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Software Requirements Specification

Document

BLOOD BANK MANAGEMENT SYSTEM

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Software Construction and Maintenance

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CHAPTER-1

1. INTRODUCTION

There is no other redeeming act than to save a human life. People may feel afraid or selfish when it comes to donating blood. But if everybody thinks that way, then doctors may be unable to save so many human lives. People who have never donated blood may themselves require blood at some point of their life. But think what will happen if everybody feels unwilling to donate blood.

There will be no blood available in the blood banks. So many precious lives will be wasted. It may happen to anyone, even you. So don't be afraid or selfish about donating blood. Blood is the fuel of life. In India, blood is required in every 2 seconds. More awareness should be created about blood donation so that more and more people come forward to donate blood. If human lives are wasted because of the dearth of blood in the blood banks it will be a shame to the human society. So donate blood and encourage other people as well.

Aim of this project is to provide such user friendly and interactive service via web interface, mobile application .As soon as any updates occur in the blood database these changes are reflected in all interfaces. So by this manner this system provides a simple and quicker interaction among various groups connected with blood bank.

The main objective is to improve the efficiency of data communication within the supply chain to reduce response time for each blood demand request. We also focused on managing blood inventory at each blood bank effectively. The results have shown that the proposed system helps enhancing the communication among blood partners within the supply chain network. The recipient can get blood in emergency case also.

1.1 <u>PURPOSE</u>

The purpose of the project is
- To develop a scalable system.
- To computerize the administrative operations of a blood transaction.
- To be highly available
- To ease the process of blood donation and reception.

1.2 <u>MOTIVATION:</u>

This project is aimed to reduce the manual work involved in data maintenance in the Blood bank system. It deals with the collection of Donors, Receivers and Inventory information etc. The main function of the system is to enter and retrieve the details as and when required, and also to manipulate the details meaningfully.

<u>CHAPTER-2</u>

2. <u>LITERATURE SURVEY</u>

Paper [1], A Web-based blood donor management information system for the Red Cross Society, Uganda (WBBDMI), describes about

developing a blood management information system to assist in the management of blood donor records and control the distribution of blood in various parts of the Uganda(country) based on the hospital demands. The blood management information system offers functionalities to quick access to donor records collected from various parts of the Uganda. It enables monitoring of the results and performance of the blood donation activity such that relevant and measurable objectives of the organization can be checked. It provides to management timely, confidential and secure medical reports that facilitates planning and decision making and hence improved medical service delivery.

Paper[2], Telemedicine, Telehealth, and Health Information Technology, describes about providing a tool for ATA(American Telemedicine Association) members to identify opportunities for collaboration and to better understand the interaction between telemedicine/telehealth services and health information technology (HIT) applications on local, regional and national levels. Paper presents a framework for discussing the interdependency of both telemedicine and HIT.

Paper[3] , An Efficient Emergency, Healthcare, and Medical Information System, explains about present situation of Malaysian medical information and emergency systems and their information processing system, and also focuses on developing an integrated Emergency, Healthcare, and Medical Information System (IEHMS) that can overcome many of the problems in the current systems in Malaysia .

The main goal of this paper is to incorporate the real-time and mobility technologies with medical emergency systems.

2.1 OBJECTIVE

This applied research aims to design, develop and implement online blood bank management system. This web-based application provides:

- To ensure hospital to have good supply or inventories of blood bags.

- To check the availability of blood bags anytime.

- To manage the information of its blood donor.

- Function to check if the person donate blood

- To allow good documentation about the donor and its blood donation activities.

- Support fast searching to find match blood bags for the right person.

2.2 LIMITATION

This study does not cover the actual blood collection activity, and actual blood transfusion operation. Blood donors and patients or recipients of blood donation are not system users, their registration or information will be encoded by the blood bank receptionists.

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3.REQUIREMENTS

3.1FUNCTIONAL REQUIREMENTS

1. Access Website: User should be able to access to web-application through either an application browser or similar service on the mobile phone or computer. There should not be any limitation to access web-application.

2. User Registration: Given that user has accessed web-application, and then the user should be able to register through the web-application.

The donor user must provide first name, gender, blood group, location, contact, username and password.

3. New Releases: When a new/update version of the web-application is released, the appearance will be automatically appears when the user access the web-application.

4. User Log-in: Given that the user has registered, and then the user should be able to login to the web-application. The login information will be stored on the database for future use.

5. Request Blood: User should be able to request for blood at emergency situation, user need to define blood group, location, required date, contact. The order requested will be sent to blood bank and then to the inventory to check the availability. If available, the requested blood will be sent to the requested donor.

6. Search Blood Bank Stock: Receiving the order from hospital, the blood stock in the Blood Bank Inventory will be searched to match the requested order. Thus matched blood units will be sent to the hospital.

3.2 NON-FUNCTIONAL REQUIREMENTS

1. Availability: The system including online components should be available 24/7.

2. Reliability: If there is extensive damage to a wide portion of the database due to catastrophic failure, such as a disk crash, the recovery method restores a past copy of the database that was backed up to archival storage and reconstructs a more current state by reapplying or redoing the operations of committed transactions from the backed up log, up to the time of failure.

3. Maintainability: The blood Inventory Manager should maintain correct records of the blood Inventory stock.

4. Usability: The cost of the blood Units is standardized.

5. Extensibility: Requirements for the website extensibility in case there is a need to add functional requirements.

6. 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)

7. 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.

8. 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.

9. 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.

3.3 HARDWARE REQUIREMNTS :

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

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

3.4 SOFTWARE REQUIREMENTS

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

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4. FEASIBILITY STUDY

The prime focus of the feasibility is evaluating the practicality of the proposed system keeping in mind a number of factors. The following factors are taken into account before deciding in favor of the new system.

4.1 ECONOMIC FEASIBILITY

Report generation in the proposed system in precise that is reports are generated as per user requirements, which reduces the use of papers and manual labor.

4.2 TECHNICAL FEASIBILITY

Keeping in view the above fact, nowadays all organizations are automating the repetitive and monotonous works done by humans. The key process areas of the current system are nicely amenable to automation and hence the technical feasibility is proved beyond doubt.

4.3 OPERATIONAL FEASIBILITY

The present system has automated most of the manual tasks. Therefore the proposed system will increase the operational efficiency of the administrator and instructors.
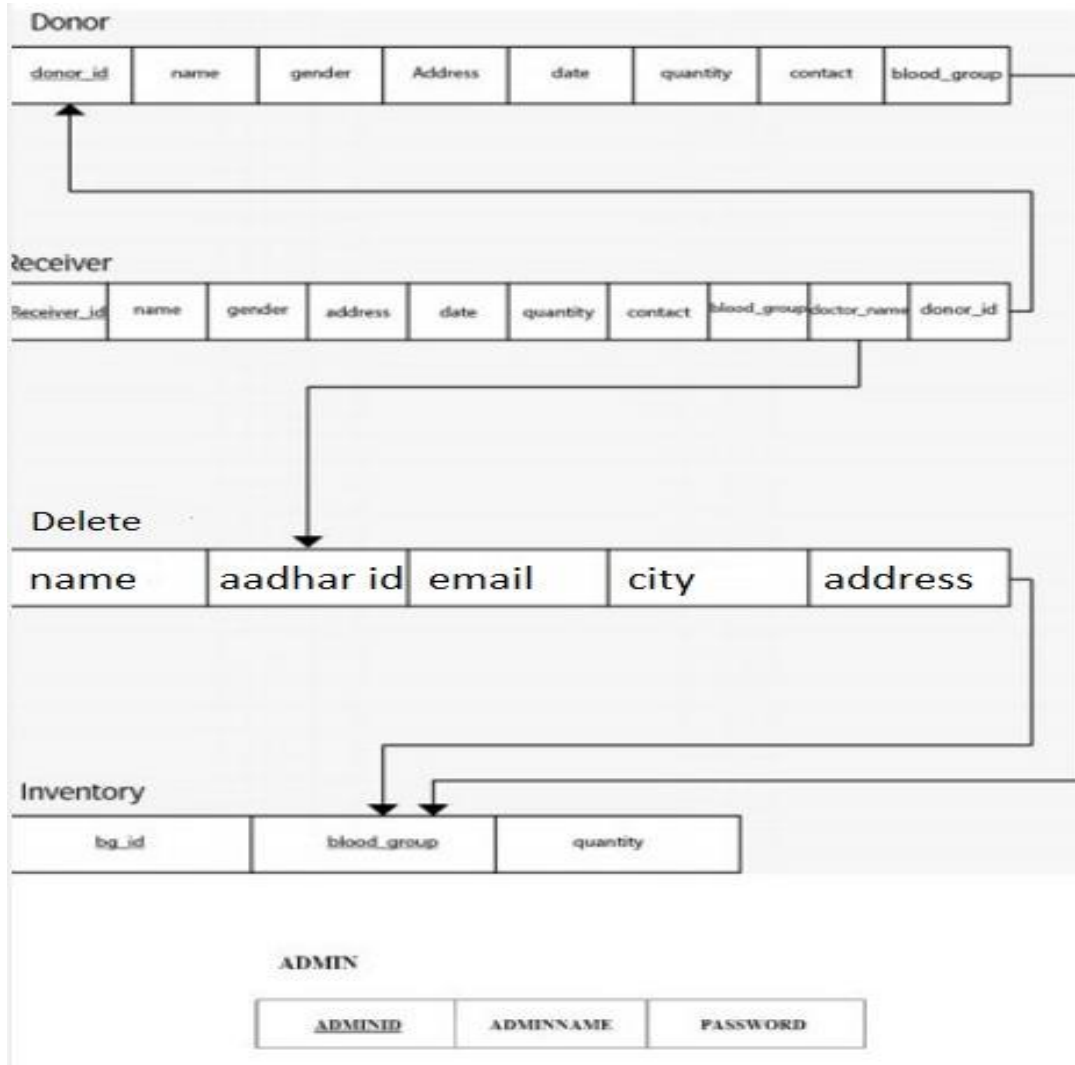
CHAPTER-5

5. DESIGN AND IMPLEMENTATION
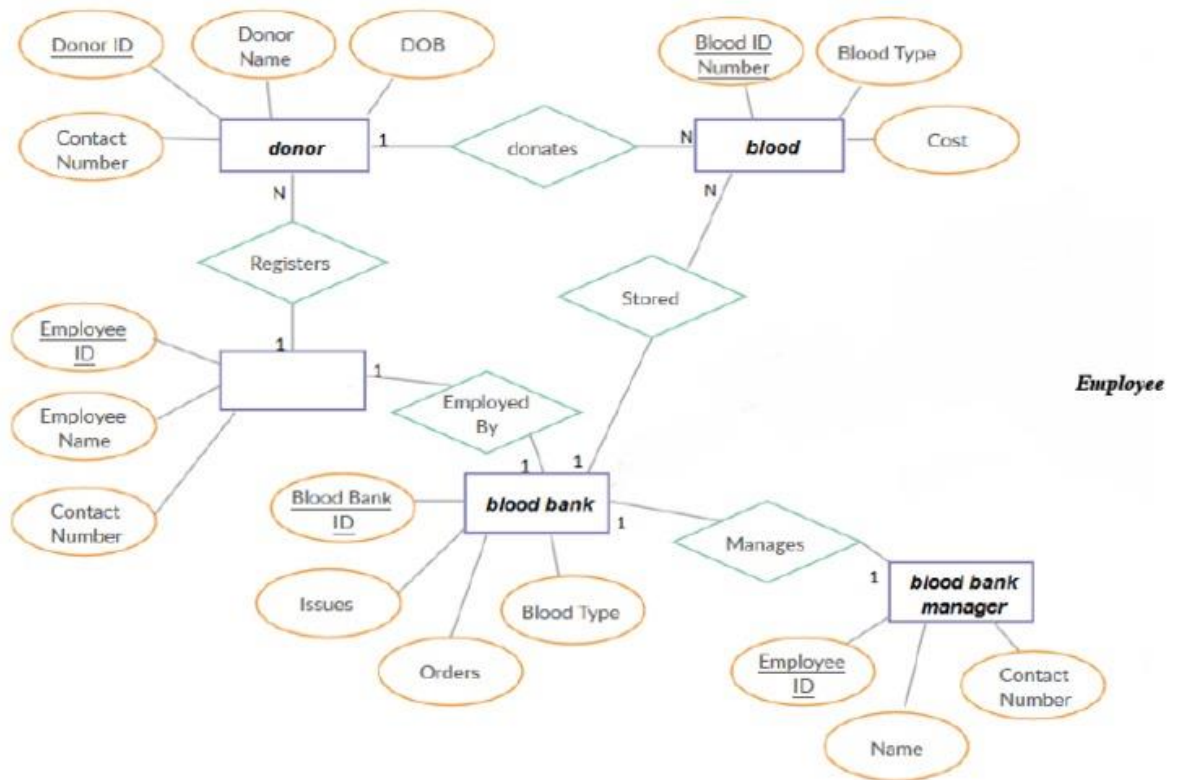
5.1 PRODUCT FEATURES

1. It is aadhar card connected and helps us to identify the users easily if any confusion arises

2. It has a special feature to locate the users easily

3. It is easily accessible

4. It helps us to update any details required

5. It also has an additional feature to delete the donor details

6. We can also edit the details in blood inventory or update the amount of blood present

5.2 RELATIONAL SCHEMA

Donor

donor_id	name	gender	Address	date	quantity	contact	blood_group

Receiver

Receiver_id	name	gender	address	date	quantity	contact	blood_group	doctor_name	donor_id

Delete

name	aadhar id	email	city	address

Inventory

bg_id	blood_group	quantity

ADMIN

ADMINID	ADMINNAME	PASSWORD

5.3 ER-DIAGRAM AND NORMALIZATION

Blood Donation Management System ER Diagram
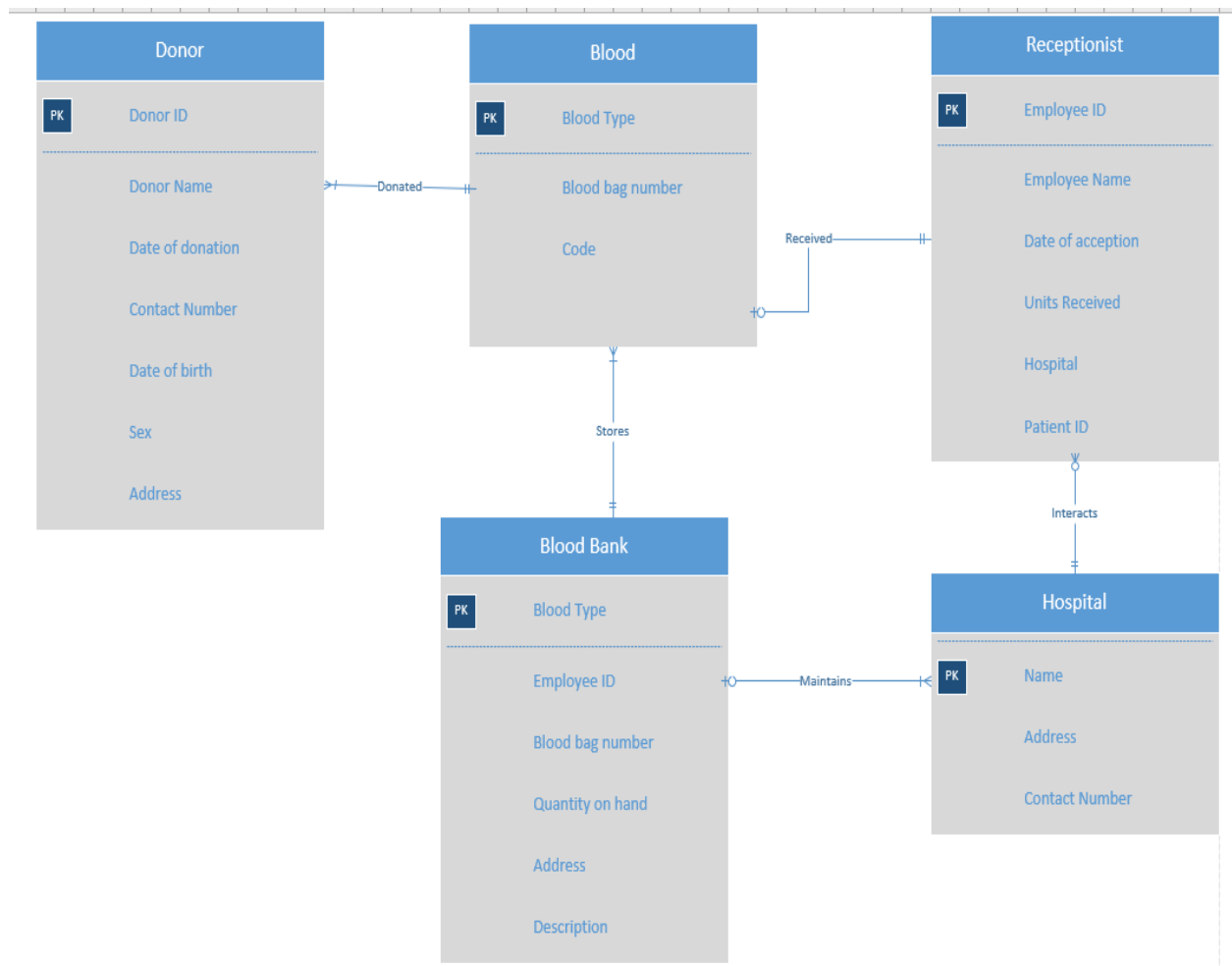

5.3.1 E-R DIAGRAM

E-R Diagram constitutes a technique for representing the logical structure of a database in a pictorial manner. This analysis is then used to organize data as a relation, normalizing relation and finally obtaining a relation database.

- **ENTITIES:** Which specify distinct real-world items in an application.

- **PROPERTIES/ATTRIBUTES:** Which specify properties of an entity and relationships.

- **RELATIONSHIPS:** Which connect entities and represent meaningful dependencies between them.
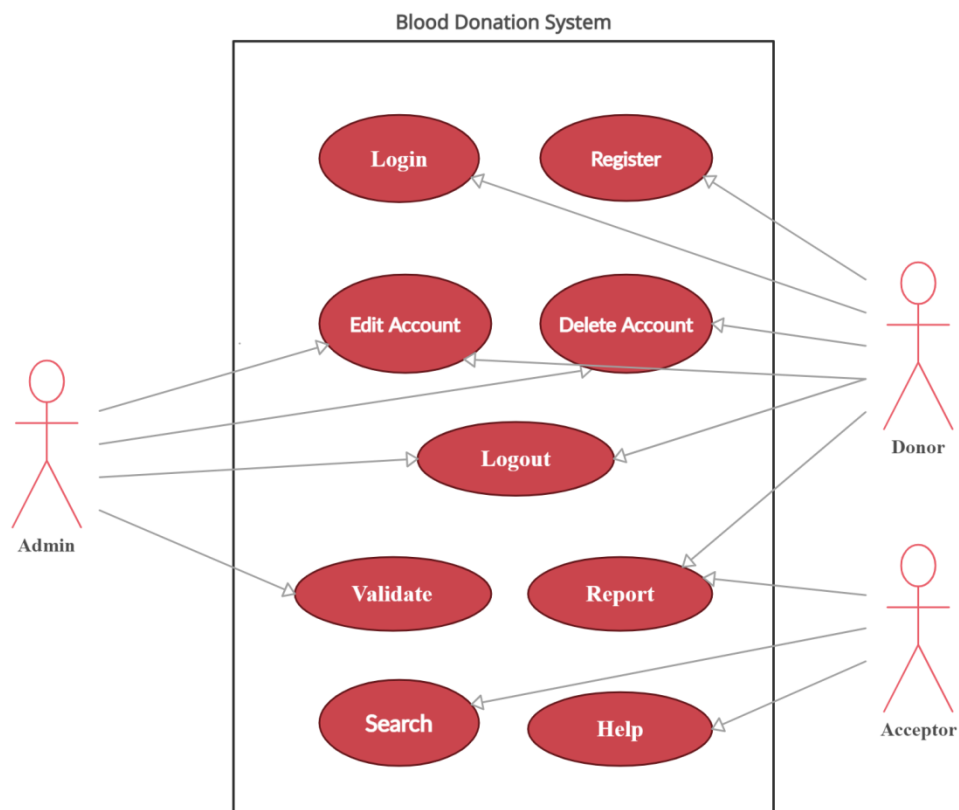
5.3.2 NORMALIZATION

- The basic objective of normalization is to reduce redundancy which means that information is to be stored only once. Storing information several times leads to wastage of storage space and an increase in the total size of the data stored.

- If a Database is not properly designed it can give rise to modification anomalies. Modification anomalies arise when data is added to, changed or deleted from a database table. Similarly, in traditional databases as well as improperly designed relational databases, data redundancy can be a problem. These can be eliminated by normalizing a database.

- Normalization is the process of breaking down a table into smaller tables. So that each table deals with a single theme. There are three different kinds of modifications of anomalies and formulated the first, second and third normal forms (3NF) is considered sufficient for most practical purposes. It should be considered only after a thorough analysis and complete understanding of its implications. Here we have normalized up to 3NF.
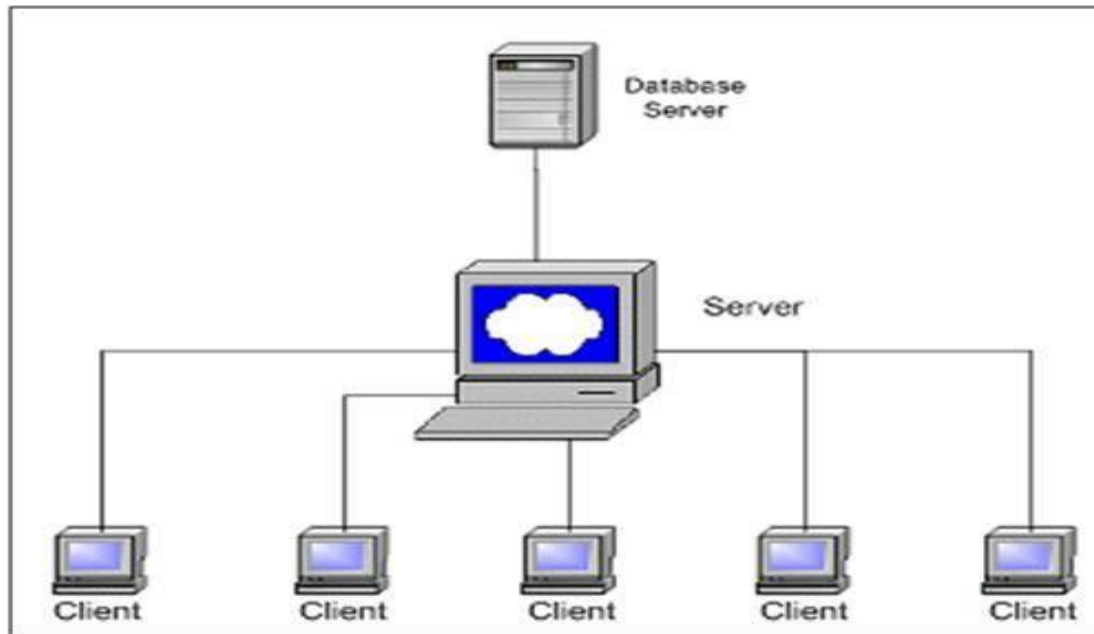
5.4 SYSTEM DESIGN

Donor	
PK	Donor ID
	Donor Name
	Date of donation
	Contact Number
	Date of birth
	Sex
	Address

Blood	
PK	Blood Type
	Blood bag number
	Code

Receptionist	
PK	Employee ID
	Employee Name
	Date of acception
	Units Received
	Hospital
	Patient ID

Donated

Received

Stores

Interacts

Blood Bank	
PK	Blood Type
	Employee ID
	Blood bag number
	Quantity on hand
	Address
	Description

Maintains

Hospital	
PK	Name
	Address
	Contact Number

5.5 USE CASE DIAGRAM

Blood Donation System

5.6 CLIENT –SERVER ARCHITECTURE

5.6.1 CLIENT-SERVER ARCHITECTURE

The client-server model of computing is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters called clients. Often clients and servers communicate over a computer network on separate hardware, but both client and server may reside in the same system. A server machine is a host that is running one or more server programs which share their resources with clients.

Client-server software architecture is versatile and flexible in today's fast-changing IT landscape. It is modular in structure and relies on messaging services for communication between components. They were designed to improve flexibility, usability, scalability, and interoperability. Software flexibility implies the ability for a program to change easily according to different users and different system requirements.
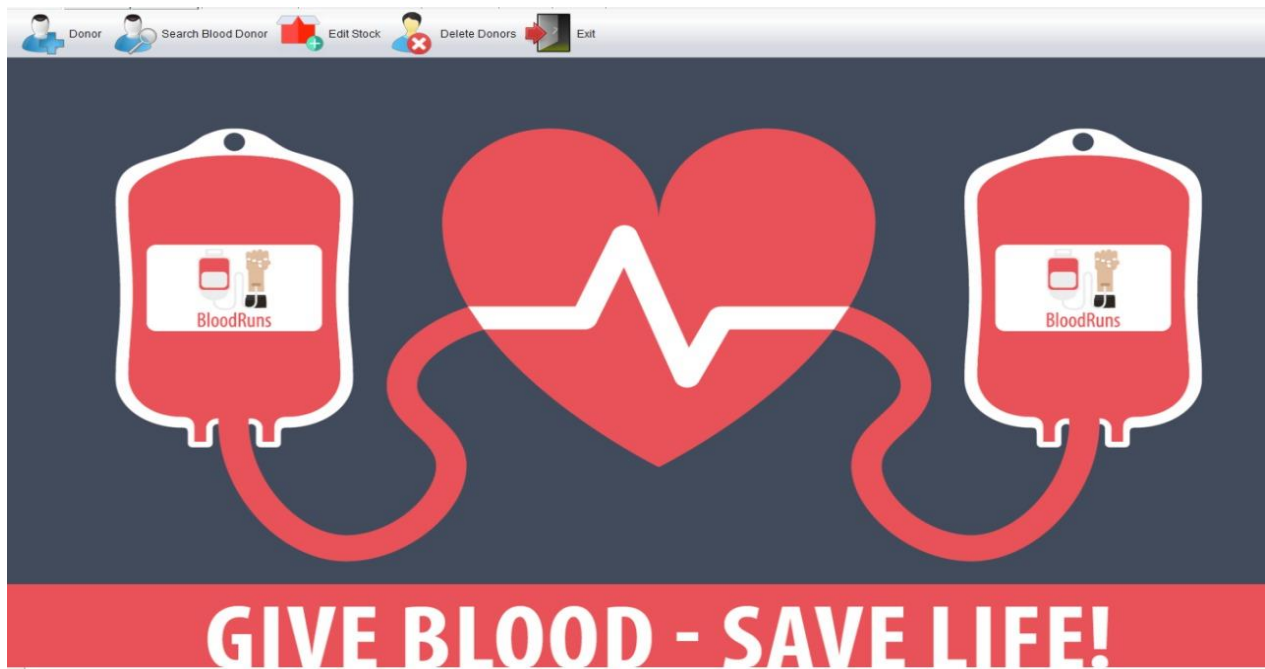
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6. SNAPSHOTS

6.1 LOGIN PAGE

6 .2 LOGIN FAILURE

6.3 MENU PAGE

6.4. DONOR OPTION

6.4.1ADD NEW DONOR

6.4.2 UPDATE DONOR DETAILS

6.4.3 ALL DONOR DETAILS

6.5 SEARCH BLOOD DONOR OPTION

6.5.1 SERACH DONOR BY LOCATION

SEARCH DONOR BY LOCATION

Address : Ta

donorId	name	fatherName	motherNa...	DOB	MobileNo	gender	email	aadharId
2	Geetha B...	Panduran...	Rajalaksh...	07-08-1971	80729047...	Female	geebabu....	8767898
4	Surya	Vinay Ku...	Meenakshi	10-06-1988	90435891...	Male	suryavina...	1234543:

Print   X Close

6.5.2 SEARCH DONOR BY BLOOD GROUP

SEARCH DONOR BY BLOOD GROUP

Blood Group : A

donorId	name	fatherName	motherNa...	DOB	MobileNo	gender	email	aadharId
1	Rakshnee	Babu	Geetha	20-09-2001	93452601...	Female	rakshnee...	89013401.
2	Geetha B...	Panduran...	Rajalaksh...	07-08-1971	80729047...	Female	geebabu....	87678987.
4	Surya	Vinay Ku...	Meenakshi	10-06-1988	90435891...	Male	suryavina...	12345432.

Print   X Close

6.6 EDIT STOCK OPTION

6.6.1 STOCK INCREASE PAGE

6.6.2 STOCK DECREASE PAGE

STOCK DECREASE

| Blood Group : | A+ | Units : | | Update |

bloodGroup	units
A+	110
A-	100
B+	80
B-	30
O+	50
O-	90
AB+	50
AB-	20

Print   X Close

6.6.3 STOCK DETAILS PAGE

STOCK DETAILS

bloodGroup	units
A+	110
A-	100
B+	80
B-	30
O+	50
O-	90
AB+	50
AB-	20

Print   X Close

6.7 DELETE DONOR OPTION

6.7.1 DELETE DONOR PAGE

DELETE DONOR

Donor ID : 2   🔍 Search

Full Name	Geetha Babu	**Email**	abu.1970@gmail.com
Father's Name	Pandurangan	**Aadhar ID**	876789873425
Mother's Name	Rajalakshmi	**Blood Group**	AB+
Date of Birth	07-08-1971	**City**	Salem
Mobile No	8072904701	**Full Address**	et, salem, TamilNadu
Gender	Female		

🗑 Delete   🔄 Reset   ✕ Close

6.8 PRINT OPTION

Print ✕

General | Page Setup | Appearance

Print Service

Name: Microsoft Print to PDF ▼   Properties...
Status: Accepting jobs
Type:
Info: ☐ Print To File

Print Range
◉ All
○ Pages 1 To 1

Copies
Number of copies: 1
☐ Collate

Print   Cancel

CHAPTER-7

7. TESTING AND RESULT

The reason behind testing was to find errors. Every program or software has errors in it, against the common view that there are no errors in it if the program or software is working. Executing the programs with the intention of finding the errors in it is therefore testing; hence a successful test is one which finds errors. Testing is an activity, however, it is restricted to being performed after the development phase is complete, but is carried parallel with all stages of system development, starting with requirement specification.

Test cases were devised with a purpose in mind. A test case is a set of data that a system will process as normal input. The software units developed in the system are modules and routines that are assembled and integrated to perform the required function of the system. Test results once gathered and evaluated, provide a qualitative indication of the software quality and reliability and serve as the basis for design modification if required. In this phase, testing is done at different levels. Actually testing phase of the implementations works accurately and efficiently before live operation commences.

7.1 UNIT TESTING

Unit testing was done after the coding phase. The purpose of the unit testing was to locate errors in the current module, independent of the other modules. Some changes in the coding were done during the testing phase. Finally, all the modules were individually tested following bottom to top approach, starting with the smallest and lowest modules and then testing one at a time.

7.2 BLACK BOX TESTING

This method of software testing tests the functionality of an application as opposed to its internal structures or working(i.e. white box testing). Specific knowledge of the application's code/internal structure and programming knowledge, in general, is not required. Test cases are built to specifications and requirements, i.e., what the application is supposed to do. It uses external descriptions of the software,

including specifications, requirements, and design to derive test cases. These tests can be functional or non-functional, though usually functional. The test designer selects valid and invalid inputs and determines the correct output. There is no knowledge of the test object's internal structure.

7.3 WHITE BOX TESTING

This method of software testing tests internal structures or workings of an application, as opposed to its functionality (i.e. black-box testing). In white-box testing, an internal perspective of the system, as well as programming skills, is required and used to design test cases. The tester chooses inputs to exercise paths through the code and determine the appropriate outputs.

7.4 INTEGRATION TESTING

Once the unit was over, all the modules were integrated for integration testing. External and internal interfaces are implemented and work as per design, the performance of the module is not degraded.

7.5 VALIDATION TESTING

At the culmination of integration testing, the software is said to be completely assembled as a package; interfacing errors have been uncovered and corrected. Then as a final series of software test, validation tests were carried out.

7. 6 ACCEPTANCE TESTING

This is the final stage in the testing process before the system is accepted for operational use. Any requirement problem or requirement definition problem revealed from acceptance testing are considered and made error free.

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8. CONCLUSION

Our project is only a humble to satisfy the needs of a realistic Blood Bank. The objective of software planning is to provide a framework that enables the working of Blood Bank.

We are grateful that we got the opportunity to understand how software is designed in the real world. We got to design a small software through which we learnt a lot.

This project has given me an ample opportunity to design, code, test and implement an application. This has helped in putting into practice of various Software Engineering principles and Database Management concepts like maintaining integrity and consistency of data. Further, this has helped me to learn more about ORACLE 8, ASP 2.0, HTML and Personal Web Server.

This project shed light on how this subject is useful in practical terms. The purpose of this theory subject was justified.

8.1 FUTURE ENHANCEMENT

As there was a little number of contact person's information given, some people may face difficulty in getting blood fast. So I like to gather more information regarding the contact persons in other cities as well as villages and will provide much more services for the people and help everyone with humanity.

8.2 EXTENSIBILITY

The other features, which the Blood bank services provide, can also be incorporated into this Blood Bank. The Encryption standards can also be used to

make the transactions more secure. The Socket Secure Layer protocol can also used in implementing the system, which gives highest security in the Internet.

CHAPTER-9
9. REFERENCES

BOOKS

- HTML: Steven Holzner (Black Book)

- FRONT PAGE: Daniel A. Tauber, Brenda Kienan

- ORACLE 8: George Koch & Kevin Loney

- (The Complete Reference)

- ACTIVE SERVER PAGE: John Kauffman, Stephen Walther

- SYSTEM ANALYSIS & DESIGN: Ellias M. Award

- SOFTWARE ENGINEERING: Roger S. Pressman

- VB SCRIPT: David Flanagan

SITES

- Class diagram and use case diagram was made on creately.com

CHAPTER-10

KNOWLEDGE BASE

1. Is the site 24*7 available?
Ans: Yes, the system will work for 24*7 and helps the users get blood at any time required.

2. Can users update their details?
Ans: Yes, the users can update their details if they have made any error.

3. Can we check the amount of blood available?
Ans: Yes, the amount of blood and the type of blood available can be viewed.

4. Is it user friendly?
Ans: Yes, this system is user friendly and everyone can use it.

5. Did you know that blood expires after a period in the blood bank?
Ans: Yes, the expired blood will not be kept and it won't be shown in the inventory and will be deleted immediately.

6. Is all our details safe and secured?
Ans: Yes, the system secures all your details and its very safe.

7. Can we delete our details if we want to?
Ans: Yes, you can delete the details if you want to and there won't be an issues related to it.

8. Does this system have option to identify donors using location?
Ans: Yes, this system does have that feature and we can easily identify the donor with the help of location.

9. Can anyone other than admin access the other donor details?
Ans: No, no one other than admin can view other donor details.

10. Is our aadhar card connected?
Ans: Yes, indeed the aadhar card number is collected from the donor, and the verification of donor is done only through aadhar number.

11. Can the particular donor be searched by using blood group?
Ans: Yes, We have created a separate option for searching the donor by location (city or full address) and also through the blood group.

12. Is your application flexible?
Ans: Yes, There are many options for the user to use our application without any interruption and also is updated frequently.

13. Does your application have valid Donors?
Ans: Yes, We validate our donor using their aadhar Id.

14. How do you manage the blood stock?
Ans: The admin will frequently Check and Will increase or decrease the stock accordingly.

15. Can we view the stock details?
Ans: yes, you can view the stock details and choose your preferred quantity accordingly.

16. How often is your application updated?
Ans: Admin will update the stocks, then and there.

17. Is your system trustworthy?
Ans: Yes, our system has proven efficient and will provide the best service at your own convenience.

18. Do you have partnership with any other blood bank?
Ans: No, we haven't thought about it now, but will surely consider if that would make a better difference for our users.

CHAPTER-11

DEMONSTRATION VIDEO LINK:

https://drive.google.com/file/d/17tv9PlVcF4xMpgwulAGRWotzYqLMrELP/view?usp=sharing