



A SOFTWARE SPECIALIZED IN LOCATING BLOOD DONORS- AN ONLINE BLOOD BANK PORTAL

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Abstract: This project is aimed at developing an online Blood Donation Information. The entire project has been developed keeping in view the distributed client server computing technology, in mind. The Blood Donation Agent is to create an e-Information about the donor and recipients that are related to donating the blood. Through this application any person who is interested in donating blood can register himself in the same way if any hospital wants to register itself with this site that can also register. Moreover, if any general consumer wants to request blood online he can also take the help of this site. Admin is the main authority who can do addition, deletion, and modification if required. The project has been planned to be having the view of distributed architecture, with centralized storage of the database. The application for the storage of the data has been planned. Using the constructs of MS-SQL Server and all the user interfaces have been designed using the Visual studio code. The database connectivity is planned using the “SQL Connection” methodology. The standards of security and data protective mechanisms have been given a big choice for proper usage. The application takes care of different modules and their associated reports, which are produced as per the applicable strategies and standards that are put forward by the administrative staff. The total front end was dominated using the Visual studio code. At all proper levels high care was taken to check that the system manages the data consistency with proper business rules or validations. The entire project is expected to be completed by the end of January 2023. The programming languages used include- Front end: HTML/CSS, JavaScript, Back end: PHP, Database: SQL Database, Server: Xampp server

Keywords: Blood donation, Donors, Recipients, blood donation request.

I. INTRODUCTION

The Blood Donation Agent is to create an e-Information about the donor and hospitals that are related to donating the blood. Through this application any person who is interested in donating blood can register himself in the same way if any hospital wants to register itself with this site that can also register. The project has been planned to be having the view of distributed architecture, with centralized storage of the database. The application for the storage of the data has been planned. Using the constructs of MS-SQL Server and all the user interfaces have been designed using php. The database connectivity is planned using the “SQL Connection” methodology. The standards of security and data protective mechanisms have been given a big choice for proper usage. The application takes care of different modules and their associated reports, which are produced as per the applicable strategies and standards that are put forward by the administrative staff. The entire project has been developed keeping in view the distributed client server computing technology, in mind. The specification has been normalized up to 3NF to eliminate all the anomalies that may arise due to the database transactions that are executed by the general users and the hospitals administration. The user interfaces are browser specific to give distributed accessibility for the overall system. The internal database has been selected as MS-SQL server 2000.

The basic constructs of table spaces, clusters and indexes have been exploited to provide higher consistency and reliability for the data storage. The MS-SQL server 2000 was a choice as it provides the constructs of high-level reliability and security. The total front end was dominated using php. At all proper levels high care was taken to check that the system manages the data consistency with proper business rules or validations. The database connectivity was planned using the latest “SQL Connection” technology provided by Microsoft Corporation. The authentication and authorization were cross checked at all the relevant stages.

1.1 BENEFITES

- The project is identified by the merits of the system offered to the user. The merits of this project are as follows: -
- It's a web-enabled project.
- This project offers users to enter the data through simple and interactive forms. This is very helpful for the client to enter the desired information through so much simplicity.
- The user is mainly more concerned about the validity of the data, whatever he is entering. There are checks on every stage of any new creation, data entry or updating so that the user cannot enter the invalid data, which can create problems at a later date.

- Sometimes the user finds in the later stages of using the project that he needs to update some of the information that he entered earlier. There are options for him by which he can update the records. Moreover, there is a restriction for him that he cannot change the primary data field. This keeps the validity of the data to a longer extent.
- User is provided the option of monitoring the records he entered earlier. He can see the desired records with the variety of options provided by him.
- From every part of the project the user is provided with the links through framing so that he can go from one option of the project to another as per the requirement. This is bound to be simple and very friendly as per the user is concerned. That is, we can say that the project is user friendly which is one of the primary concerns of any good project.
- Data storage and retrieval will become faster and easier to maintain because data is stored in a systematic manner and in a single database.
- Decision making process would be greatly enhanced because of faster processing of information since data collection from information available on computers takes much less time than a manual system.
- Allocating of sample results becomes much faster because at a time the user can see the records of last year.
- Easier and faster data transfer through latest technology associated with the computer and communication.
- Through these features it will increase the efficiency, accuracy and transparency

1.2 MOTIVATION

Though many online blood portals are available the donors the efficiency of the browser was not up to the mark and even the protection of users' information was questionable. This project is purely done with a social mind set of providing easy access to safe blood to the patients in need. Even patients with rarest blood groups should be provided with the necessary blood as soon as possible.

1.3 PROBLEM STATEMENT

Although, there were existing system with the same concept feasibility was the main issue. Earlier no system existed to cater to the needs of 'Secure Infrastructure Implementation System'. The database's purpose is to create, establish and maintain a workflow among various entities in order to facilitate all concerned users in their various capacities or roles. Permission to the users was not to be granted based on the roles specified. Therefore, it did not provide the technical guarantee of accuracy, reliability and security. Operational feasibility aspects of the project are to be taken as an important part of the project implementation. Some of the important issues raised are to test the operational feasibility of a project includes the following: -

- Is there sufficient support for the management from the users?
- Will the system be used and work properly if it is being developed and implemented?
- Will there be any resistance from the user that will undermine the possible application benefits?

This system is targeted to be in accordance with the above-mentioned issues. Beforehand, the management issues and user requirements have been taken into consideration. So, there is no question of resistance from the users that can undermine the possible application benefits.

1.4 EXISTING STATEMENT

- Cannot Upload and Download the latest updates.
- No use of Web Services and Remoting.
- Risk of mismanagement and of data when the project is under development.
- Less Security.
- No proper coordination between different Applications and Users.

1.5 PROBLEM STATEMENT

To debug the existing system, remove procedures that cause data redundancy, make navigational sequence proper. To provide information about audits on different levels and also to reflect the current work status depending on the donors up to date. To build a strong password mechanism.

1.6 FUTURE SCOPE

To implement this system in every area possible. To implement this on a large level and to maintain the system and the User information secure in all aspects.

II. MODULES INVOLVED

2.1 FEASIBILITY STUDY

Preliminary investigation examines project feasibility; the likelihood the system will be useful to the hospitals. The main objective of the feasibility study is to test the Technical, Operational and Economical feasibility for adding new modules and debugging old running systems. All systems are feasible if they have unlimited resources and infinite time. There are aspects in the feasibility study portion of the preliminary investigation:

- Technical Feasibility
- Operation Feasibility
- Economic Feasibility

2.1.1 TECHNICAL FEASIBILITY

The technical issue usually raised during the feasibility stage of the investigation includes the following:

- Does the necessary technology exist to do what is suggested?

- Does the proposed equipment have the technical capacity to hold the data required to use the new system?
- Will the proposed system provide adequate response to inquiries, regardless of the number or location of users?
- Can the system be upgraded if developed?
- Are there technical guarantees of accuracy, reliability, ease of access and data security?

Earlier no system existed to cater to the needs of 'Secure Infrastructure Implementation System'. The current system developed is technically feasible. It is a web-based user interface for audit workflow at NIC-CSD. Thus, it provides easy access to the users. The database's purpose is to create, establish and maintain a workflow among various entities in order to facilitate all concerned users in their various capacities or roles. Permission to the users would be granted based on the roles specified. Therefore, it provides the technical guarantee of accuracy, reliability and security. The software and hardware requirements for the development of this project are not many and are already available in-house at NIC or are available as free as open source. The work for the project is done with the current equipment and existing software technology. Necessary bandwidth exists for providing fast feedback to the users irrespective of the number of users using the system.

2.1.2 OPERATIONAL FEASIBILITY

Proposed projects are beneficial only if they can be turned into an information system. That will meet the hospital's operating requirements. Operational feasibility aspects of the project are to be taken as an important part of the project implementation. Some of the important issues raised are to test the operational feasibility of a project includes the following: -

- Is there sufficient support for the management from the users?
- Will the system be used and work properly if it is being developed and implemented?
- Will there be any resistance from the user that will undermine the possible application benefits?

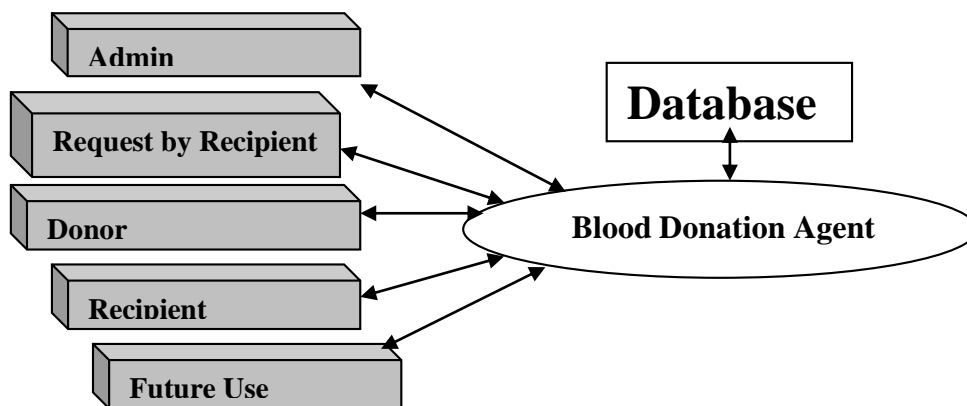
This system is targeted to be in accordance with the above-mentioned issues. Beforehand, the management issues and user requirements have been taken into consideration. So, there is no question of resistance from the users that can undermine the possible application benefits. The well-planned design would ensure the optimal utilization of the computer resources and would help in the improvement of performance status.

2.1.3 ECONOMIC FEASIBILITY

A system can be developed technically and that will be used if installed must still be a good investment for the hospitals. In the economic feasibility, the development cost in creating the system is evaluated against the ultimate benefit derived from the new systems. Financial benefits must equal or exceed the costs. The system is economically feasible. It does not require any additional hardware or software. Since the interface for this system is developed using the existing resources and technologies available at NIC, there is nominal expenditure and economic feasibility for certain.

2.2 DATA FLOW

A Data Flow has only one direction of flow between symbols. It may flow in both directions between a process and a data store to show a read before an update. The latter is usually indicated however by two separate arrows since these happen at different types. A data flow cannot go directly back to the same process it leads. There must be at least one other process that handles the data flow and produces some other data flow that returns the original data into the beginning process. A Data flow to a data store means update (delete or change).



2.3 STRATEGIC APPROACH TO SOFTWARE TESTING

The software engineering process can be viewed as a spiral. Initially system engineering defines the role of software and leads to software requirement analysis where the information domain, functions, behavior, performance, constraints and validation criteria for software are established. Moving inward along the spiral, we come to design and finally to coding. To develop computer software, we spiral in along streamlines that decrease the level of abstraction on each turn. Unit testing focuses verification effort on the smallest unit of software design, the module. The unit testing, we have is white box oriented and some modules the steps are conducted in parallel.

2.3.1 WHITE BOX TESTING

This type of testing ensures that

- All independent paths have been exercised at least once
- All logical decisions have been exercised on their true and false sides
- All loops are executed at their boundaries and within their operational bounds
- All internal data structures have been exercised to assure their validity.

To follow the concept of white box testing we have tested each form. we have created independently to verify that Data flow is correct, all conditions are exercised to check their validity, all loops are executed on their boundaries.

2.3.2 BASIC PATH TESTING

Established technique of flow graph with Cyclomatic complexity was used to derive test cases for all the functions. The main steps in deriving test cases were: Use the design of the code and draw correspondent flow graph. Determine the Cyclomatic complexity of resultant flow graph, using formula:

$$V(G)=E-N+2 \text{ or}$$

$$V(G)=P+1 \text{ or}$$

$$V(G)=\text{Number of Regions}$$

Where $V(G)$ is Cyclomatic complexity, E is the number of edges, N is the number of flow graph nodes, P is the number of predicate nodes. Determine the basis of set of linearly independent paths.

2.3.3 CONDITIONAL TESTING

In this part of the testing each of the conditions were tested to both true and false aspects. And all the resulting paths were tested. So that each path that may be generated on a particular condition is traced to uncover any possible errors.

2.3.4 DATA FLOW TESTING

This type of testing selects the path of the program according to the location of definition and use of variables. This kind of testing was used only when some local variables were declared. The definition-use chain method was used in this type of testing. These were particularly useful in nested statements.

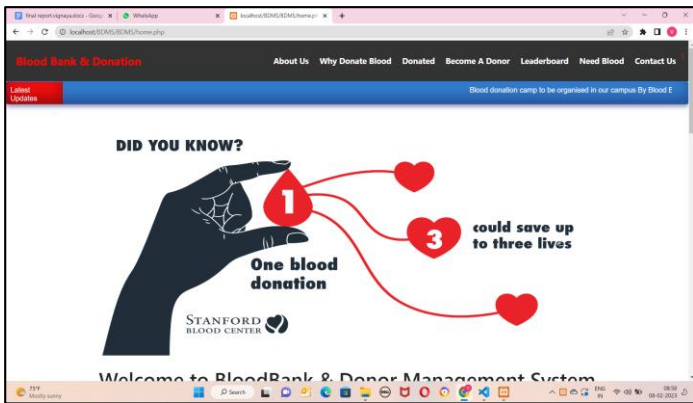
2.3.5 LOOP TESTING

In this type of testing all the loops are tested to all the limits possible. The following exercise was adopted for all loops:

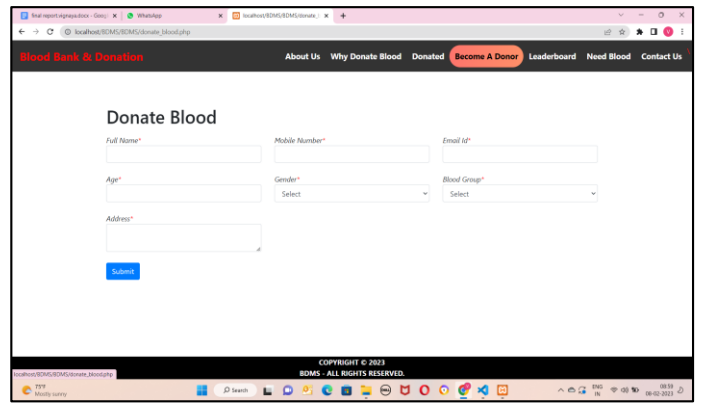
- All the loops were tested at their limits, just above them and just below them.
- All the loops were skipped at least once.
- For nested loops, test the inner most loop first and then work outwards.
- For concatenated loops the values of dependent loops were set with the help of connected loops.
- Unstructured loops were resolved into nested loops or concatenated loops and tested as above.

Each unit has been separately tested by the development team itself and all the input have been validated.

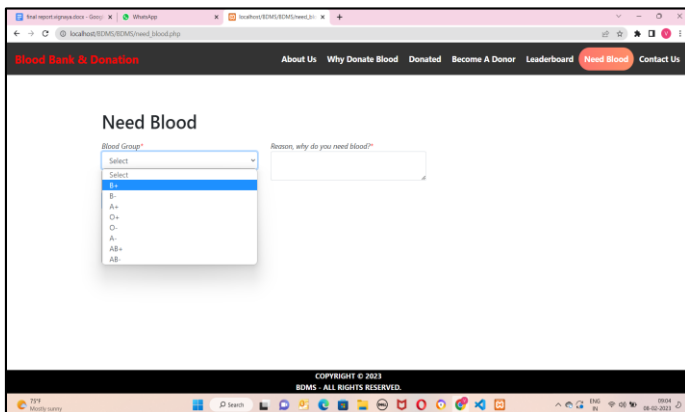
III. RESULT & PERFORMANCE ANALYSIS



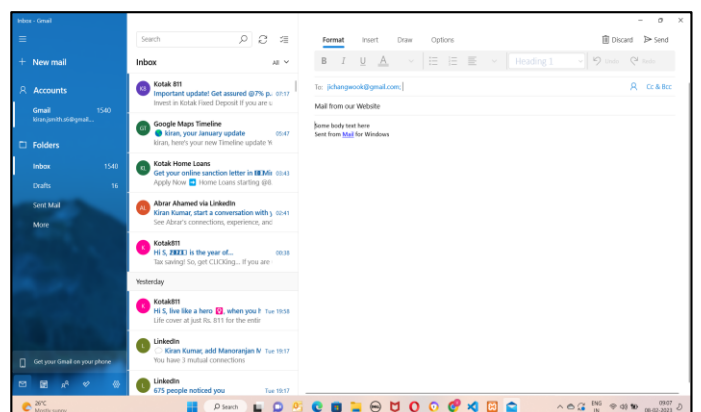
(fig 1.1 Home page)



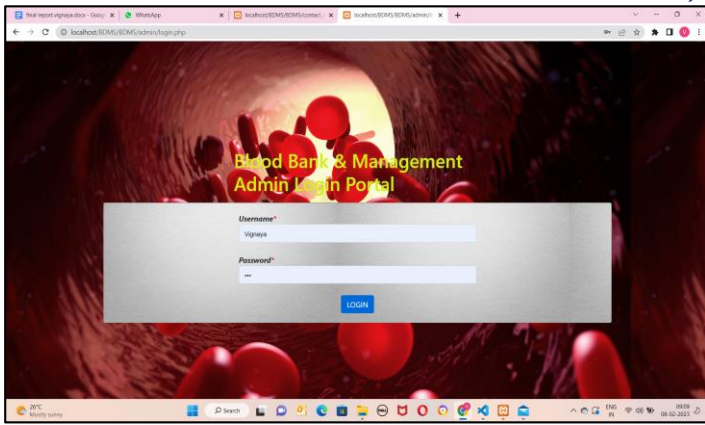
(fig 1.2 Donor Registration)



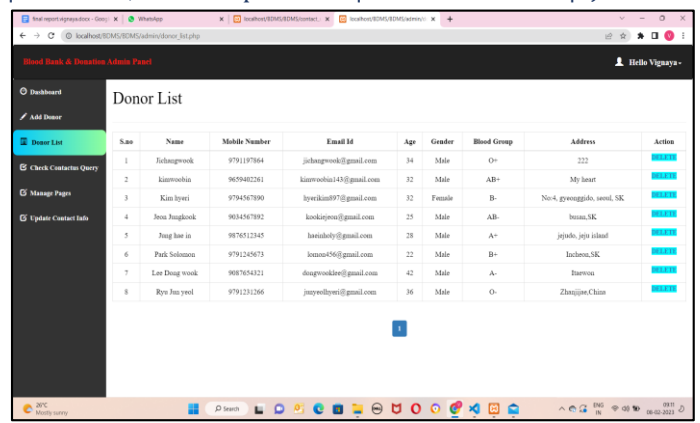
(fig 1.3 Requesting Blood)



(fig 1.4 Requesting Blood from the available Donor)



(Fig 1.5 Admin Login)



(fig 1.6 Donor Information & Status)

IV. CONCLUSION

It has been a great pleasure for me to work on this exciting and challenging project. This project proved good for me as it provided practical knowledge of not only programming in php and JavaScript web-based applications and to some extent Windows Application and SQL Server, but also about all handling procedures related with “Blood Bequeath Federal”. It also provides knowledge about the latest technology used in developing web enabled applications and client server technology that will be in great demand in future. This will provide better opportunities and guidance in future in developing projects independently.

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