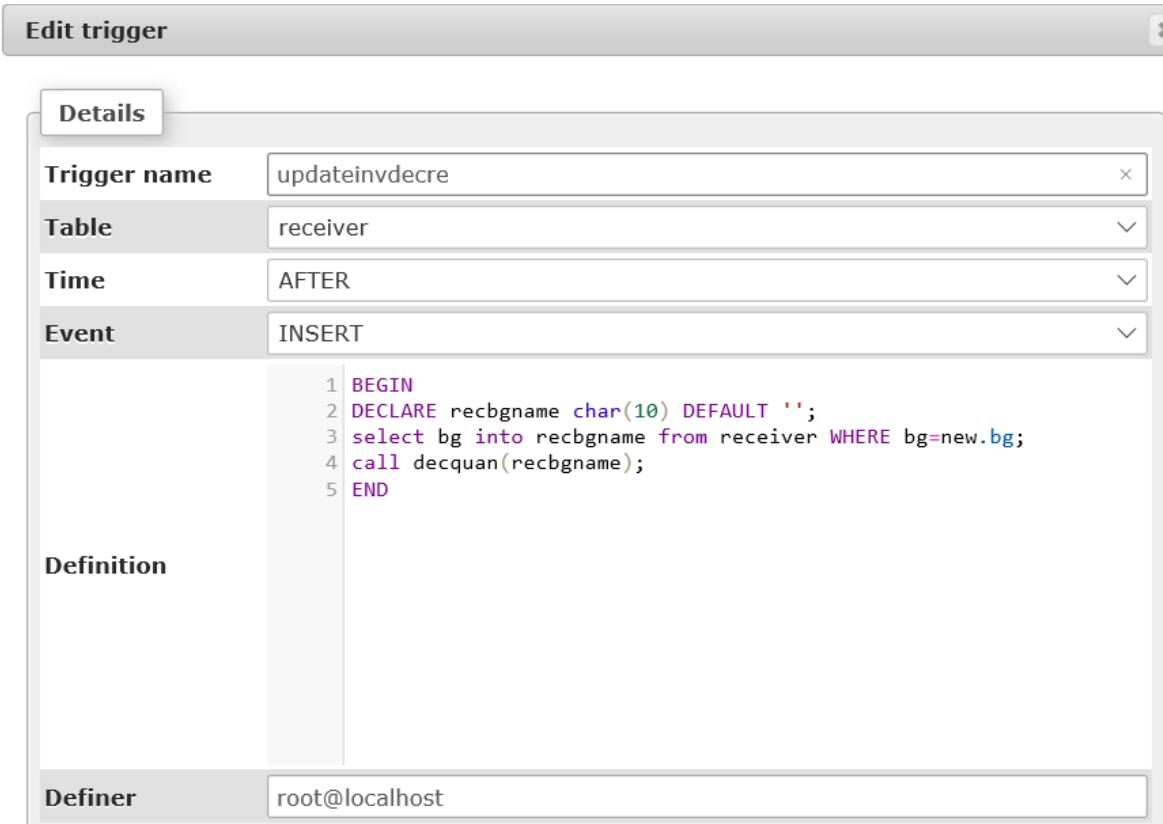


Fig 4.5.2. Trigger 2

This trigger subtracts / updates the contents of blood in the inventory whenever a new record of receiver is created, by calling a procedure called "decquan" on the newly inserted record which does the job.

CHAPTER 5

CONCLUSION AND FUTURE ENHANCEMENTS

5.1. Conclusion

The Blood Bank Management System is a great improvement over the manual system which uses lots of manual work and paper. The computerization of the system speeds up the process. This system was thoroughly checked and tested with dummy data and found to be very reliable. Thus, we have implemented a fully comprehensive and minimalistic efficient system for use by Admins/Receptionist without any additional training.

5.2. Limitations of the Project

The donor cannot modify/add/delete his details like address, phone number. The whole project is done for offline blood bank, since there is no way to access the details online. Moreover, there is no feature to modify donor details.

5.3. Future Enhancements

The Blood bank Management System can be enhanced by including more functionality like allowing online access to the donor to modify the details if he has gone wrong while registering. Online implementation to nearest blood banks may be implemented.

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