INTERNSHIP REPORT

A report submitted as a part of the Internship in IT & ERP Department, Visakhapatnam Steel Plant

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RASHTRIYA ISPAT NIGAM LIMITED

VISAKHAPATNAM STEEL PLANT

Department of IT & ERP

BONAFIDE CERTIFICATE

This is to certify that Mr. K. REVANTH (Trainee No. 100027092), third year student of B. Tech in Computer Science Engineering with specialization in Cyber Security from INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, KOTTAYAM has completed a project titled “A PROJECT BASED ON PHP” at RINL, VISAKHAPATNAM STEEL PLANT from 11th December to 29th December and the Project done by him was found to beExcellent.

Signature of project guide

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MANAGER (IT&ERP)

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VISAKHAPATNAM STEEL PLANT

VISAKHAPATNAM-531021

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ABSTRACT

The project “Blood Bank Management System” is about managing blood donation processes efficiently. Its key modules include a Donors Page for donor registration and database management, a Blood Donations Page for recording donation details and maintaining inventory, a Requests Page for submitting and managing blood requests, and a Handed Over Page for tracking blood distribution. The system includes capabilities such as search and filtering options, automated alerts for events and low inventory, the creation of reports detailing donor statistics and distribution history, and secure authentication for users. Overall, it enhances the operational effectiveness of blood banks by facilitating organized donor records, inventory tracking, and prompt responses to blood requests.

This project has been developed using HTML, CSS, JavaScript, Bootstrap, Ajax, jQuery, and MySQL for database.

CANDIDATE DECLARATION

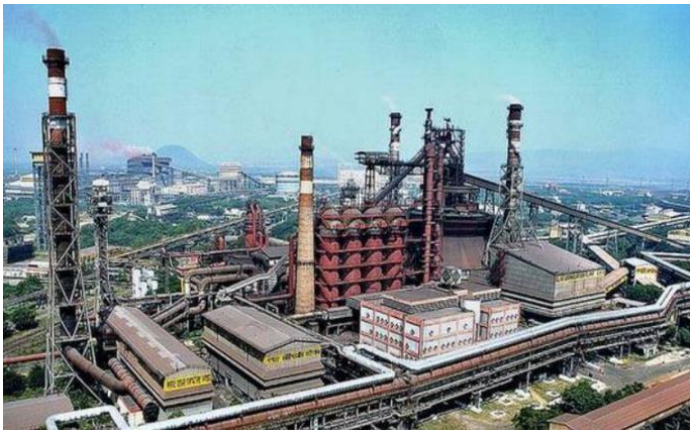
This is to declare that, I, K.Revanth have successfully completed this project under my guide that represent our own uniqueideas and have not been included from outside sources that might be declared plagiarized.

We further affirm that we followed all rules governing academic honesty and integrity and that nothing in our contribution was misrepresented, faked, or falsified. For ease of comprehension, we have made every effort to keep the report as real and straightforward as we can.

K. REVANTH

Trainee No.: 100027092

ABOUT THE ORGANISATION - RINL



India has long been aware of the skill of creating iron and steel. However, it was not until around 1900 that production began. The Iron and Steel industry in India is among the most important industries within the country. India surpassed Japan as the second largest steel producer in January 2019. According to the latest report by World Steel Association, the total crude steel production in India in 2022 was pegged at 125.3 million tonnes (MT), slightly higher than the previous year's 118.2 MT. China, the largest steel producer, saw its output fall to 1.01 billion tonnes in 2022 from 1.03 billion tonnes in 2021. Similarly, Japan, which occupies the third spot, saw its output at 89.2 MT in 2022, lower than the previous year's 96.3 MT.

The first shore-based Integrated Steel Plant in the nation is Rashtriya Ispat Nigam Limited's Visakhapatnam Steel Plant (RINL-VSP), sometimes referred to as "Vizag Steel" or the "Pride of Steel" and a significant Central PSU under The Ministry of Steel. The first coast-based steel plant in India, the Visakhapatnam Steel Plant, is situated 26 kilometres south-west of Visakhapatnam, the city of destiny. VSP, which is equipped with cutting-edge technology, has an installed capacity of 7.3 million tonnes of liquid steel per annum. Total automation, smooth integration, and effective upgrading are prioritised at VSP, resulting in a wide range of long and structural products to satisfy the exacting requirements of discriminating clients in India and beyond.

VSP has become the first integrated steel plant in the nation to get certification to all three international standards: OHSAS-18001 for occupational health and safety, ISO-9001 for quality management, and ISO-14001 for environmental management. The accreditation covers all operational, maintenance, and service units' quality systems in addition to purchase systems, training programs, and marketing activities dispersed among 4 regional marketing offices, 20 branch offices, and 22 stock yards around the nation.

VSP sells high-quality pig iron and related goods to South East Asia, the Middle East, Myanmar, Nepal, and Sri Lanka. RINL-VSP received the designation of "Star Trading House" from 1997 to 2000. VSP intends to maintain its position in the export business after establishing a reliable export market.

With a workforce of around 13,000 people, VSP has projected a labor productivity of 439 tons of liquid steel per worker per year in 2022-23, which is among the best in the nation and on par with global standards.

With a market share of roughly 10%, Vizag Steel, which is noted for its "Quality" and "Customer Service," is the market leader. It has been providing different grades of steel for the development of important national projects including metros, the power industry, and many others. RINL-VSP has exported finished goods to nations including the United States, United Arab Emirates, Thailand, Bangladesh, Nepal, and Sri Lanka, among others. Its products are entirely composed of virgin steel, with tolerances for both chemical composition and physical characteristics. RINL-VSP is the "Preferred steel maker" and has a vast marketing network extending over the nation.

IT & ERP DEPARTMENT

VSP is the first steel plant in India where computerization and integrated automation are planned. Almost all commercial and industrial operations are in some way automated by computers. All levels of staff involved in the operation and maintenance of the facility are intended to benefit from these computers and the associated automation systems. For the senior management to make both long- and short-term choices, they offer useful information.

The steel industry consists of a variety of intricate and extensive activities and processes. Additionally, quick order data processing, delivery to numerous manufacturing units, and collection and dissemination of technical and production data are required.

Since 1960, computers have been utilized in the steel industry for process automation and production management. VSP was designed with a significant level of computerization in keeping with current technological developments. The major goals of computerization in VSP are to help the operators handle repetitive tasks, maximize the use of scarce resources through real-time process control, and help with management of operations and production.

To effectively integrate planning and processes, three degrees of computerization and automation are planned for VSP. The highest level helps management make decisions by gathering, analyzing, and delivering production and management data in real time, while the lowest level helps the actual process operators by automating tasks that would otherwise be tedious for them. As a result, the structure is created to support the plant's operation and administration at all levels.

Using an optical fiber cable network, VSP has a gigabit Ethernet data communication network. On the major connections, this allows for

data transfer at a rate of 1000 Mbps. There are eight crucial zones that make up the total plant network. Of the eight zones, two are core switches situated at Central Computer Centre and the other is placed at Area Shop Office of Steel Melt Shop. These zones are connected by single mode type optical fibers. The last set of switches are the zonal switches found in the Coke Ovens, Sinter Plant, LMMM, and Central Stores. Additionally, 72 access switches that link to all of the workstations (about 1000 of them) through Multimode fiber optical cable.

Technologies like Classic asp, Html5, SQL are used. Different operating systems being used in VSP are AIX(IBM's version of Unix), 9LINUX (fedora core 10,11 and Ubuntu), Windows 2000server, Windows 2003 server, Windows 2008 server, Windows storage server, Novel networks.

Applications:

As VSP is using different technologies, the following applications are being run in VSP.

1. Materials Management System (MATS)
2. Human Resource Information System (HRIS)
3. Head Quarter (HQ) Sales Marketing System
4. Branch Sales Office (BSO) Marketing System
5. Financial Accounting System (FACT)
6. Production Planning and Control (PPC) System
7. Maintenance Management System
8. Raw materials Management System
9. Technical Doc's & Information System
10. Audit information Management System
11. Software Configuration Management System
12. Projects Management System

HYPERTEXT MARKUP LANGUAGE

HTML (Hyper Text Markup Language) is the most fundamental element of the internet. HTML is a straightforward language used to format texts that are seen in a web browser. The browser's main responsibility is to render documents in accordance with the HTML tags they contain and show them on the screen. We may publish material in a manner that is suitable for browser reading on or off the Internet by using HTML editors. This strategy has several advantages, and Office 97 supports HTML publishing. Any Office 97-compatible document may be converted to HTML format and published on a web server, either on the Internet or on a company intranet. By clicking on hyperlinks, users may find the information they're looking for.

Text-formatting tags, which are enclosed in a pair of angle brackets and typically come in pairs, make up HTML. The matching tags turn off a formatting option that is activated by the first tag. It is necessary to utilise the HTML markups in pairs. An "opening tag" and a "closing tag" must be specified. The closing tag starts with a "/" and ends with ">," whereas the starting tag is represented as ">."

Understanding basic HTML tags is important while learning HTML. Here are the HTML elements that are used more frequently than others. They are:

1. the heading <h1>-<h6> tags,
2. the <p> tag,
3. the <img /> tag,
4. the <a> tag

HTML documents

All HTML documents must start with a declaration which specifies the document type: <!DOCTYPE html>. The HTML document begins with <html> and ends with </html>. The main part of the HTML document is located between <body> and </body>.

HTML headings

The heading elements are used for structuring headings. There are six types of HTML headings starting from <h1> to <h6>.

HTML paragraphs

The <p> element is used for separating HTML paragraphs. The attributes of this tag are:

1. the source file (src)
2. the alternative text (alt)
3. width
4. height

HTML images

The <img /> tag is used for inserting HTML images.

HTML links

The <a> tag is used for inserting HTML links. You can specify the destination of the link with the help of href attribute.

HTML buttons

You can specify the HTML buttons with the <button> tag.

HTML lists

HTML lists are specified with the <ul> tag that is used for specifying an unordered list, or with the <ol> tag that is used to create an ordered list, followed by <li> tags.

HTML horizontal lines

The HTML <hr> tag breaks the page into different parts and with the help of a horizontal line, which runs from left to right edge of the page, creates horizontal margins. This is an empty tag.

HTML5

HTML5 is not only a new version of HTML language enriched with new elements and attributes, but a set of technologies for building more powerful and diverse web sites and applications, that support multimedia, interact with software interfaces, etc.

HTML5 Benefits

The main benefits of HTML5 are listed below:

1. HTML5 is supported by all modern browsers.
2. HTML5 is more device friendly. It is easy for use.
3. HTML5 can help creating attractive websites with CSS, JavaScript, etc.
4. HTML5 supports SVG (Scalable Vector Graphics - Wikipedia) and other virtual graphics. In earlier versions, the use of vector graphics was possible only in combination with such technologies as Flash, VML, etc.
5. The code becomes cleaner mainly due to replacing div tags with Semantic elements, which help better structure content of the web page and improve readability.
6. HTML5 supports geolocation, which makes it possible to determine the users' location.
7. The new standards were specified for playing multimedia (animation, audio, video) directly in the browser without having to install additional plug-ins.
8. Support for web storage introduced in HTML5 makes it possible to store large amounts of application data locally, without affecting your web application's performance. The data in local

storage will persist even when the user's browser is closed and reopened.

Disadvantages of HTML5:

1. It is supported only by modern browsers.
2. You must write long codes which is time-consuming.

HTML5 Content Models

In HTML5, the content of a web page can be divided into semantic groups, which describe its content. These groups are called content models. Each of these models describes the type of elements it contains. The content model can contain text and child elements. The element can belong to one or more content categories.

HTML5 content models are listed below:

1. Metadata content
2. Flow content
3. Sectioning content
4. Heading content
5. Phrasing content
6. Embedded content
7. Interactive content
8. Palpable content

Content models can overlap, and it means that elements are belonging to several categories in the meantime. For example, sectioning, heading, phrasing, embedded, interactive, and a part of metadata content refer to flow content. Metadata and interactive content in certain cases may refer to phrasing content.

There are also elements that are used for specific purposes, for example, for defining forms. Such kind of elements does not refer to any of the content mentioned above models.

Metadata content

Elements belonging to the metadata content category contain information about HTML documents, set up links to other resources, define the presentation, or the behavior of it. These elements are not displayed on the web page.

The elements of content model category are: <base> , <link> , <meta>, <noscript>, <script>, <style>, <template> and <title>.

Sectioning content

Elements belonging to the sectioning content are those creating independent sections in the structure of an HTML document (for example, header, footer, etc.) Note that each section could have its heading and outline.

The elements of sectioning content model are: <article>, <aside>, <nav> and <section>.

Heading content

Elements belonging to the sectioning content model create a section in the current outline that defines the scope of <header> elements, <footer> elements, and heading content.

The elements of heading content are: <h1>, <h2>, <h3>, <h4>, <h5>, <h6> and <hgroup>.

All the modern browsers support HTML5, automatically handling the unknown elements as inline elements. furthermore, it’s possible to “teach” the older browsers to handle such kinds of elements.

Semantic Elements as Block Elements

HTML5 specifies eight new semantic elements, and all of them are block-level elements. Here they are:

- HTML <header> tag
- HTML <section> tag
- HTML <footer> tag
- HTML <aside> tag
- HTML <nav> tag
- HTML <main> tag
- HTML <article> tag
- HTML <figure> tag

Set the CSS display property for the elements mentioned above, to ensure proper behavior in older browsers.

CSS

A style sheet language called Cascading Style Sheets (CSS) is used to describe how a document produced in a markup language like HTML is presented. The World Wide Web's foundational technologies, along with HTML and JavaScript, include CSS. Layout, colour, and font choices may all be separated from text and display using CSS. By declaring the pertinent CSS in a separate file, this separation can increase the accessibility of the content, give more freedom and control in the specification of presentation features, and allow numerous web pages to share formatting.CSS file, which makes the structure material simpler and less repetitive; and enable. To increase the speed at which pages that share a CSS file and its formatting load, the CSS file should be cached.

CSS saves a lot of work. It can control the layout of several pages all at once. You can add CSS to HTML elements in 3 ways:

1. Inline, where the style attribute is used in HTML elements.
2. Internal, where the <style> element is used in the <head> section.
3. External, where an external CSS file is used.

Inline CSS

An inline CSS applies a particular style to a single HTML element. Here the style attribute of an HTML element is used.

Internal CSS

An internal CSS specifies a style for a single HTML page. It is defined in the <head> element of an HTML page, inside of a <style> tag.

External CSS

An external style sheet specifies the style for multiple HTML pages. It can change the look of the whole website by changing just one file. For using an external style sheet, you should add a link to it inside of the element of the HTML page.

CSS Fonts

The CSS color property describes the color of the text content.

The CSS font-family property defines the font of the text content.

The CSS font-size property defines the text size.

CSS Border

The CSS border property sets values to all four sides of an element.

CSS Padding

The CSS padding property specifies padding (space) between the text and the border.

CSS Margin

The CSS margin property creates space around the element.

The id Attribute

The id attribute specifies a specific style for one element.

The Class Attribute

The class attribute is used to specify a style for special kinds of elements.

JAVASCRIPT

JavaScript, often abbreviated as JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. As of 2023, 98.7% of websites use JavaScript on the client side for webpage behaviour, often incorporating third-party libraries. All major web browsers have a dedicated JavaScript engine to execute the code on users' devices.

JavaScript is a high-level, often just-in-time compiled language that conforms to the ECMAScript standard. It has dynamic typing, prototype-based object-orientation, and first-class functions. It is multi-paradigm, supporting event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model (DOM).

The ECMAScript standard does not include any input/output (I/O), such as networking, storage, or graphics facilities. In practice, the web browser or other runtime system provides JavaScript APIs for I/O.

JavaScript engines were originally used only in web browsers, but are now core components of some servers and a variety of applications. The most popular runtime system for this usage is Node.js.

Although Java and JavaScript are similar in name, syntax, and respective standard libraries, the two languages are distinct and differ greatly in design.

Web libraries and frameworks

Over 80% of websites use a third-party JavaScript library or web framework for their client-side scripting.

jQuery

jQuery is by far the most popular client-side library, used by over 75% of websites. jQuery is a fast and lightweight JavaScript library designed to simplify client-side scripting in web development. It provides a set of easy-to-use abstractions and shortcuts for common JavaScript tasks, making it more efficient and convenient to manipulate the Document Object Model (DOM), handle events, create animations, and manage AJAX interactions across various web browsers. jQuery simplifies the process of writing JavaScript code, offering a concise syntax and a wide range of pre-built functions. Its popularity lies in its ability to enhance the ease and speed of web development by abstracting complexities and providing a consistent approach to cross-browser compatibility.

AJAX

Ajax, which stands for Asynchronous JavaScript and XML, is a web development technique that allows for the asynchronous exchange of data between a web browser and a server. Unlike traditional web page interactions, where the entire page is refreshed upon user action, Ajax enables specific parts of a web page to be updated without requiring a full reload. This results in a more dynamic and responsive user experience. Ajax utilizes a combination of technologies, including HTML, CSS, JavaScript, and XML or JSON for data interchange. Through asynchronous requests, Ajax allows web applications to fetch and send data to the server in the background, facilitating real-time updates and a smoother, more interactive user interface.

BOOTSTRAP

Bootstrap is a popular open-source front-end framework for web development. Developed by Twitter, it provides a collection of pre-designed and pre-built components, including HTML, CSS, and JavaScript, to streamline the process of creating responsive and visually appealing websites. Bootstrap simplifies tasks such as layout structuring, navigation bar creation, form styling, and more, by offering a consistent and mobile-friendly design. It utilizes a grid system that adapts to different screen sizes and devices, ensuring a seamless user experience across desktops, tablets, and smartphones. With its extensive documentation and easy-to-use classes, Bootstrap is widely adopted by developers to expedite the development process and maintain a cohesive and professional look for their web applications.

INTRODUCTION TO DBMS

A Database Management System (DBMS) is a software system that is designed to manage and organize data in a structured manner. It allows users to create, modify, and query a database, as well as manage the security and access controls for that database.

<u>Some key features of a DBMS include:</u>

- Data modeling: A DBMS provides tools for creating and modifying data models, which define the structure and relationships of the data in a database.
- Data storage and retrieval: A DBMS is responsible for storing and retrieving data from the database, and can provide various methods for searching and querying the data.
- Concurrency control: A DBMS provides mechanisms for controlling concurrent access to the database, to ensure that multiple users can access the data without conflicting with each other.
- Data integrity and security: A DBMS provides tools for enforcing data integrity and security constraints, such as constraints on the values of data and access controls that restrict who can access the data.
- Backup and recovery: A DBMS provides mechanisms for backing up and recovering the data in the event of a system failure.
- DBMS can be classified into two types: Relational Database Management System (RDBMS) and Non-Relational Database Management System (NoSQL or Non-SQL)
- RDBMS: Data is organized in the form of tables and each table has a set of rows and columns. The data is related to each other through primary and foreign keys.

- NoSQL: Data is organized in the form of key-value pairs, document, graph, or column-based. These are designed to handle large-scale, high-performance scenarios.

Database is a collection of interrelated data which helps in the efficient retrieval, insertion, and deletion of data from the database and organizes the data in the form of tables, views, schemas, reports, etc. For Example, a university database organizes the data about students, faculty, admin staff, etc. which helps in the efficient retrieval, insertion, and deletion of data from it.

There are four types of Data Languages

- Data Definition Language (DDL)
- Data Manipulation Language(DML)
- Data Control Language(DCL)
- Transactional Control Language(TCL)

DDL is the short name for Data Definition Language, which deals with database schemas and descriptions, of how the data should reside in the database.

CREATE: to create a database and its objects like (table, index, views, store procedure, function, and triggers)

ALTER: alters the structure of the existing database

DROP: delete objects from the database

TRUNCATE: remove all records from a table, including all spaces allocated for the records are removed

COMMENT: add comments to the data dictionary

RENAME: rename an object

DML is the short name for Data Manipulation Language which deals with data manipulation and includes most common SQL statements

such SELECT, INSERT, UPDATE, DELETE, etc., and it is used to store, modify, retrieve, delete and update data in a database.

SELECT: retrieve data from a database

INSERT: insert data into a table

UPDATE: updates existing data within a table

DELETE: Delete all records from a database table

MERGE: UPSERT operation (insert or update)

CALL: call a PL/SQL or Java subprogram

EXPLAIN PLAN: interpretation of the data access path

LOCK TABLE: concurrency Control

DCL is short for Data Control Language which acts as an access specifier to the database. (basically to grant and revoke permissions to users in the database.

GRANT: grant permissions to the user for running DML(SELECT, INSERT, DELETE) commands on the table

REVOKE: revoke permissions to the user for running DML(SELECT, INSERT, DELETE) command on the specified table

TCL is short for Transactional Control Language which acts as an manager for all types of transactional data and all transactions.

Some of the commands of TCL are

- Roll Back: Used to cancel or Undo changes made in the database
- Commit: It is used to apply or save changes in the database
- Save Point: It is used to save the data on the temporary basis in the database

Database Management System: The software which is used to manage databases is called Database Management System (DBMS). For

Example, MySQL, Oracle, etc. are popular commercial DBMS used in different applications.

DBMS allows users the following tasks:

- Data Definition: It helps in the creation, modification, and removal of definitions that define the organization of data in the database.
- Data Updation: It helps in the insertion, modification, and deletion of the actual data in the database.
- Data Retrieval: It helps in the retrieval of data from the database which can be used by applications for various purposes.
- User Administration: It helps in registering and monitoring users, enforcing data security, monitoring performance, maintaining data integrity, dealing with concurrency control, and recovering information corrupted by unexpected failure.

Paradigm Shift from File System to DBMS

File System manages data using files on a hard disk. Users are allowed to create, delete, and update the files according to their requirements. Let us consider the example of file-based University Management System. Data of students is available to their respective Departments, Academics Section, Result Section, Accounts Section, Hostel Office, etc. Some of the data is common for all sections like Roll No, Name, Father Name, Address, and Phone number of students but some data is available to a particular section only like Hostel allotment number which is a part of the hostel office. Let us discuss the issues with this system:

- Redundancy of data: Data is said to be redundant if the same data is copied at many places. If a student wants to change their Phone number, he or she has to get it updated in various sections. Similarly, old records must be deleted from all sections representing that student.

- Inconsistency of Data: Data is said to be inconsistent if multiple copies of the same data do not match each other. If the Phone number is different in Accounts Section and Academics Section, it will be inconsistent. Inconsistency may be because of typing errors or not updating all copies of the same data.
- Difficult Data Access: A user should know the exact location of the file to access data, so the process is very cumbersome and tedious. If the user wants to search the student hostel allotment number of a student from 10000 unsorted students' records, how difficult it can be.
- Unauthorized Access: File Systems may lead to unauthorized access to data. If a student gets access to a file having his marks, he can change it in an unauthorized way.
- No Concurrent Access: The access of the same data by multiple users at the same time is known as concurrency. The file system does not allow concurrency as data can be accessed by only one user at a time.
- No Backup and Recovery: The file system does not incorporate any backup and recovery of data if a file is lost or corrupted.

ADVANTAGES OR DISADVANTAGES:

Advantages of using a DBMS:

- Data organization: A DBMS allows for the organization and storage of data in a structured manner, making it easy to retrieve and query the data as needed.
- Data integrity: A DBMS provides mechanisms for enforcing data integrity constraints, such as constraints on the values of data and access controls that restrict who can access the data.
- Concurrent access: A DBMS provides mechanisms for controlling concurrent access to the database, to ensure that multiple users can access the data without conflicting with each other.

- Data security: A DBMS provides tools for managing the security of the data, such as controlling access to the data and encrypting sensitive data.
- Backup and recovery: A DBMS provides mechanisms for backing up and recovering the data in the event of a system failure.
- Data sharing: A DBMS allows multiple users to access and share the same data, which can be useful in a collaborative work environment.

Disadvantages of using a DBMS:

- Complexity: DBMS can be complex to set up and maintain, requiring specialized knowledge and skills.
- Performance overhead: The use of a DBMS can add overhead to the performance of an application, especially in cases where high levels of concurrency are required.
- Scalability: The use of a DBMS can limit the scalability of an application, since it requires the use of locking and other synchronization mechanisms to ensure data consistency.
- Cost: The cost of purchasing, maintaining and upgrading a DBMS can be high, especially for large or complex systems.
- Limited use cases: Not all use cases are suitable for a DBMS, some solutions don't need high reliability, consistency or security and may be better served by other types of data storage.

These are the main reasons which made a shift from file system to DBMS. Also, see A Database Management System (DBMS) is a software system that allows users to create, maintain, and manage databases. It is a collection of programs that enables users to access and manipulate data in a database. A DBMS is used to store, retrieve, and manipulate data in a way that provides security, privacy, and reliability.

Some of the key features of a DBMS include:

- Data Definition: A DBMS allows users to define the structure of the database, including the tables, fields, and relationships between tables.
- Data Manipulation: A DBMS allows users to insert, update, and delete data in the database, as well as retrieve data using queries.
- Data Security: A DBMS provides security features to prevent unauthorized access to the database and to protect the data from theft, loss, or corruption.
- Data Integrity: A DBMS provides mechanisms to maintain the accuracy and consistency of the data in the database, including enforcing constraints, such as unique keys, foreign keys, and check constraints.
- Data Backup and Recovery: A DBMS provides mechanisms to back up the data in the database and to recover data in case of data loss or corruption.

There are several types of DBMS, including:

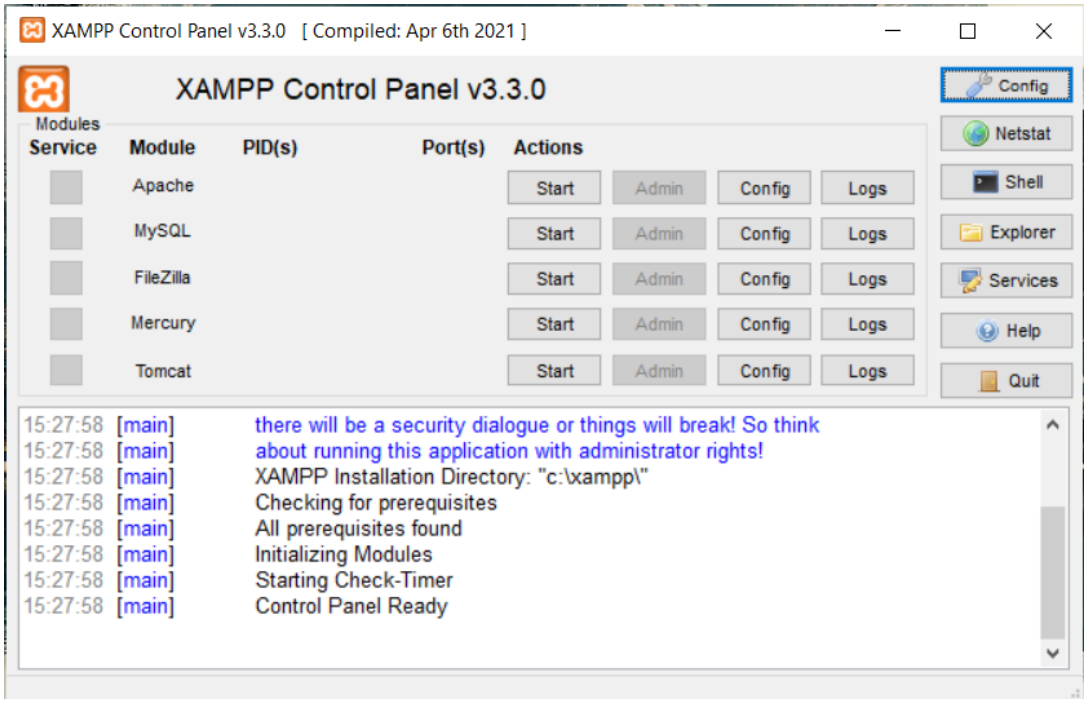
- Relational DBMS (RDBMS): An RDBMS stores data in tables with rows and columns, and uses SQL (Structured Query Language) to manipulate the data.
- Object-Oriented DBMS (OODBMS): An OODBMS stores data as objects, which can be manipulated using object-oriented programming languages.
- NoSQL DBMS: A NoSQL DBMS stores data in non-relational data structures, such as key-value pairs, document-based models, or graph models.

INTRODUCTION TO MYSQL

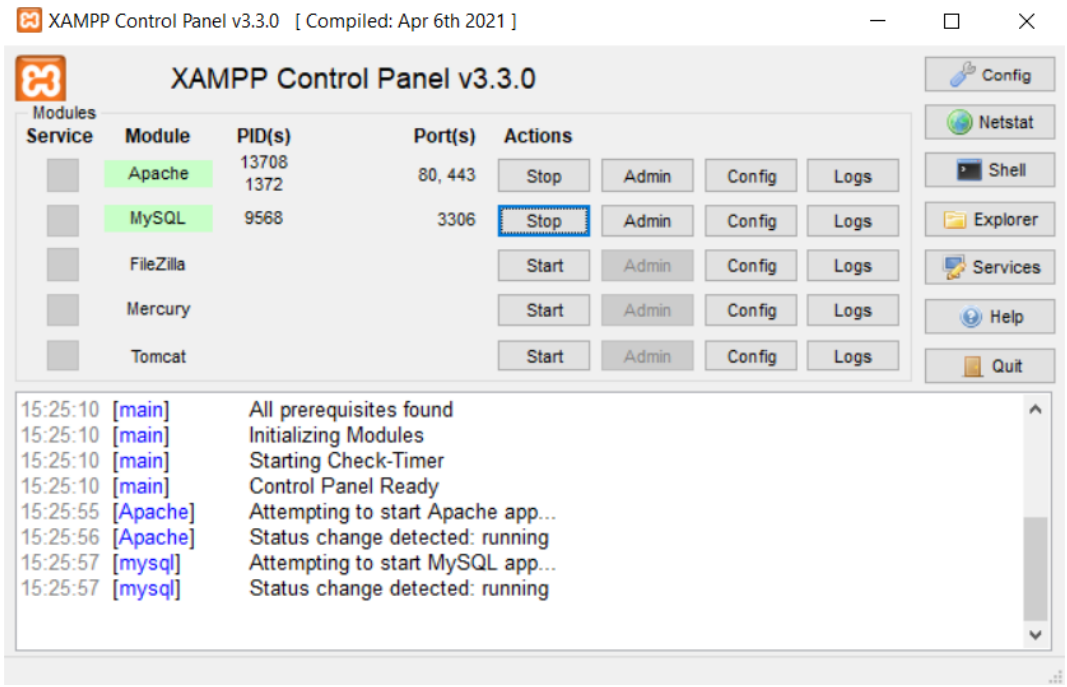
MySQL is an open-source relational database management system (RDBMS) that plays a fundamental role in the field of database management. Developed by Oracle Corporation, MySQL is known for its reliability, scalability, and ease of use. It employs the SQL (Structured Query Language) for managing and manipulating data within a database. MySQL is widely used in various web applications and software development projects as it offers robust data storage and retrieval capabilities. It supports transactional and non-transactional storage engines, providing flexibility to developers based on their specific requirements. Additionally, MySQL is compatible with different programming languages and platforms, making it a versatile choice for building dynamic and data-driven applications. Its community edition is freely available, encouraging widespread adoption and contributing to its popularity in the software development community.

PROJECT OVERVIEW

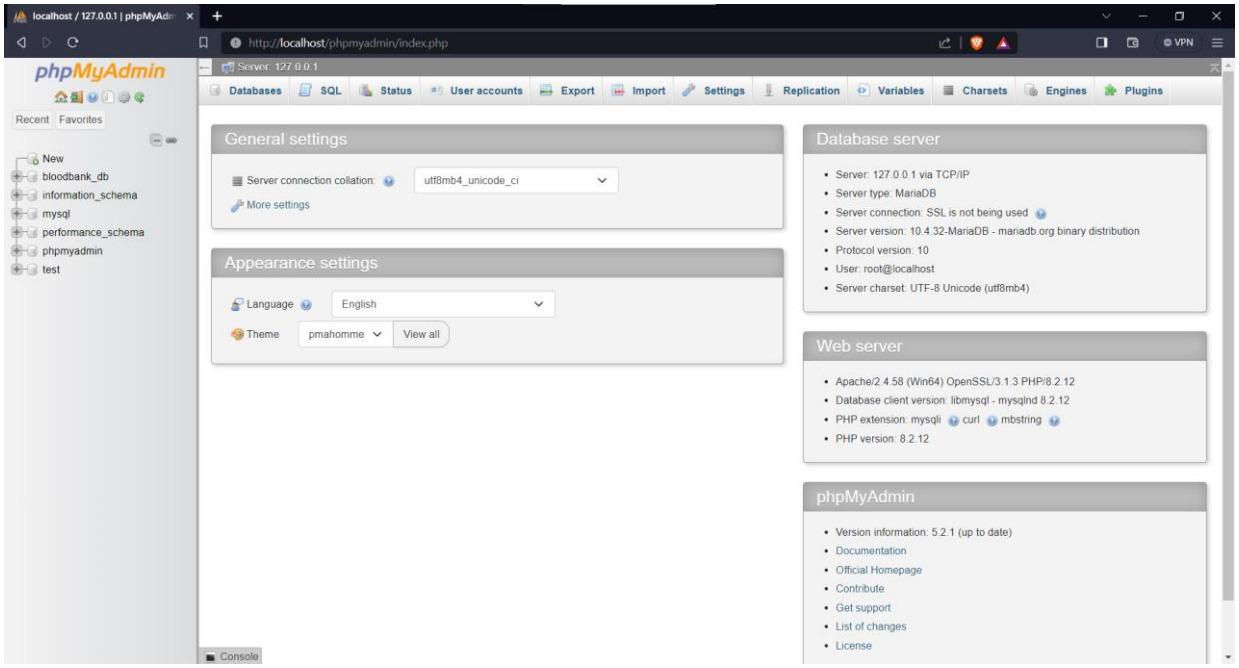
First, open XAMPP control panel. You will see a window as below.



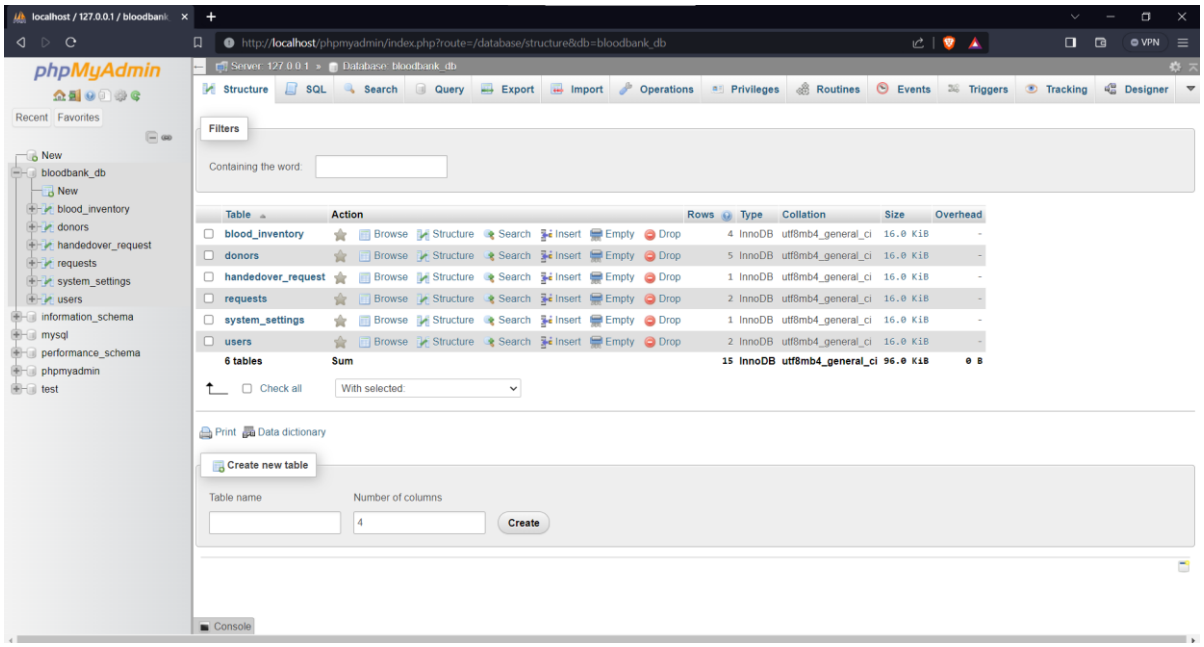
Then Start both Apache and MySQL modules as shown:



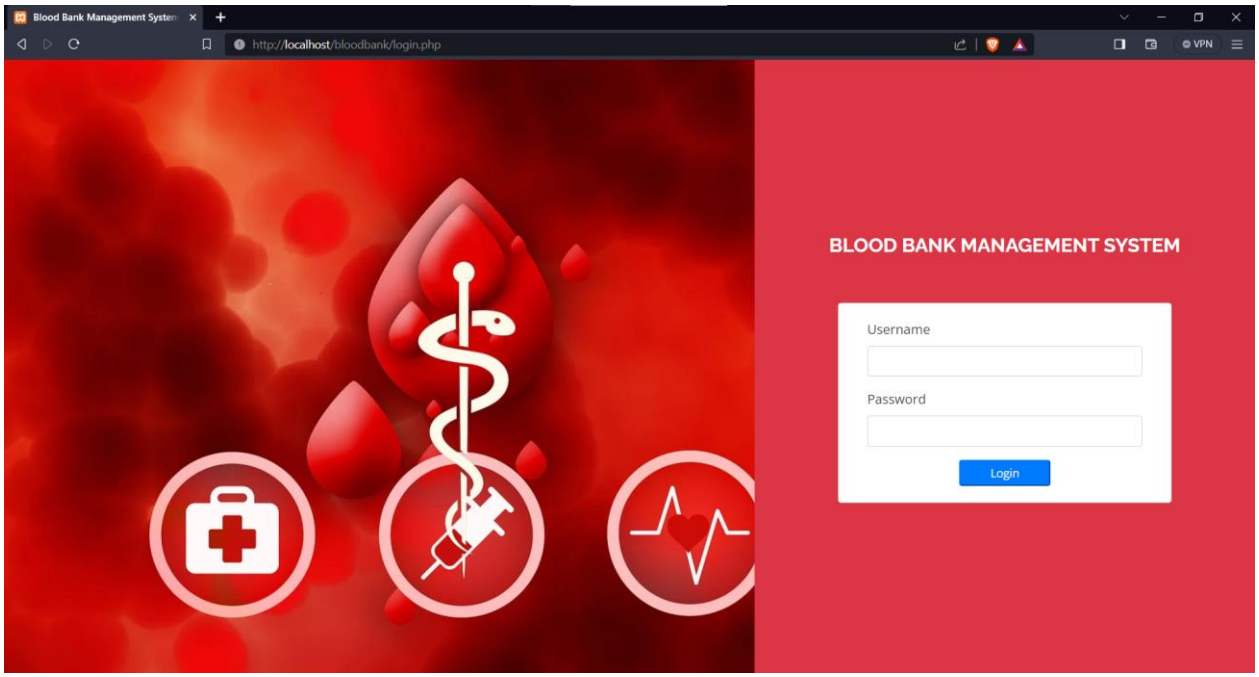
Now, go to a search engine and type ‘localhost/phpmyadmin’. You will be Directed to this below page. Here we call see all the data from the database.

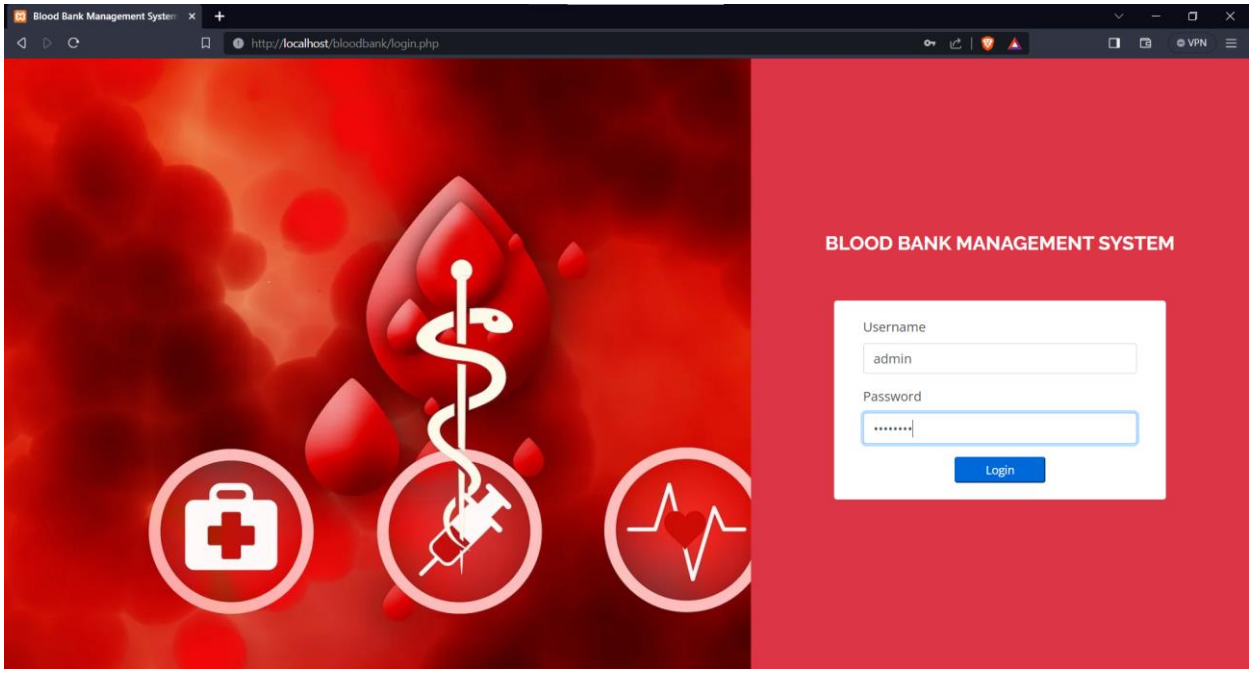


Click on ‘bloodbank_db’ to see the database of this project.

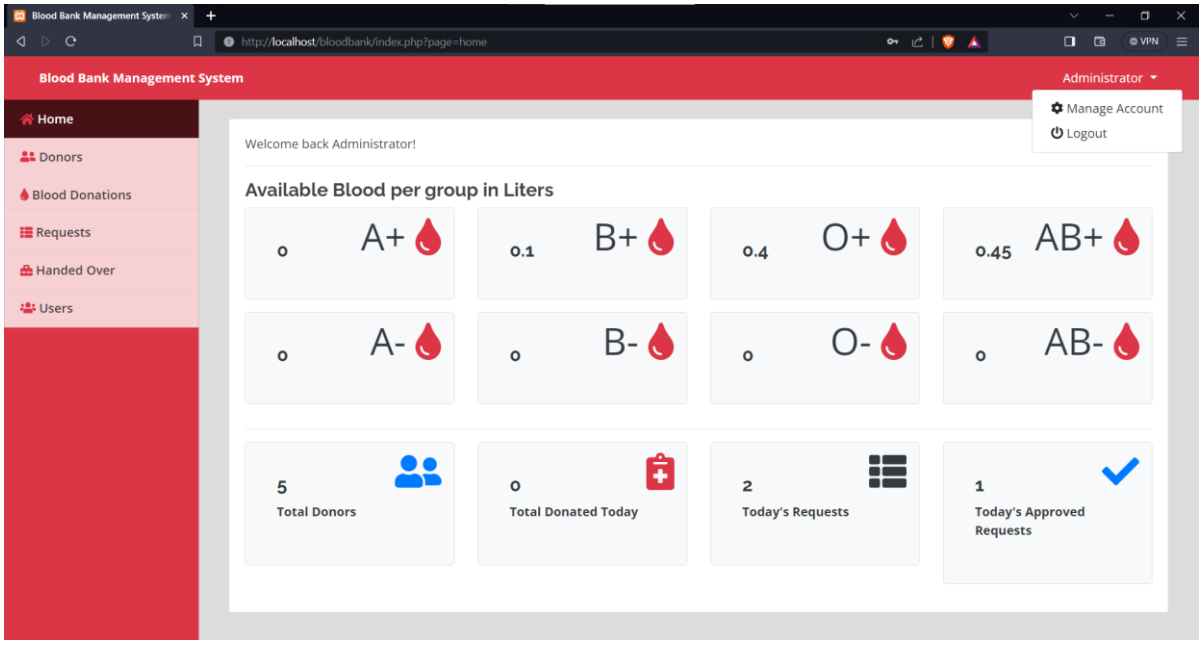


Now, open another tab and type ‘localhost/bloodbank/login.php’ to go to this login page. The users can enter their valid credentials to login to this management system correctly.

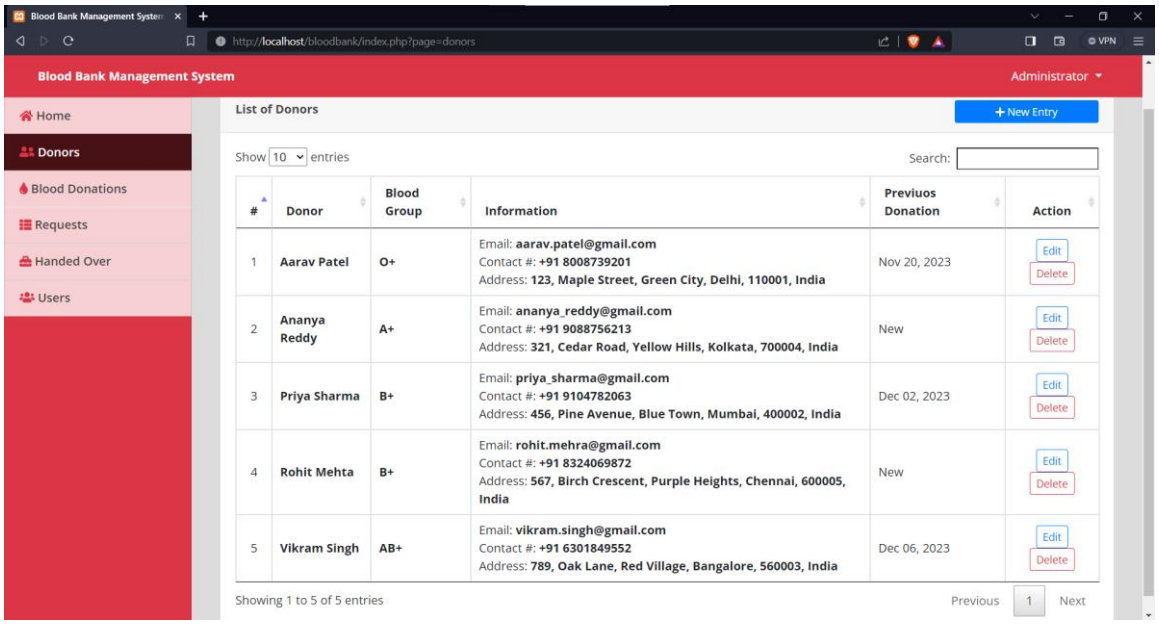


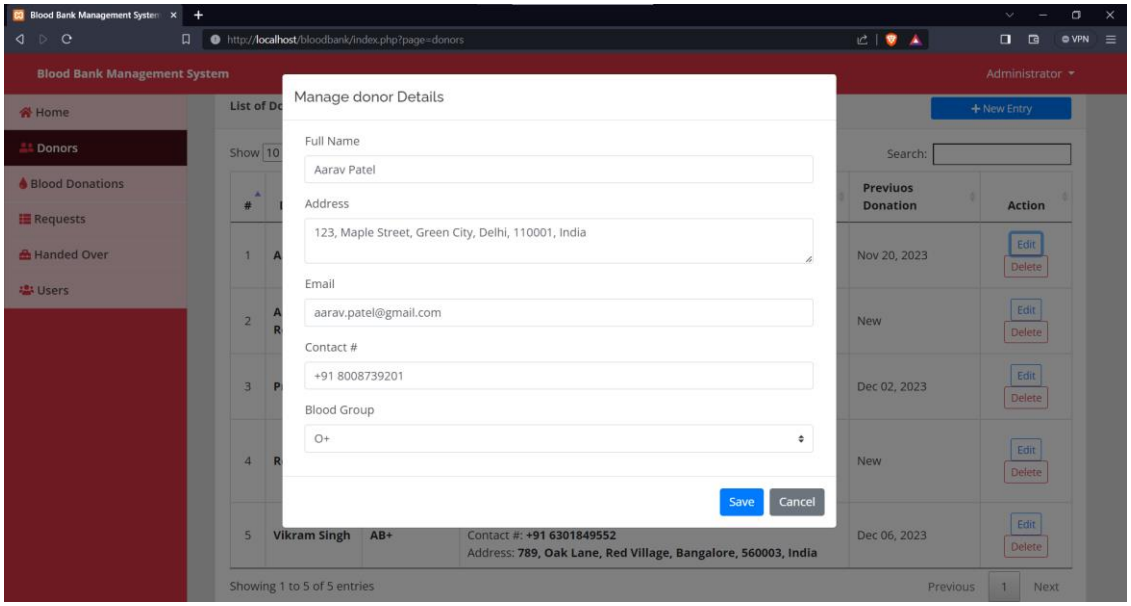


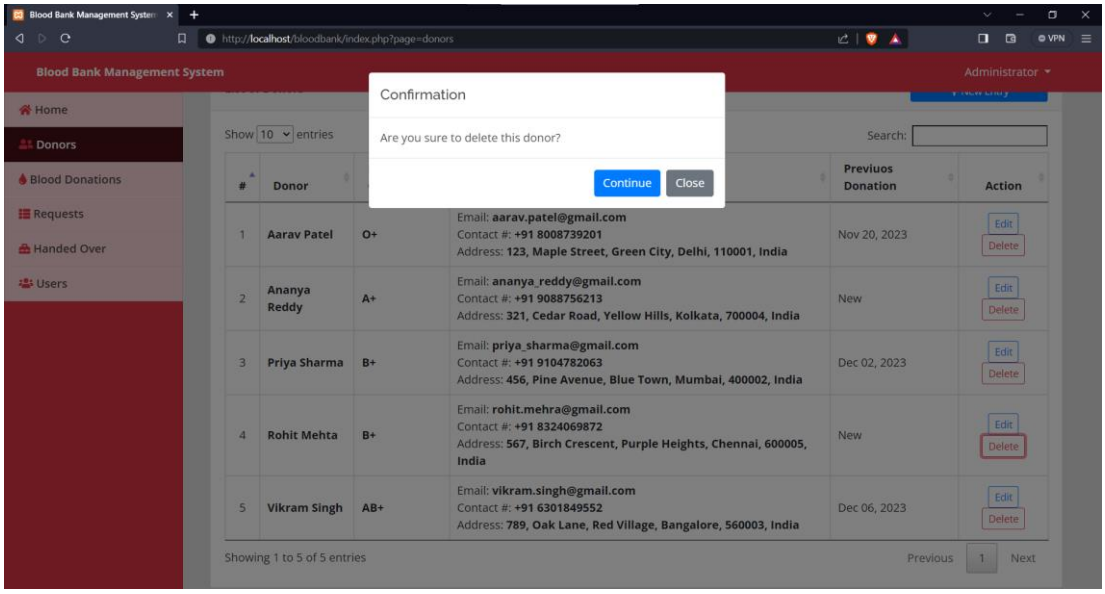
This is the landing page, i.e, **Home page**. All the available blood along with the activities on that day will be displayed on this page. Here we can go to all the different pages like Donors page, Blood Donations page, Requests page, Handed Over page, and Users page.

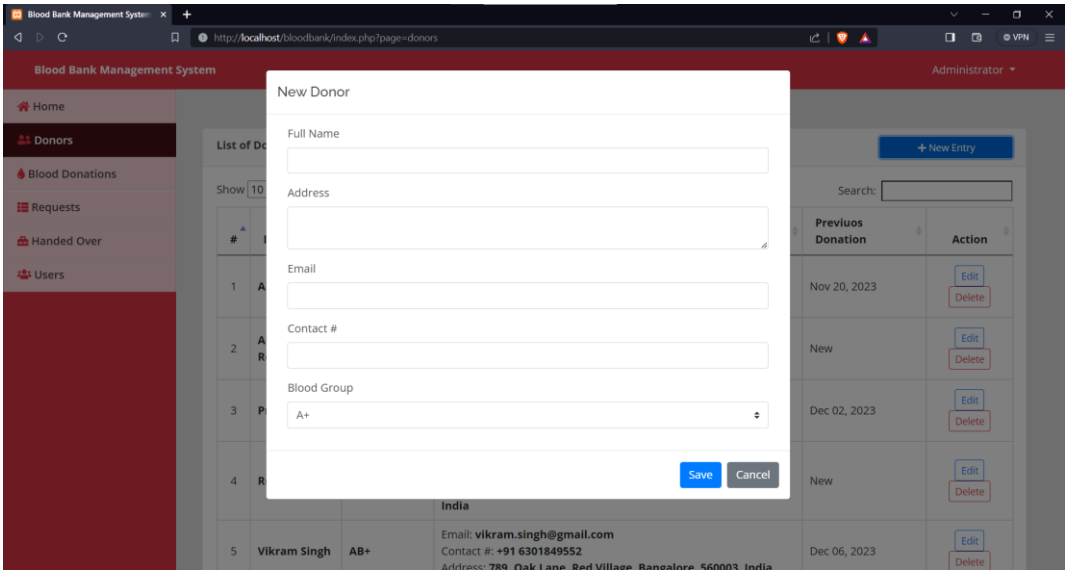


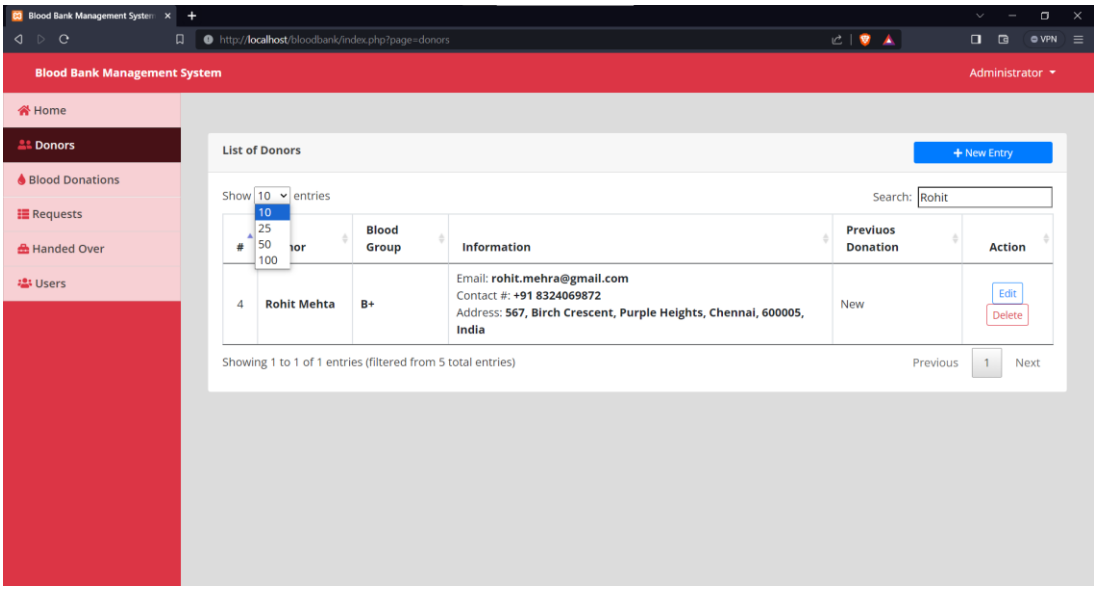
If we Click on ‘Donors’ we will be directed to this below **Donors Page.** Here we Can see the list of donors. Also, we can edit, delete the donors data, check the donor by searching his name, or we can also add new donors data.



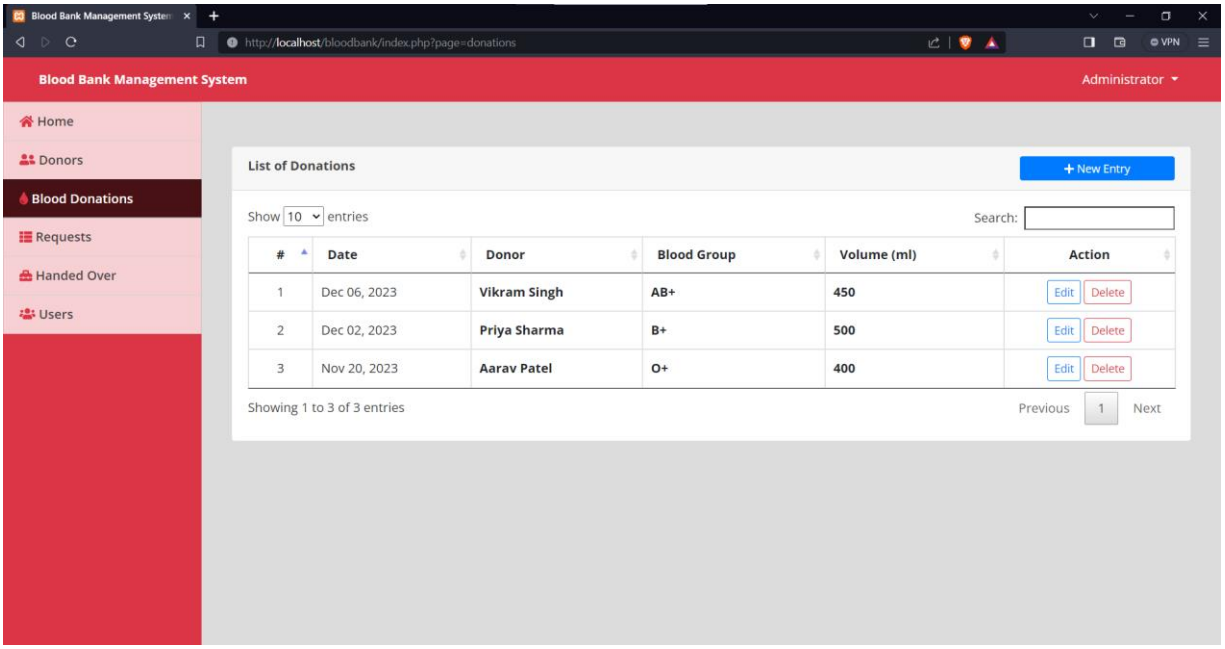

Blood Bank Management System
Administrator
Home
Donors
Blood Donations
Requests
Handed Over
Users
Manage donor Details
Full Name
Aarav Patel
Address
123, Maple Street, Green City, Delhi, 110001, India
Email
aarav.patel@gmail.com
Contact #
+91 8008739201
Blood Group
O+
Save
Cancel
+ New Entry
Search:
Previuos Donation
Action
Edit
Delete
Nov 20, 2023
New
Dec 02, 2023
New
5 Vikram Singh AB+
Contact #: +91 6301849552
Address: 789, Oak Lane, Red Village, Bangalore, 560003, India
Dec 06, 2023
Showing 1 to 5 of 5 entries
Previous
1
Next

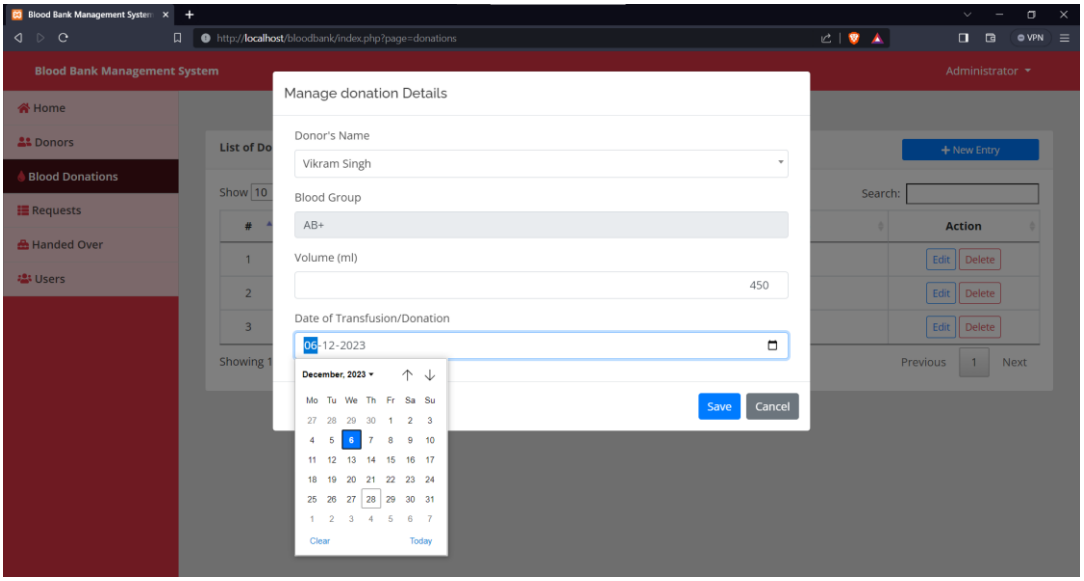

Blood Bank Management System
Administrator
Confirmation
Are you sure to delete this donor?
Continue
Close
Show 10 entries
Search:
Donor
Previuos Donation
Action
1 Aarav Patel O+
Email: aarav.patel@gmail.com
Contact #: +91 8008739201
Address: 123, Maple Street, Green City, Delhi, 110001, India
Nov 20, 2023
2 Ananya Reddy A+
Email: ananya_reddy@gmail.com
Contact #: +91 9088756213
Address: 321, Cedar Road, Yellow Hills, Kolkata, 700004, India
New
3 Priya Sharma B+
Email: priya_sharma@gmail.com
Contact #: +91 9104782063
Address: 456, Pine Avenue, Blue Town, Mumbai, 400002, India
Dec 02, 2023
4 Rohit Mehta B+
Email: rohit.mehra@gmail.com
Contact #: +91 8324069872
Address: 567, Birch Crescent, Purple Heights, Chennai, 600005, India
New
5 Vikram Singh AB+
Email: vikram.singh@gmail.com
Contact #: +91 6301849552
Address: 789, Oak Lane, Red Village, Bangalore, 560003, India
Dec 06, 2023
Showing 1 to 5 of 5 entries
Previous
1
Next

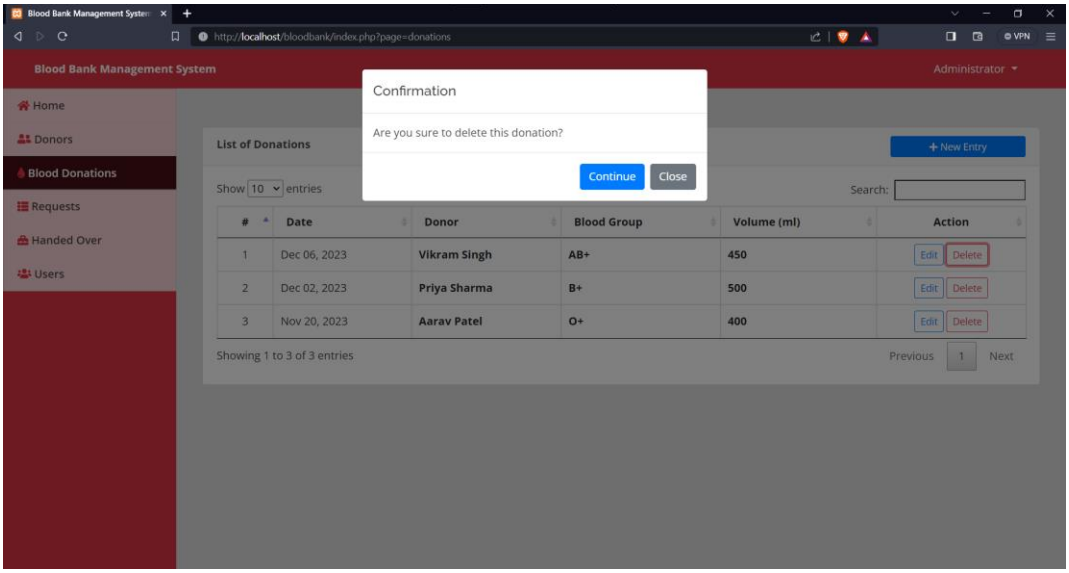

Blood Bank Management System
Administrator
New Donor
Full Name
Address
Email
Contact #
Blood Group
A+
Save
Cancel
+ New Entry
Search:
Previuos Donation
Action
Nov 20, 2023
New
Dec 02, 2023
New
India
5 Vikram Singh AB+
Email: vikram.singh@gmail.com
Contact #: +91 6301849552
Dec 06, 2023

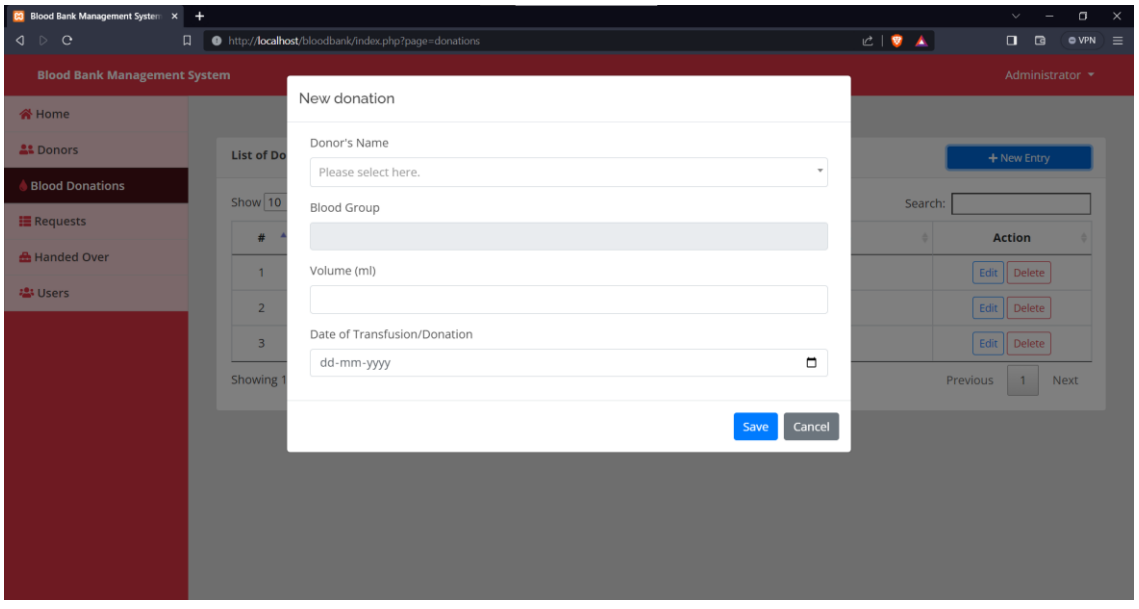


Next, if we click on 'Blood Donations' on the right, we will be redirected to **Blood Donations page**. Here, we can see the details of the blood donations done by the people. We can edit the data, search for the name, delete it or even add new blood donation details also.

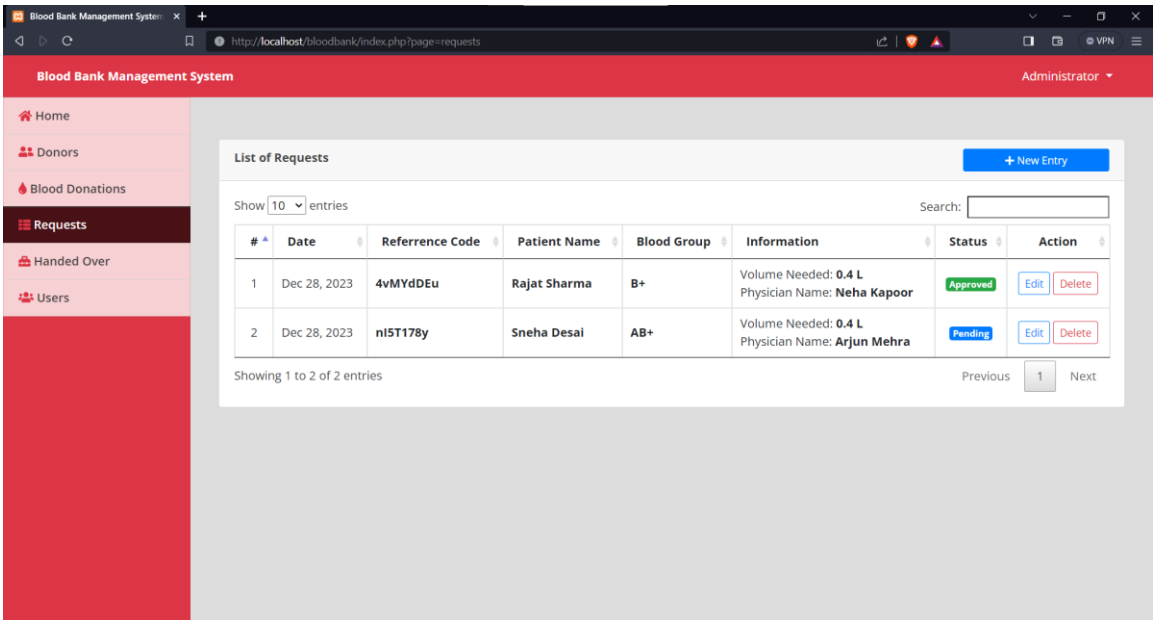


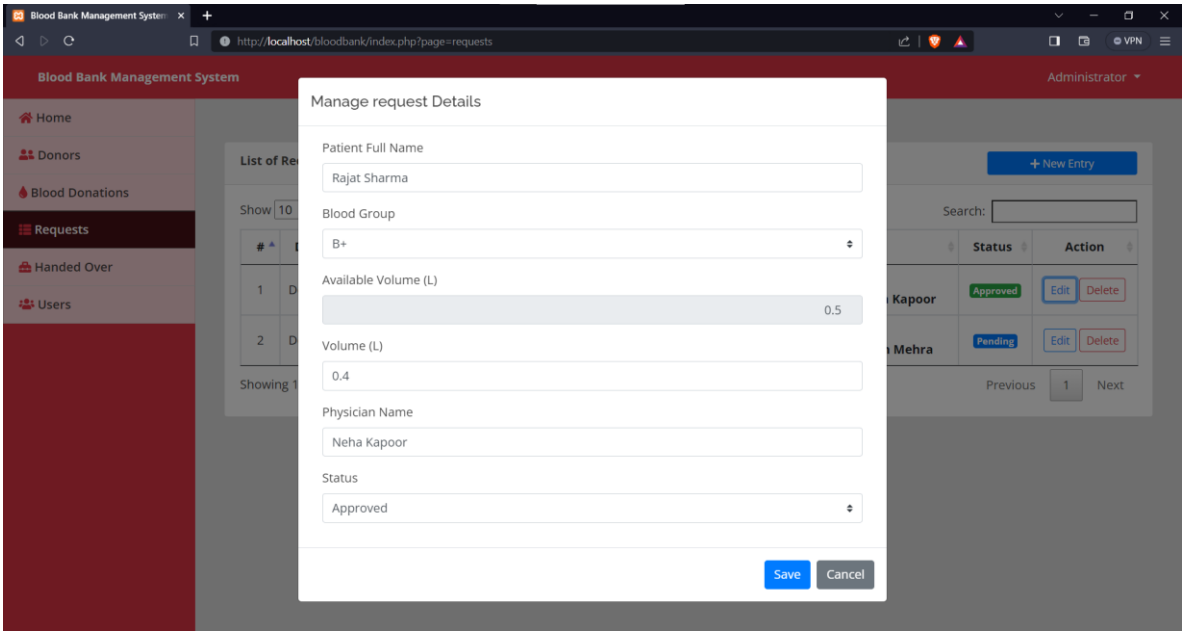

Blood Bank Management System
http://localhost/bloodbank/index.php?page=donations
Blood Bank Management System
Administrator
Home
Donors
Blood Donations
Requests
Handed Over
Users
Manage donation Details
Donor's Name
Vikram Singh
Blood Group
AB+
Volume (ml)
450
Date of Transfusion/Donation
06-12-2023
December, 2023
Save
Cancel
+ New Entry
Search:
Action
Edit
Delete
Previous
Next

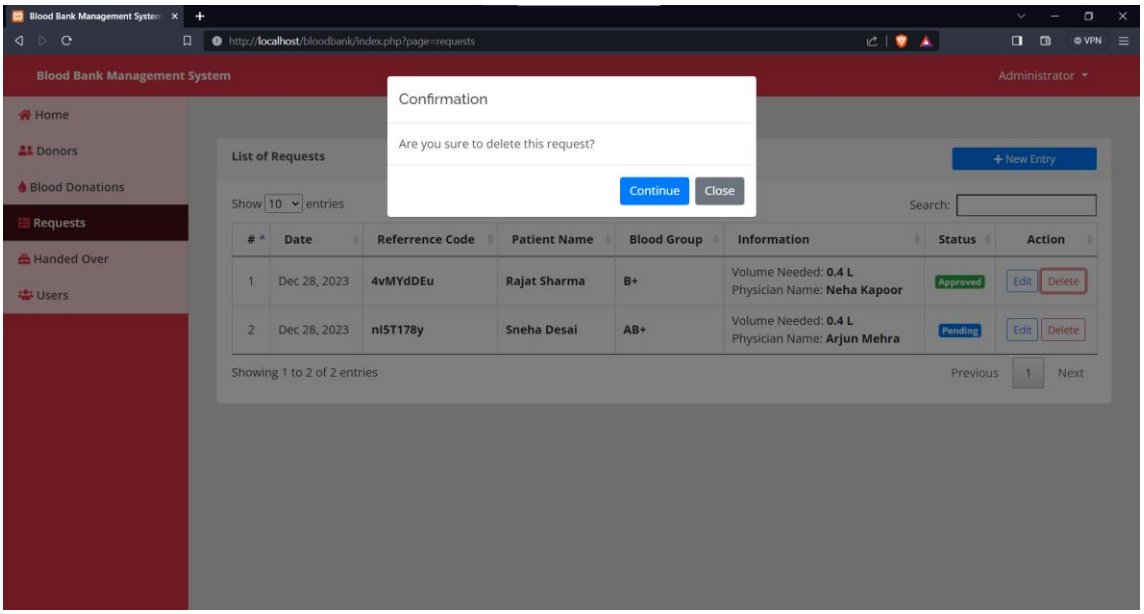

Blood Bank Management System
http://localhost/bloodbank/index.php?page=donations
Blood Bank Management System
Administrator
Home
Donors
Blood Donations
Requests
Handed Over
Users
Confirmation
Are you sure to delete this donation?
Continue
Close
List of Donations
+ New Entry
Show 10 entries
Search:
Date Donor Blood Group Volume (ml) Action
1 Dec 06, 2023 Vikram Singh AB+ 450 Edit Delete
2 Dec 02, 2023 Priya Sharma B+ 500 Edit Delete
3 Nov 20, 2023 Aarav Patel O+ 400 Edit Delete
Showing 1 to 3 of 3 entries
Previous
1
Next

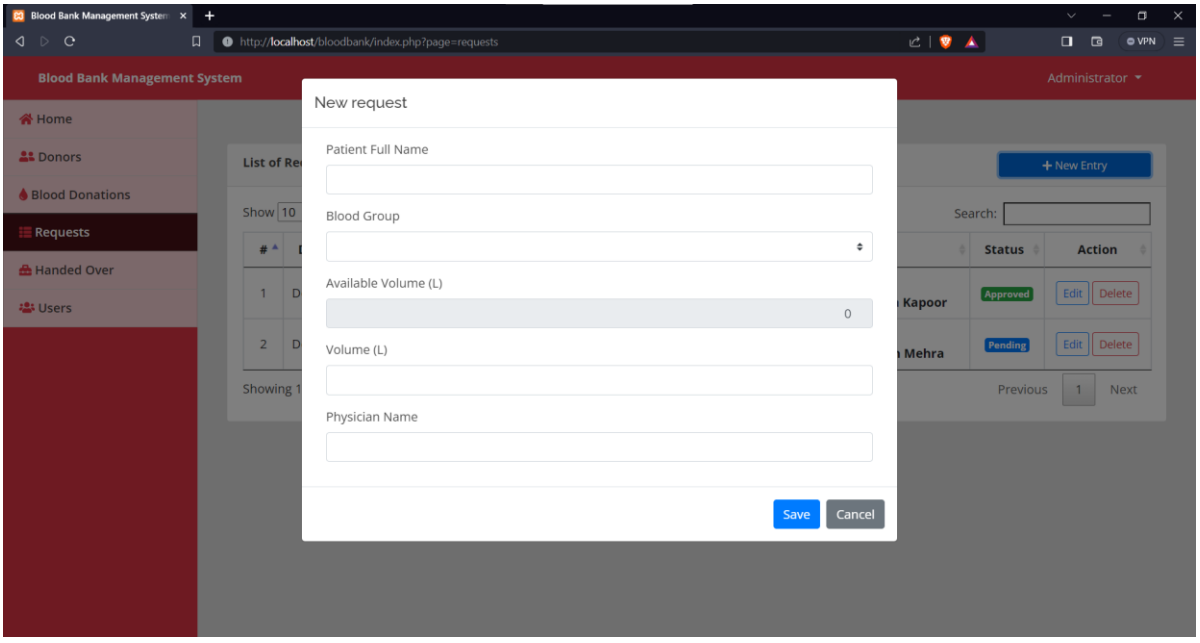

Blood Bank Management System
http://localhost/bloodbank/index.php?page=donations
Blood Bank Management System
Administrator
Home
Donors
Blood Donations
Requests
Handed Over
Users
New donation
Donor's Name
Please select here.
Blood Group
Volume (ml)
Date of Transfusion/Donation
dd-mm-yyyy
Save
Cancel
+ New Entry
Search:
Action
Edit
Delete
Previous
1
Next

Now, if we go to **Requests Page**, we can see the list of people who Requested for blood and if it is approved or not by seeing the status. We can also edit or delete the request details, add new entries also.

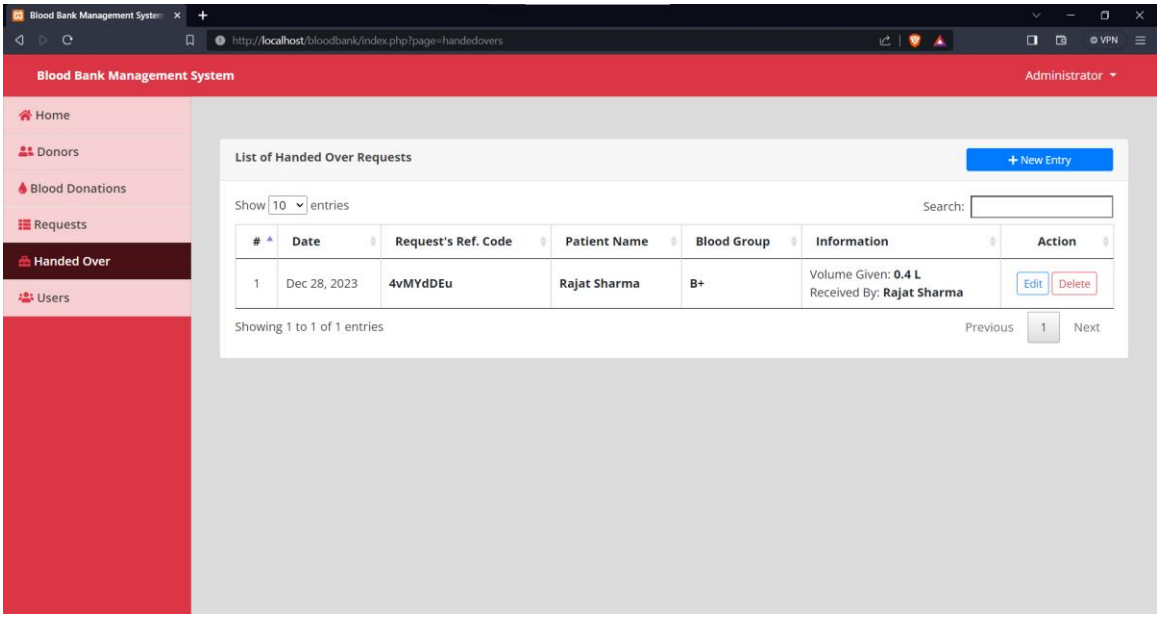


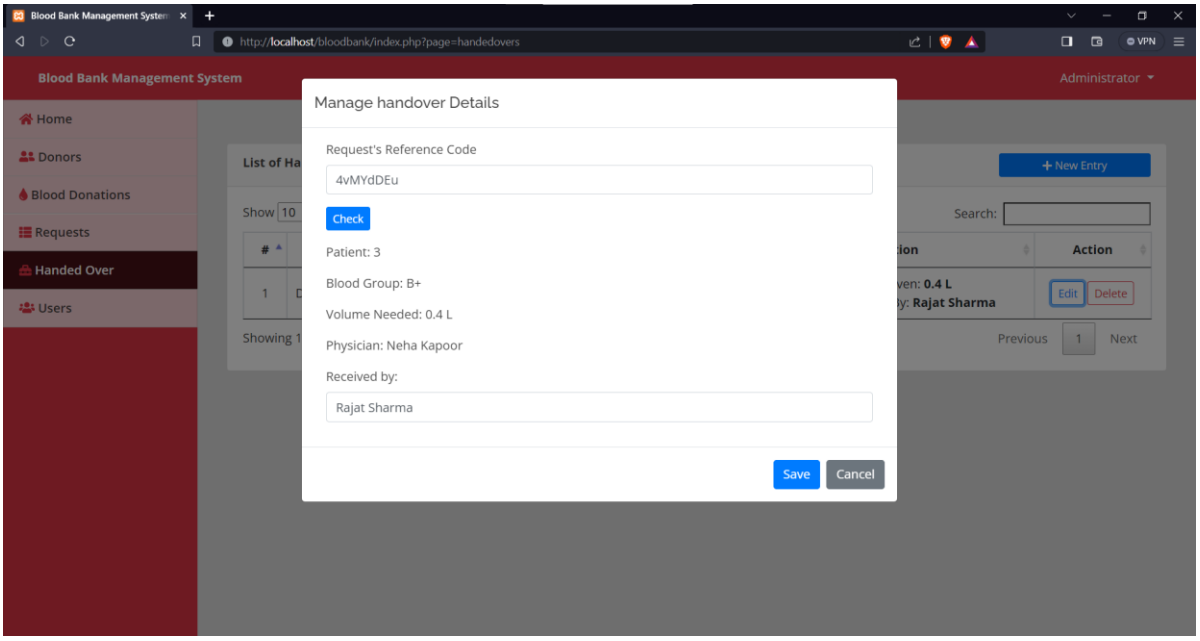


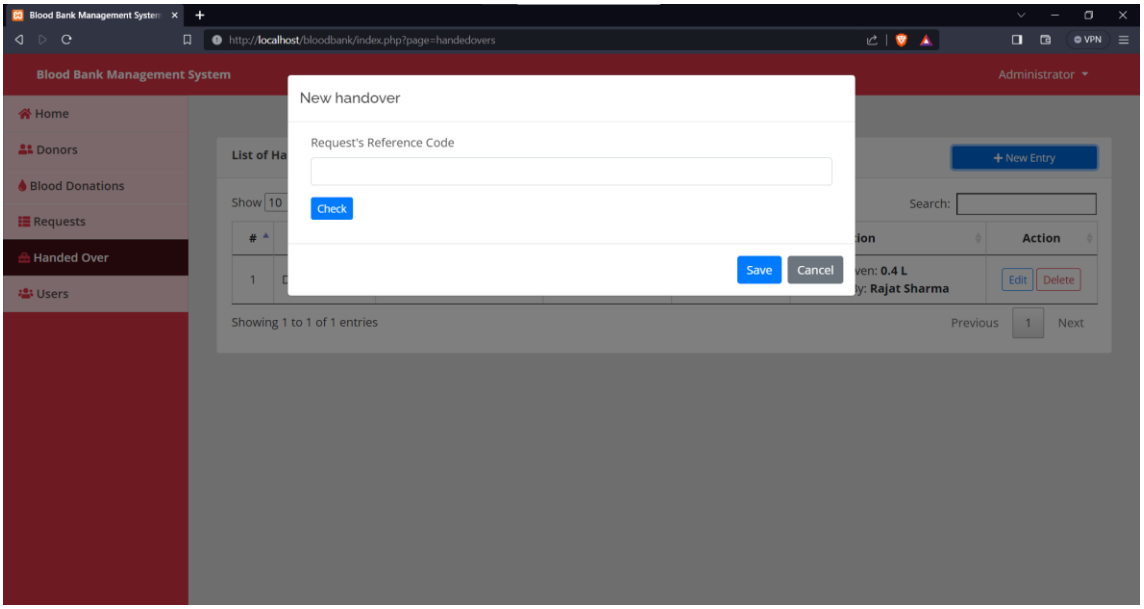

Blood Bank Management System
http://localhost/bloodbank/index.php?page=requests
Blood Bank Management System
Administrator
Home
Donors
Blood Donations
Requests
Handed Over
Users
Confirmation
Are you sure to delete this request?
Continue
Close
List of Requests
+ New Entry
Show 10 entries
Search:
Date Referrence Code Patient Name Blood Group Information Status Action
1 Dec 28, 2023 4vMYdDEu Rajat Sharma B+ Volume Needed: 0.4 L Physician Name: Neha Kapoor Approved Edit Delete
2 Dec 28, 2023 nI5T178y Sneha Desai AB+ Volume Needed: 0.4 L Physician Name: Arjun Mehra Pending Edit Delete
Showing 1 to 2 of 2 entries
Previous 1 Next

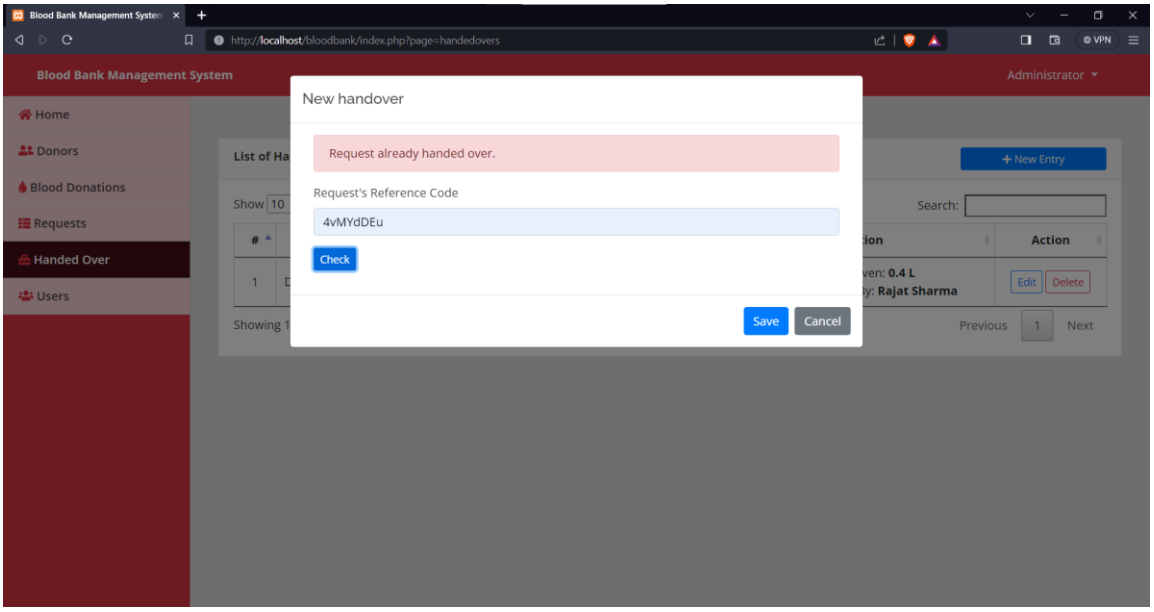

Blood Bank Management System
http://localhost/bloodbank/index.php?page=requests
Blood Bank Management System
Administrator
Home
Donors
Blood Donations
Requests
Handed Over
Users
New request
Patient Full Name
Blood Group
Available Volume (L)
0
Volume (L)
Physician Name
Save
Cancel
+ New Entry
Search:
Status Action
Approved Edit Delete
Pending Edit Delete
Previous 1 Next

Now, in **Handed Over page**, we can see if the blood donation has been safely handed over or not to the intended patient. We can also see the amount of blood donated and the request code. If the code matches, then only the blood is safely handed over to the required person.

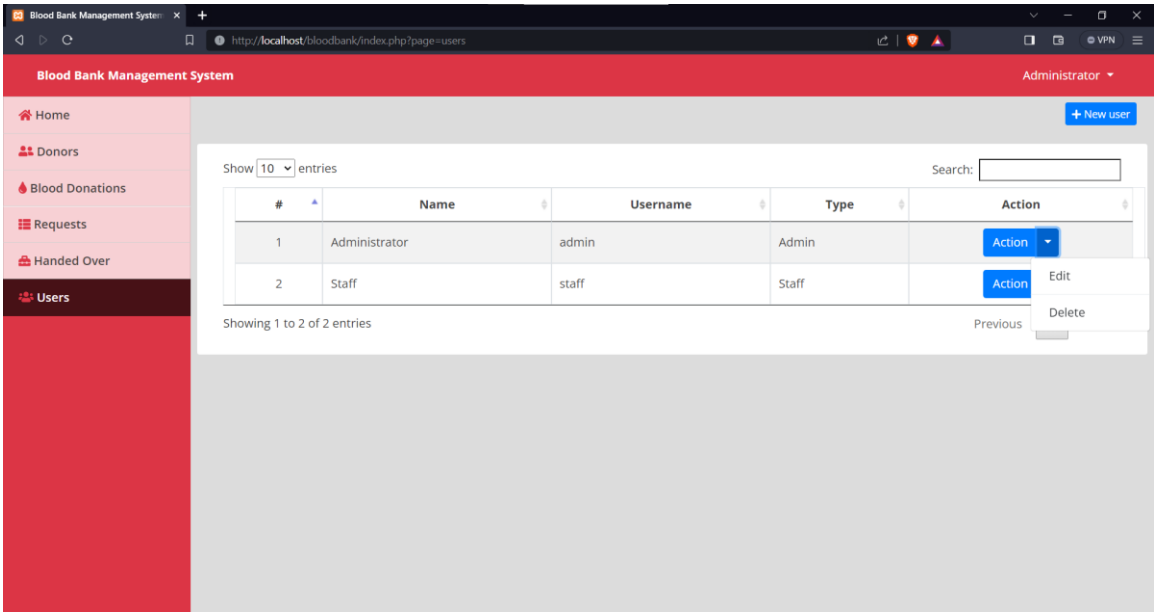


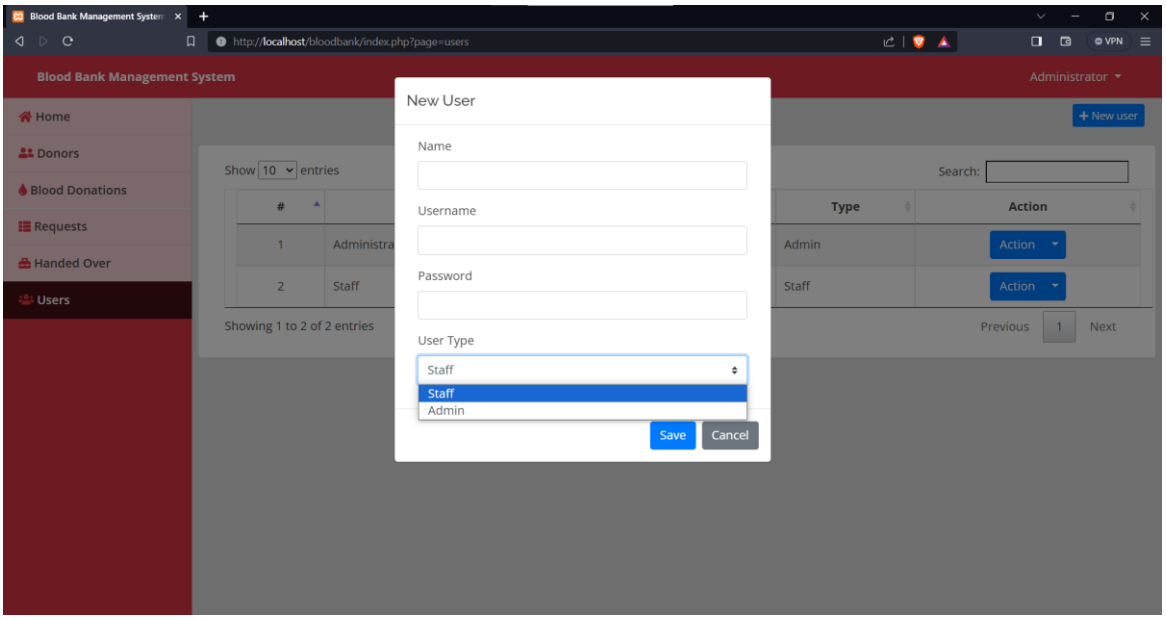




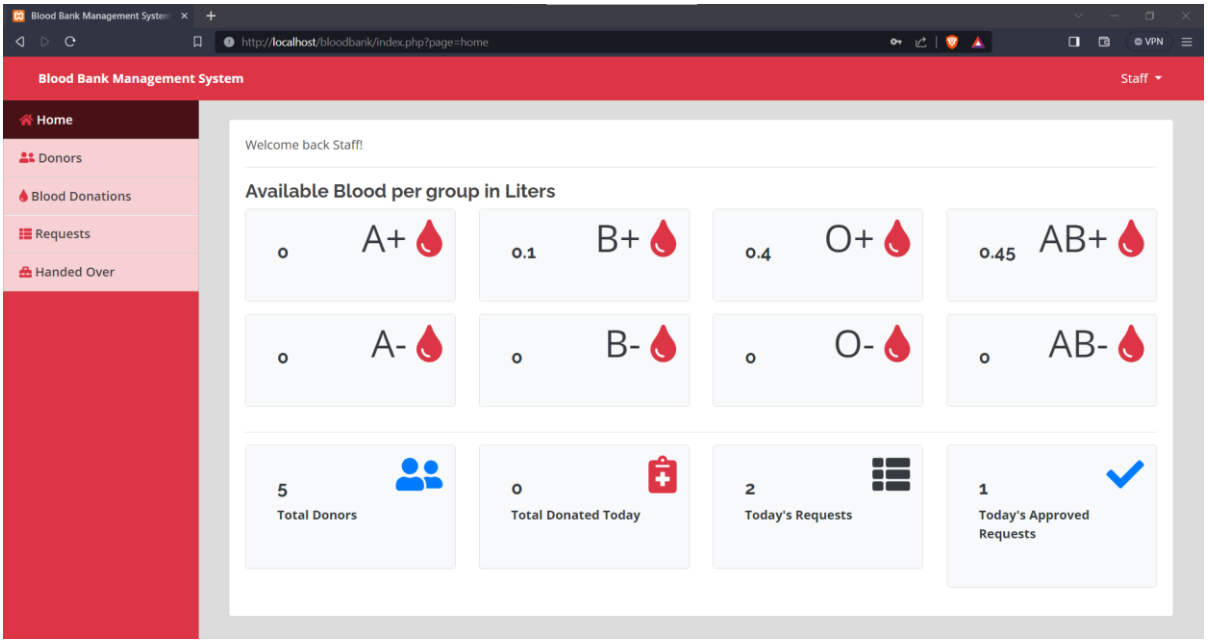


There is another last page called **Users page** where we can see the list of users who can access this management system. Here, we can edit, add or delete the users.





We need to note that only the administrator can see this Users tab where list of all users is present. If we login as some staff, we will not see this Users tab. Administrator has the highest access in the Blood Bank Management System



Conclusion

In summary, the Blood Bank Management System, with its dedicated modules for Donors, Blood Donations, Requests, and Handed Over transactions, stands as a robust and comprehensive solution for the seamless orchestration of blood bank operations. By providing a structured platform for donor registration, donation tracking, request management, and distribution oversight, the system ensures efficiency and transparency in every facet of blood-related processes. With its user-friendly interfaces and features such as search options, automated notifications, and secure authentication, this system not only simplifies data management but also enhances the overall responsiveness and reliability of blood bank operations, contributing to the critical mission of ensuring timely and efficient access to life-saving blood resources.

Future Considerations

As I conclude this project, I recognize that there is always room for improvement and further development. Some future considerations include:

Scalability: Ensure that the system is designed to scale efficiently with the growth of donor records, blood donations, and overall usage. Scalability is crucial for accommodating increasing data volumes and user interactions.

Security: Given the sensitive nature of health data and personal information in a blood bank, prioritize robust security measures. Implement encryption protocols, access controls, and regular security audits to safeguard against unauthorized access or data breaches.

Integration: Consider the potential integration with other healthcare systems, laboratory information systems, or electronic health records. Seamless integration can enhance data accuracy and streamline processes across different healthcare facilities.

User Training and Support: Provide adequate training for users to effectively navigate and utilize the system. Establish a support system to address any issues promptly, ensuring a smooth user experience and minimizing disruptions in blood bank operations.

Compliance: Stay informed about and adhere to relevant health regulations, data protection laws, and industry standards. Compliance with these standards is essential to maintaining the integrity and legality of blood bank operations.

Mobile Responsiveness: In an era of diverse devices and user preferences, ensure that the Blood Bank Management System is mobile-responsive. This feature allows users to access and manage information conveniently from different devices.

Feedback Mechanism: Establish a mechanism for collecting feedback from users, including blood bank staff and administrators. Regular feedback can help identify areas for improvement and ensure continuous optimization of the system.

Disaster Recovery and Backup: Implement robust disaster recovery and backup mechanisms to prevent data loss in case of unforeseen events. Regularly test these mechanisms to ensure their effectiveness in restoring data and system functionality.

Usability and Accessibility: Prioritize a user-friendly interface and ensure accessibility for users with diverse needs. Consider implementing features such as contrast adjustments and compatibility with screen readers to enhance accessibility.

Future Enhancements: Plan for future enhancements and updates to keep the system aligned with evolving technologies, user needs, and industry best practices. Regularly assess the system's performance and explore opportunities for improvement and innovation.