

UNIVERSITY PARTNER



## Project and Professionalism (6CS007)

### Milestone 5

# Blood Donation System

Student Id : 2227079

Student Name : Nischal Raj Basnet

Group : Re-take

Supervisor : Utsav Dahal

# Title Declaration Sheet

**Faculty of Science and Engineering  
School of Mathematics and Computer  
Science**



**MCS COMMITTEE ON THE ETHICS OF RESEARCH  
Registration of a Research Project**

This form must be completed by the Researcher(s) and, in cases where the applicant is a student, the project Supervisor to determine if the project requires approval by the FSE Research Ethics Committee.

**YOUR DETAILS**

**First Name:** Nischal                    **Surname:** Basnet

**Student Number:** 2227079                **Supervisor:** Utsav Dahal

**Course:** BSc (Hons) Computer Science (Software Engineering)

**Project Title:** Blood Donation System

**YOUR PROJECT**

**State in no more than 100 words the problem(s) your project is aiming to address**

My blood donation system, which is built on Django, aims to streamline the process of connecting blood donors with recipients in urgent need of blood. The platform allows users to register as donors, track blood donation statuses, and manage donation requests. Our goal is to provide an efficient and reliable system that ensures fast response times, increases donor participation, and maintains a well-organized record of blood donations. By prioritizing data security and accessibility, we aim to contribute to a more effective and transparent blood donation system.

**Academic question:**

How does your system ensure the privacy and security of sensitive health information while providing seamless communication between donors, recipients, and healthcare providers?

**Artifact1:** Data Encryption and Secure Storage:

**Artifact2:** Role-Based Access Control (RBAC) and Authentication:

Will the information or artefacts resulting from your project be available externally to the University?	YES / NO  If yes, please complete an <u>External Agreement Form</u>
Will your project involve:	YES / NO

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(a) Human participants (b) Data about humans (c) Sensitive information	If yes, please complete Page 2 of this form. Otherwise, please sign the top of Page 3, and if necessary pass it on to your supervisor.	
<b>Human participants</b>	<b>Yes</b>	<b>No</b>
<input type="checkbox"/> If your proposal involves healthy adult participants, does the project have characteristics that may be detrimental to their physical or mental wellbeing?		
<input type="checkbox"/> Does the proposal involve vulnerable participants (for example, are they under 18 years of age, do they have a disability or are mentally unable to consent)?		
<b>Privacy</b>		
<input type="checkbox"/> Does the proposal involve processing of genetic information or personal data (e.g. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)		
<input type="checkbox"/> Does the proposal involve tracking the location or observation of people without their knowledge?		
<b>Research on Animals</b>		
<input type="checkbox"/> Does the proposal involve research with animals?		
<b>Research Involving Developing Countries</b>		

<input type="checkbox"/> Is any of the research involving one of the <u>Least Developed Countries</u> ?		
<b>Dual Use</b>		
<input type="checkbox"/> Does the research have direct military applications?		
<input type="checkbox"/> Does the research have the potential for terrorist abuse?		

2

**Faculty of Science and Engineering  
School of Mathematics and Computer**



**Science Project Title:**

Student Name: *Nischal Raj Basnet*

Supervisor Name: *Utshav Dahal*

We confirm that the information given in this form is true, complete and accurate.

Student Signature: *[Signature]*

Date: 1<sup>st</sup> Dec 2024

Supervisor Signature: *[Signature] (Reader)*

Date: 1<sup>st</sup> Dec 2024

Thank you for completing this form. The MCS Ethics Committee will process the information provided and inform you of their decision shortly.

FOR MCS ETHICS COMMITTEE USE ONLY

The MCS Ethics Committee:

approves this project. You may proceed with your project.

your project requires approval by the FSE Research Ethics Committee. Please complete the **MCS\_REC\_Application Form**.

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Project Coordinator Signature (if applicable) \_\_\_\_\_ Date:

\_\_\_\_\_

## Abstract

This project report discusses the design and implementation of an online Blood Donation System using Django as the backend framework, Postgresql for database management, and HTML, CSS, and JavaScript for the frontend interface. It bridges the gap in communications between blood donors and recipients, hence it's an online, approachable, and efficient way of performing blood donation and request processes.

The main aims of the project are to develop a responsive user interface, establish strong backend functionality for the secure and efficient handling of data, and establish a reliable system for matching donors with recipients based on blood type and availability. This report discusses the system architecture, development tools, methodologies employed, and challenges faced during implementation.

Additionally, the report has emphasized scalability and usability of the system, its potential impact on healthcare services in providing accessibility to blood donation during emergency situations. This study covers all aspects of the Blood Donation System, from its technical architecture to user-oriented perspectives through the effective use of Django and web technologies in solving real-world critical issues of the blood donation process.

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# **1. Introduction to Blood Donation System**

The Online Blood Donation System seeks to bridge the gap between blood donors and recipients through a web-based system. The system offers a convenient method of communication, scheduling, and dissemination of real-time information, hence making blood donation efficient and convenient.

Through the integration of a chat bot support system and a systematic donation scheme, the system renders blood donation systematic and convenient to use. Blood donation is a crucial part of healthcare, and demand for it tends to outstrip supply due to logistical inefficiencies.

The majority of patients, especially those with rare blood groups, face difficulties in finding donors in time. The proposed system will address these issues by providing a structured, technology-driven solution to blood donation. The system will enable people to find and reach donors efficiently and ensure that donation drives are well-organized and accessible.

## **2. Project Briefing**

### **2.1. Overall Working**

The system offers a platform on which donors can register, look for donation events, and interact with potential receivers. Receivers can post blood requests, look for compatible donors, and interact. Admins control the system, execute donation programs, and ensure effective running.

Donors can sign up, update their availability, and get notified for urgent blood donation requirements. Receivers can place precise requests for blood type and location. A chatbot functionality is integrated that guides the user in discovery and knowledge gathering without delay. There is an interactive real-time chat functionality through which donors can communicate with receivers for a hassle-free experience.

### **2.2. Problem Domain**

Blood donation is a critical medical requirement, yet often there isn't one due to the lack of a platform uniting donors and recipients. Many patients, particularly those who need rare blood types, are left behind due to an ineffective system reliant mostly on word-of-mouth and handbooks.

This system acts as a technical solution by rationalizing donation procedures for blood, offering real-time communication, and disseminating critical information to users. The aim is to create a platform that will encourage people to donate more often and make hospitals and patients receive the required blood in cases of emergencies.

### **3. Aims and Objectives**

#### **3.1. Aims**

The primary goal of this project is to design a well-organized and streamlined online blood donation system that enhances the convenience and effectiveness of the blood donation process. With the combination of donor and receiver functionalities, the system aims to have a seamless experience in which individuals requiring blood can match easily with potential donors. In addition, the system aims to incorporate a chatbot that offers users guidance, so that they are able to use the platform with ease.

The second prime objective is to provide real-time exchange of information between donors, receivers, and administrators so that better communication can be ensured and the emergency blood requisition can be responded to in a timely manner. The project also aspires to form a systematized and organized portal for blood donation drives so that people can be motivated to donate with ease and the administrators can coordinate them with ease.

#### **3.2. Objectives**

To achieve the above goals, the system has been designed with several major goals:

- Design a feature-rich web-based system with donor, receiver, and admin functionality such that all groups of users are able to use the tools necessary to communicate with one another in a seamless manner.
- Design a chatbot that serves as an interactive guide to users, answering on pre-specified terms and assisting in navigation throughout the site.
- Introduce a live chat feature whereby donors and recipients are able to chat directly with one another for purposes of arranging donations effectively.
- Include an interactive map feature that provides users with locations of nearby blood banks to make it easier for donors and recipients to access available services near them.
- Establish a programmatic donation system through which administrators are able to organize and schedule blood donation sessions and have better control over them to increase participation.
- Incubate real-time notifications and alerts to inform users of emergency blood requests, blood donation programs scheduled in advance, and other significant details.
- By fulfilling these objectives, the project aims to enhance the overall efficiency of the blood donation process, making it more accessible, easy to use, and responsive to the needs of the donors and recipients alike.

## 4. Artefact

### 4.1. Functional Decomposition Diagram (FDD)

The system is decomposed into various interdependent parts that exist to ensure the smooth operation of the blood donation process. These parts are:

- User Management (Donor, Receiver, Admin) - This module offers user registration, authentication, profile management, and user role assignments.
- Blood Request and Donation Module - This feature enables receivers to post blood requests and donors to accept them, ensuring an organized donation process.
- Chat System - A facility for immediate communication that allows donor and recipient direct interaction in order to effectively communicate donation plans.
- Chatbot Support - A pre-programmed assistant that provides users with pre-set replies to frequently asked questions in order to help them use the platform easily.
- Donation Program Management - An admin-controlled centralized module that organizes and administers blood donation programs, which allow donors to register and donate.
- Blood Bank Map Integration - An interactive map displaying blood banks nearby that users can locate and get in touch with them for emergency blood needs.

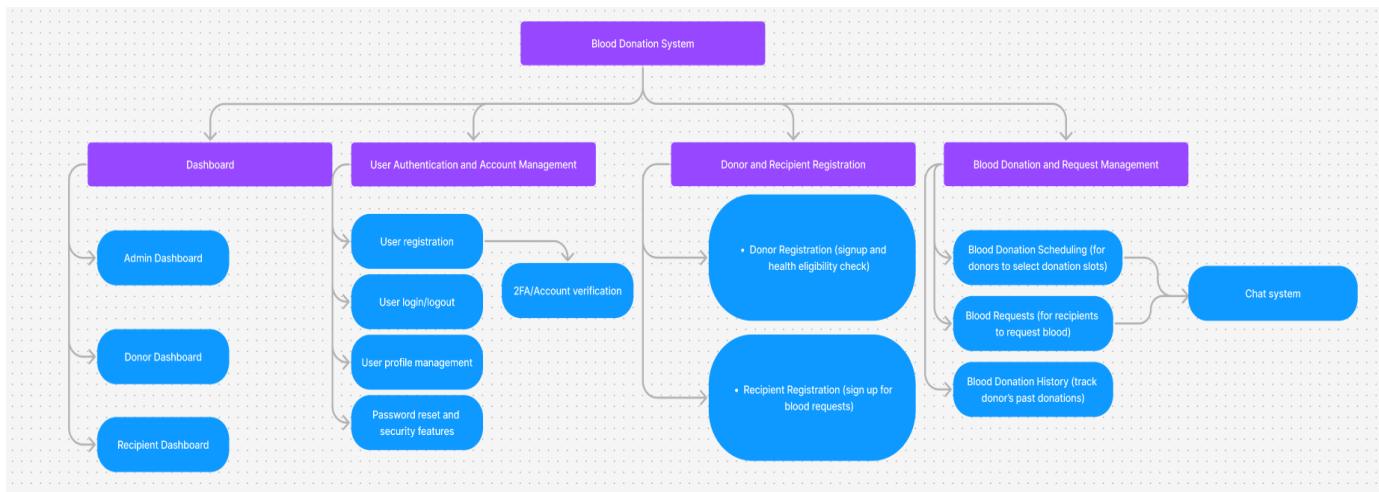


Figure 1: FDD

## 4.2. System Description

The system acts as a centralized platform where receivers and donors can communicate securely and effectively. The users can register, make profiles, and provide their personal and medical details so that their status of being eligible to donate or receive blood is correctly documented. Donors can specify availability and preferred locations, whereas receivers can post blood requests in urgent requirement with specified details of their need, such as blood type, level of urgency, and preferred donation location. The system also maintains transparency and accountability through a formal donation process under the administrator's control, authenticating donors' credentials, monitoring blood requests, and scheduling donation events.

Additionally, the system incorporates a comprehensive notification system that reminds users of pending requests, fresh donation opportunities, and upcoming blood donation drives. Having a chat system means donors and receivers are able to chat in real time, allowing them to make decisions regarding such specifics as meeting points and medical safety precautions. Moreover, the website has a blood drive program management feature in which administrators can post scheduled blood drives and invite blood donors to give blood and prepare a proper volume of blood availability for hospitals.

By offering such services, the system ensures that the blood donation process is being conducted efficiently, reducing inefficiencies and enabling needy individuals to immediately locate appropriate donors. This system based on technology and organization optimizes coordination efforts, increases user interaction, and eventually offers more donors' blood to patients with pressing needs.

## 4.3. Subsystems

The system is designed with multiple subsystems, each covering an important function within the platform:

- **Donor & Receiver Module:** The module consists of user registration, profile management, and blood donation request processing. Donors are able to state their availability and also reply to blood donation requests, while receivers can post their needs.
- **Chat System:** The real-time chat system integrated into the system facilitates direct communication between donors and receivers, improving coordination and making donation more accessible.
- **Chat bot Support:** A pre-configured chat bot provides instructions and information, guiding users with general queries and system usage.
- **Donation Program Management:** This subsystem allows administrators to create, plan, and manage blood donation programs, facilitating increased planned blood donation activities and donor participation.

- Blood Bank Locator: The map-based search feature helps users locate nearby blood banks, making it easy to get immediate blood supplies as and when needed.

These subsystems, being integrated, ensure that the Online Blood Donation System is effective and efficient, addressing major problems in the blood donation process and improving usability for donors and recipients.

## 5. Academic Question

The research question driving this project is: "How can technology be utilized to optimize the process of blood donation and enhance the user experience of an online system of blood donation?" It is the beginning of the project, researching where medicine and technology intersect in an attempt to identify solutions to present inefficiencies within the blood donation process and to make the overall process simpler for donors, recipients, and administrators.

Technology, and specifically web-based platforms and electronic communication systems, has revolutionized most sectors, including the medical industry. This research question is about how such technology can be used effectively to mechanize blood donation operations, increase accessibility, and encourage frequent donor activity. The research examines different factors, such as user interface design, system architecture, database management, and real-time communication, that make an online blood donation system more efficient.

The question portrays the need for the application of technology in resolving logistical issues of blood giving such that the donors and the receivers are optimally connected and well-structured blood donating programs. Through the inclusion of technologies such as real-time chat, an application of a chatbot for support, a blood bank interactive locator, and structured donation event management, the system aims at improving the rapidity and reliability of blood donating. Finally, this question aims to improve the blood donation process using new digital solutions that increase the process's effectiveness, usability, and availability.

## 6. Scope and limitations

### Scopes

The task is to create a complete online blood donation system with front-end user interfaces and back-end infrastructure, including administrative facilities for effective management. The system has basic

features of user registration, donor and receiver profile management, posting of blood requests, donation scheduling, real-time chat, chatbot assistance, and interactive blood bank finder.

Besides these core features, the project incorporates best practices in software development, user experience (UX) design, and system optimization to create a robust, secure, and user-friendly platform. The system is designed to provide an easy-to-use experience for users, allowing donors and receivers to interact seamlessly while administrators are able to monitor and manage operations with ease.

Second, the project facilitates stakeholder engagement through setting up interaction between receivers, donors, and administrators, making the donation process convenient. The system is focused on increasing donor activity and enhancing the effectiveness of blood donation programs through organized donation drives and geospatial donor matching. The system is designed with future scalability for expansion with additional users and functionalities.

## **Limitations**

Despite the project's aspirational nature, there are certain constraints and problems:

- Limited research and testing capabilities: There is a time and resource constraint to carry out vast user research and testing in the real world. This may affect the system's ability to optimize user interactions and response mechanisms.
- Dependence on third-party services: Some features, such as geolocation for mapping blood banks and real-time messaging capabilities, rely on third-party services. This reliance might come with potential issues, including API rate limiting, service downtimes, or changes to policies by the third parties.
- Scalability and geographic limitations: The system is designed for a specific geographic area first for pilot deployment and testing. To expand to other regions, further modifications will be required, such as compliance with regional healthcare policies and additional localization.
- Non-AI-based chatbot: The chatbot relies on a pre-established keyword-based response system rather than an AI-based system. Although effective for basic questions, it is less sophisticated than an AI-based virtual assistant and might not be capable of handling elaborate user questions.
- Potential user adoption problems: Encouraging frequent usage of the platform by both donors and recipients entails active promotional campaigns and coordination with medical facilities, which may be beyond the scope of this pilot project.

As the project is faced with these challenges, it seeks first to deliver a functional prototype that demonstrates how technology can be used to improve the process of blood donation. The system offers the basis upon which future development can be built, including AI-powered support, more sophisticated donor-recipient pairing algorithms, and improved user engagement mechanisms.

## 7. Report structure

The report format is designed to provide a detailed record of the development, progress, and results of the project.

The Introduction comes first, and then the Project Briefing defining the goals of the project, area of concern, and technical solutions used. The Chatbot Implementation is also referred to, describing how the chatbot leads users through pre-defined responses.

Following the Introduction, the Aims and Objectives and Objectives sections detail the overall purpose of the project, and a break-down of the detailed problem-solving methodologies included within the system. The Artefact section includes a Functional Decomposition Diagram (FDD), detailing the key components of the system, together with an explanation of how these interact and behave. All of the subsystems are fully documented to provide insight into the system architecture.

The Academic Question section discusses the research question that guided this project with emphasis on the role of technology in optimizing the blood donation process and satisfaction for the user. The Scope and Limitations section articulates the limitations of the project with recognition of its capability and shortcomings.

The Literature Review section presents relevant research and existing studies that serve as the foundation for this project. This is followed by the Project Methodology section, which presents the development methodology used, how it aligns with the project objectives, and why it was used.

The Technology and Tools section provides a comprehensive description of the technologies and platforms used to create the system, why they were chosen, and how they render the system efficient. The Artefact Designs section provides design diagrams, system deliverables, and explains the testing procedures used to guarantee the performance of the system.

The Conclusion reiterates the major findings and results, reflecting on the project objectives and research question. This is followed by the Critical Evaluation, presenting an evaluation of the project by itself, including strengths, weaknesses, and opportunities for future improvement.

Finally, the Project Management subtopic documents project activities, including planning, time tracking, and coordination work for the team. The References section includes citations to sources used, and the Appendices include supporting materials like user manuals, survey answers, and technical reports.

## 8. Literature Review

### 8.1. Research Investigation

The research aspect of this project involved a comprehensive review of a variety of sources on online blood donation systems and healthcare technological solutions. The primary sources were scientific articles, research reports, expert analyses, and case studies that offered an intensive understanding of the research issue.

Literature review played a crucial role in shaping the project basis on different key areas such as donor behavior, future technology trends, system architecture, medical logistics, and real-time communication in healthcare applications. Through examination of related features from different sources, the review allowed greater understanding of the existing challenges of blood donation and how technology can be utilized to optimize the process.

Some of the key issues that arose during the review included the impact of web platforms on donor engagement, chat bot use for the automation of healthcare assistance, and the application of mapping and geolocation services in optimizing donor-recipient matching. The study of user experience design and system optimization further enhanced the process of how to make the platform more friendly and efficient.

By comparison and contrast of alternative views, the research question established a good basis to address the academic question and make an informed entry into the problem-solving venture. Critical thinking and controversies during the research activities helped to establish loopholes in existing systems and areas of possible innovative advancements in blood donation technology.

### 8.2. Similar Systems

The literature review component of the project focused on the identification of comparable systems and models within the online blood donation and healthcare domains to derive lessons from successful implementations and practices. The systems chosen for comparison were the dominant blood donation platforms, including BloodConnect, DonorBox, and Red Cross Blood Donation Systems, and generic healthcare-related platforms like Zocdoc and HealthTap. These sites were chosen to reveal commonalities among user interaction, logistical issues, and system architecture, as well as to analyze their distinct aspects and operational methodologies.

The research attempted to understand various features of systems such as user interface design, matching algorithms between donor and recipient, and the presence of real-time communication functionalities which could be incorporated in developing an improved system of blood donation. Automated assistance systems (chatbots) and location-based systems were also investigated within these systems which acted as the inspiration behind incorporating similar functionality on the blood donation website.

Analysis of the platforms involved evaluation of worldwide trends, technological developments, and best practices in healthcare system management. The case studies and research reports provided conceptual frameworks and pragmatic strategies, which were employed to guide the direction for this project. They offered useful methodological advice that was project-oriented, allowing for a thorough exploration of the blood donation system setting.

The aim of this section is that the literature review will serve as a point of reference, and will be used to inform the design and development process. By examining the successes and failures of similar systems, the review ensures that the final blood donation platform has a solid basis of industry-specific know-how and is informed by the best practices currently available in the field.

## 9. Project Methodology

### 9.1. Rationale for Methodology Selection

The methodology selection for the online blood donation system was necessitated through an integral analysis of the goals, needs, and inherent difficulties in the blood donation industry. The "WHY" of this decision is crucial since the methodology will directly impact efficiency and seamless implementation of the development process. While various methodologies such as Waterfall, Scrum, and DevOps may be on the table, focus was put on justifying the methodology employed and how it helps achieve the goals and limitations of the project.

The Agile methodology, employing Scrum as the framework here, was selected for a number of key reasons:

- **Flexibility in the Dynamic Domain:** The blood donation industry, like all health-related systems, is dynamic and subject to fluctuating regulations, user needs, and technological advances. Iterative development through agile development processes, particularly Scrum, is well adapted for constant changes and fine-tuning on the basis of user feedback, changing requirements, and unforeseen problems. This flexibility is

needed to enable the system to become responsive to dynamic requirements, such as adding new blood donation plans, accommodating diverse user profiles, and integrating donor and receiver comments.

- **Customer-Centric Approach:** The primary focus of the online blood donation system is to design a system that is simple, efficient, and tailored to meet the needs of its users—donors, receivers, and administrators. Agile methods, because of their customer feedback component, are most appropriate for maintaining the end-user experience at the forefront. Involving users as part of the development process through feedback channels is a promise that the platform meets the intended requirements and adequately solves issues faced by the blood donation community.
- **Collaboration and Communication:** Blood donation system development involves multiple stakeholders like developers, designers, business analysts, medical professionals, and administrators. Agile ideology, particularly on Scrum, is built upon communication, cooperation, and transparency. This matters in the process of teaming up efforts and ensuring that all parties are agreeable to the project objectives. Scrum events like stand-up, sprint planning, and retrospectives instill ongoing communication, placing great emphasis on improvements and synchronizing the development to be aligned with all the stakeholders' interests.
- **Rapid Iterative Development:** The Agile method promotes early and continuous delivery of software. This is especially useful in a healthcare-related system, where timely features, such as real-time donation scheduling and emergency blood requests, need to be introduced quickly and efficiently. With short sprints, the development team can provide working features within a short period of time, obtain feedback, and adjust the project based on user and stakeholder inputs. This allows for faster time-to-market and ensures that the system remains in alignment with user needs all the time.
- **Continuous Improvement and Flexibility:** Agile methodologies encourage continuous improvement of the system throughout the project life cycle. This iterative process is critical in a field like blood donation, where new functionality, security features, and enhancements can be incrementally added over time based on feedback from donors, receivers, and administrators. By constantly re-prioritizing and delivering in small increments, the system can remain responsive to user needs and technological advancements.

Briefly, Scrum Agile was chosen because of its ability to be adaptable, user-focused development, collaboration culture, and its ability to support rapid, iterative development. Through this process, the online blood donation system will be able to change quickly, adapt to shifting needs, and deliver a high-quality product that meets both stakeholders and users.

## 9.2. Framework selection justification

The use of the Scrum framework was driven by its compatibility with the need for agility and iteration in developing the online blood donation system. The project is faced with a continuous need to improve and adapt to respond to evolving user requirements, evolving market conditions, and integrating new technologies. The Scrum approach supports this by promoting an incremental process in which the incremental development is emphasized. This allows easy incorporation of new features or modifications based on ongoing user inputs to keep the system updated and user-centric.

Second, Scrum emphasizes collaboration, communication, and stakeholders' engagement throughout all phases of a project, from the initial stages to delivery. As the priority of the blood donation system is to bring value to its users—administrators, receivers, and donors—the most important should be feedback from the users and constant testing of the product. Scrum facilitates this by providing a structure that keeps the stakeholders engaged all the time, and their problems are nipped in the bud as the development progresses.

Additionally, Scrum's flexibility is well-placed to deal with the fluctuating requirements and shifting timetables inherent in the project. Whether it is a small feature enhancement or a huge system revamp, Scrum allows the team to plan, monitor, and schedule the scope, resources, and timelines effectively. This enables the project to be carried out as per schedule while maintaining high-quality standards without compromising anything.

## 9.3. Milestone/Gantt Representation

For compliance with the project timeline regulations and ease of understanding, a simplified Gantt chart has been used to depict the major milestones and deliverables of the project. The timeline is December to May, covering the important stages of the project, which are planning, designing, initial build, and the final deployment and testing phase.

The Gantt chart divides the project into manageable, specific stages, which are linked to a specific set of activities. This is useful for tracking the progress of the project as well as making certain the activities are known and possible. The high-level representation is a useful one for obtaining an overall sense of the timeline, which is crucial in order to establish if the project objectives are being met.

The "Evidence of Project Management" part will then provide a more in-depth breakdown of each task and its specific requirements, providing further insight into how the project is managed and undertaken.

## 10. Tools and technologies

Movement from the idea phase to implementing the project involved extensive research on the appropriate tools and technologies. Each technology was chosen carefully to align with the aims of the project and the direction as a whole, producing the optimal result. The selection involved not just thinking of the requirements of the project, but also the level of expertise and experience of the development team. Through the use of a combination of tools and techniques, the project is made to attain high productivity levels as well as provide effective collaboration for the team.

### 10.1. Justification of tools and technologies

The chosen set of tools and technologies is judiciously selected to guide the development of a modern web application with confidence, efficiency, and economy. Every tool was analyzed to determine if it would be useful in improving the quality of the end product. The choice was made critically such that the phases of development followed the main goals and addressed key issues of the project.

All the tools were evaluated in terms of how well they would seamlessly integrate into the workflow, make production better, and support the collaboration, and provide the amount of flexibility necessary for iterative development. All this is in an effort to ensure that the development process will yield a high-quality, functional, and user-friendly online blood donation system.

### 10.2. Programming language and framework

HTML, CSS, and JavaScript are at the heart of the project—the holy trinity of frontend development building blocks. They allow us to create an interactive, responsive UI. JavaScript allows dynamic content on the frontend, giving a user-generated experience.

For the backend, Django was selected as the framework because it is simple, scalable, and has strong features. The inherent features of Django, such as its admin panel and security features, are suitable for the needs of the blood donation system. PostgreSQL was employed as the database to store donor, receiver, and admin information securely because it provides reliability and excellent handling of large data.

### 10.3. Tools

**IDE (Integrated Development Environment):** Visual Studio Code was used as the IDE due to its flexibility and productivity-boosting extensions. It provides support for efficient development via functionalities like syntax highlighting, auto-completion, and debugging.

**Version Control:** Git was used for version control so that team work is managed effectively. We have used GitHub to manage the codebase and share updates within the development team.

### 10.4. Icon package and fonts

For the interactive user interface, we used Font Awesome to display an array of vector icons appropriate to the visual themes of the project. We chose Roboto as well for typography so that clarity and readability throughout the platform will be ensured.

### 10.5. Package manager

For dependency management, we chose pip, the package installer for Python, to manage dependencies and keep our project libraries in order efficiently. With the help of pip, we had a seamless installation process for any Python packages that were needed, such as Django for backend integration and other libraries needed by the project. This assisted us in having a seamless environment for various stages of development and maintaining the project's functionality.

## 11. Artefact Designs

Throughout the project, a very important aspect was the careful design and modeling of artifacts that would validate the functionality of the system and enhance the user experience. With zeal for simplicity and care in details, I embarked on the artifact creation process with the help of charts and intricate models. The graphical tools provide a better understanding of the complex system, with greater insights into its operation.

### 11.1. Software Requirements Specification (SRS)

The very meaning of all design activities is consolidated in the Software Requirements Specification (SRS), which is a description of system development. The SRS report for this project addresses technical requirements as well as

user requirements. It ensures rich support of functional and non-functional requirements consistent with the goal of the project along with fulfilling user needs. The SRS document is an essential roadmap, directing the development process and keeping the system on target to provide value to users.

## 11.2. Design/Modeling Diagrams

To support the development of the Software Requirements Specification (SRS), various design and modeling diagrams were set up to provide a clear representation of the system architecture and functionalities. The diagrams were created using Figma to achieve a common understanding and guide the development process.

### FDD

Functional Decomposition Diagram (FDD) is a frontend functions presentation as understandable components with unique sets of requirements and relevance. The FDD is concerned specifically with the user interface components, such as:

Order Basket (UI-1): A critical component that aims to ease the user's shopping process.

Payment Options (UI-F-2): Secure payment features, which are significant to the user's trust and transaction security.

Dietician Recommendation (UI-UR-2): A menu-oriented feature that helps users select healthy foods.

FDD helps prioritize features by labeling them as must-have, should-have, could-have, or nice-to-have features. This approach makes sure that key functionalities are prioritized highest during development.

### Use Case Diagram

Use Case Diagram is applied to graphically depict the system and user interaction. It is applied to identify the different things that the users can perform, such as becoming a donor (UC-1), searching blood banks (UC-2), requesting blood donation (UC-3), and communicating with other users (UC-4). The diagram reflects the correct comprehension of the interactions of the user, system response, and unproblematic sequence of activities carried out in the blood donation system.

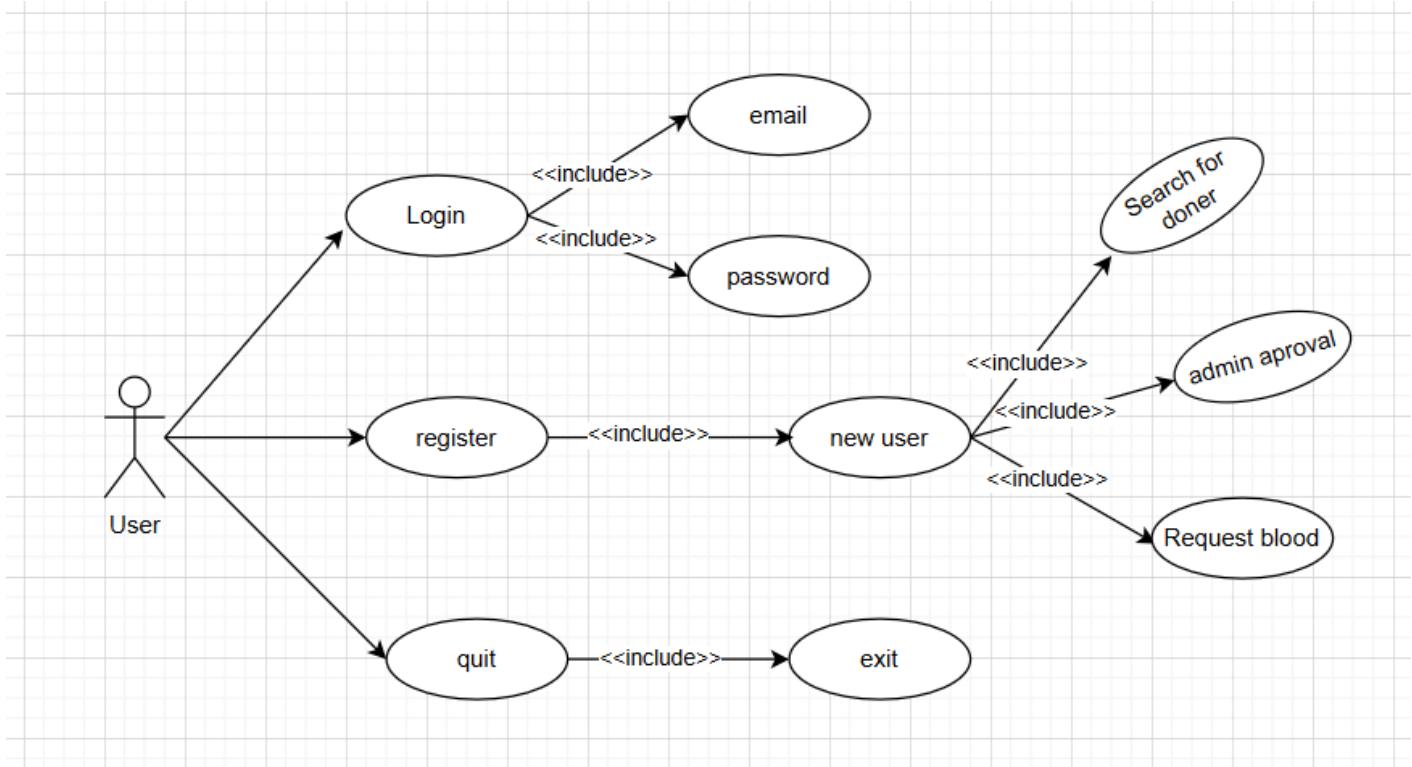


Figure 2: Use Case diagram

### Sequence of UI

This diagram depicts the flow of user interaction and system response for various use cases in the blood donation system. It is a graphical representation of how information is processed step by step for each operation, such as donor registration, blood request submission, and real-time chat with blood banks or donors. Following the order of actions and reactions of the system, the diagram shows how user actions trigger specific system reactions to ensure there is a seamless and continuous user experience. The sequence diagram also allows one to establish and rectify any probable glitches or inefficiencies and can be applied to optimize the interface for hassle-free interaction.

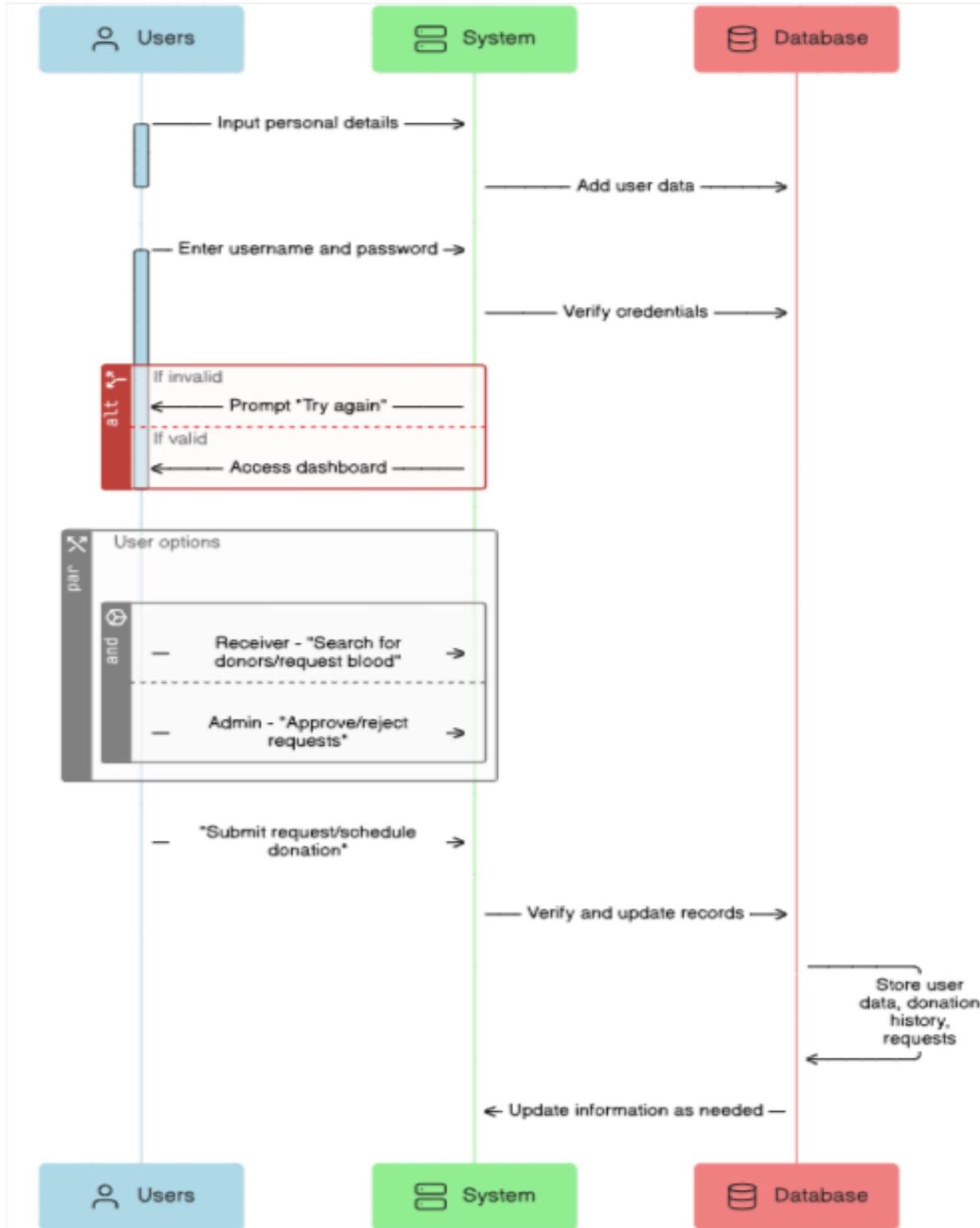


Figure 3: Sequence Diagram

## Activity Diagram of UI

These flow diagrams represent the path of processes through the blood donation system, so each process is a single step a user takes towards completing a specific task, i.e., donating blood, ordering blood, or viewing donation programs. By mapping the processes and interactions, these diagrams allow for easier understanding of the dynamics of the system and identification of any bottlenecks or idle processes that can limit overall efficiency. This visualization helps to determine where things can be improved, that the user experience is optimized and that the system is running at its best from start to finish.

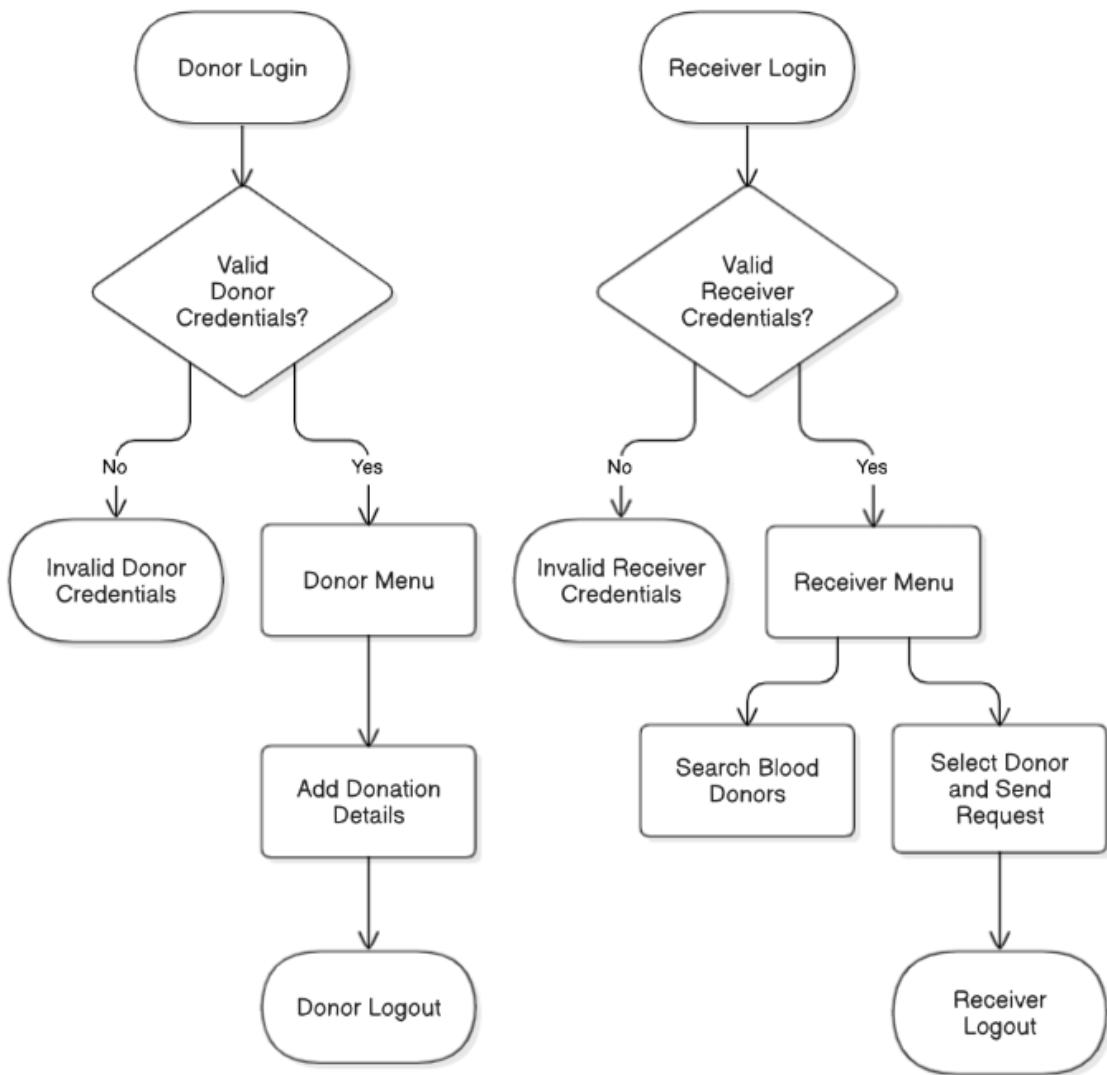


Figure 4: Activity Diagram

## **Work Breakdown Structure (WBS)**

The WBS (Work Breakdown Structure) defined the phases and activities in developing the blood donation system, breaking the project into manageable chunks:

### **Phase 1: Planning**

- Define system requirements
- Identify key stakeholders (donors, receivers, and administrators)
- Determine features (donor registration, receiver request, donation programs, etc.)

### **Phase 2: Design**

- Design user interface for donors, receivers, and admins
- Design system architecture and database schema (using PostgreSQL)
- Plan the blood donation program feature, chat system, and map functionality

### **Phase 3: Development**

- Develop the frontend using HTML, CSS, JavaScript
- Install the backend using Django
- Install the PostgreSQL database
- Create features such as registration, donation request, chat feature, and program scheduling

### **Phase 4: Verification and Testing**

- Check all the system components for bugs
- Conduct user acceptance testing (UAT)
- Conduct security and performance testing

The other features of the application included user creation and registration (donors and receivers), managing schemes of blood donations, processing requests, providing a chat facility between the receiver and the donor, and developing admin tools to monitor the site. This setup created the structure of the project to be comprehensive, in sequence, and efficient.

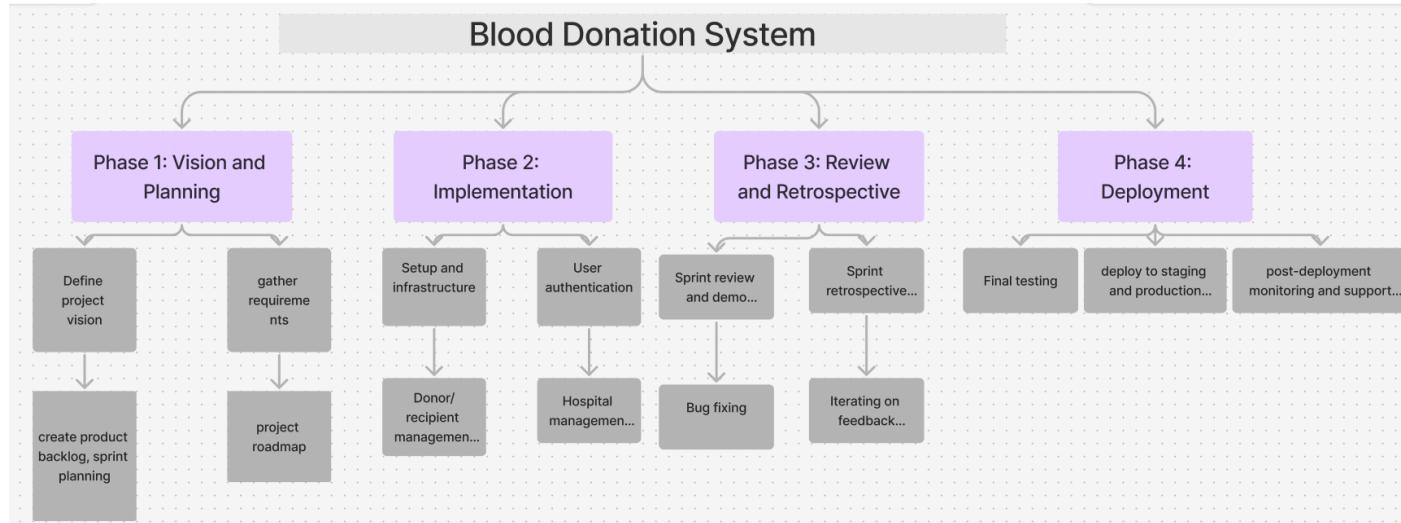


Figure 5: WBS

## 11.3. Testing

### 11.3.1. Signup testing

Interfacing frontend testing was performed thoroughly by the means of exhaustive test cases making sure that all functions operated without any objection. A specific test case example is provided below:

Test Case ID: signup

Priority: High

Test Case: Correct User Registration – Verification Attempt

Test Step: Enter your username and password here. Click on the sign in button.

Learn Vocabulary from the Text:

Time Religion plays a profound role in my personal development. I was raised to believe that the only way to find peace, happiness, and purpose is through a spiritual connection. Time Religion has an immense impact on my life. I was raised to believe

that the connection with the highest power is the one and only route to peace, bliss

Pre-Condition: The user needs to be supplied with valid data.

Test Data:

Username: nischalrazz2000@gmail.com

Password: nischal123

Post Condition: The log-in should only be allowed to the dashboard.

Expected Result: Menus appear.

Actual Result: Menus appear.

Conclusion: Pass

The screenshot shows the 'BloodBridge' website's registration page. At the top, there is a navigation bar with the logo, 'BloodBridge', 'Home', 'Resources', and 'About'. On the right side of the navigation bar are 'Login' and 'Register' buttons. The main title 'Register to Save Lives' is centered at the top in a large red font. Below the title, a sub-instruction reads 'Join our community of blood donors and help save lives.' The registration form consists of several input fields arranged in a grid-like layout. The first row contains two input fields: 'Nischal' and 'Basnet'. The second row contains two input fields: 'nischalrazz2000@gmail.com' and '9861913054'. The third row contains two input fields: 'Male' (with a dropdown arrow) and '12/17/2003' (with a calendar icon). The fourth row contains two input fields: 'Kathmandu' (with a location pin icon) and a password field containing '.....'. The fifth row contains two dropdown menus: 'A+' and 'Register as Donor'. Below the form is a checkbox labeled 'I agree to the Privacy Policy and Terms of Service' with a checked box. At the bottom is a large red 'Register' button. To the right of the form, there is a 'Activate Windows' message with a link to 'Go to Settings to activate Windows' and a small circular icon with a red cross.

BloodBridge Home Resources About

Login Register

## Register to Save Lives

Join our community of blood donors and help save lives.

Nischal Basnet

nischalrazz2000@gmail.com 9861913054

Male 12/17/2003

Kathmandu

A+ Register as Donor

.....

I agree to the Privacy Policy and Terms of Service

Activate Windows  
Go to Settings to activate Windows

Register

Figure 6: Sign in

### 11.3.2. Test Case: Request Blood

Test Case ID: request\_blood

Priority: High

Test Case: Blood Request Functionality – Request Blood Test Scenarios

Test Step: Go to the "Request Blood" section, select blood type, and click on the "Request Blood" button.

Pre-Condition: The user must be logged in and on the "Request Blood" page.

Test Data:

Username: Nischal

Password: nischal123

Blood Type Needed: A+

Urgency: Urgent

Post Condition: The request must be posted to the system and shown in the receiver's request history.

Expected Result: The system logs the request for blood, showing a confirmation message and entering the request in the receiver's history with the required type of blood and urgency.

Actual Result: The blood request is entered in the receiver's history, and a confirmation message is displayed on the screen.

BloodBridge Home Dashboard Request Blood Blood Requests Chat Resources About

Nischal

## Request Blood

Please fill in the details for your blood requirement.

Blood Type Required	Units Needed
A+	10
Urgency Level	Required By
Urgent	04/01/2025
Hospital/Medical Center	
test	
Additional Notes	
Must be eligible	
<input checked="" type="checkbox"/> I confirm that this is a genuine medical requirement	
<b>Submit Request</b>	

Activate Windows  
Go to Settings to activate Win

Figure 7: Test Case Request blood

### 11.3.3. Test Case: Donate Blood

Test Case ID: donate\_blood

Priority: High

Test Case: Blood Donation Functionality – Donate Blood Test Scenarios

Test Step: Go to the "Donate Blood" section, select the available donation program, and click the "Donate Blood" button.

Pre-Condition: The user must be logged in and on the "Donate Blood" page, with the donor's profile and eligibility verified.

Test Data:

Username: nischal

Password: nischal123

Donation Program: test

Blood Type: A+

Eligibility: Eligible to donate

Post Condition: The donation request is submitted and the donor is added to the list of donation programs.

Expected Result: The system has to validate the blood donation, update the profile of the donor with the donation status, and add the donation to the list of programs along with the blood group and details of donation.

Actual Result: The system confirms the donation, and the donor's profile is updated with the donation details and a confirmation message on the screen.

The screenshot shows the BloodBridge website interface. At the top, there is a navigation bar with links for Home, Dashboard, Donate Blood (which is highlighted in red), Donation Programs, Blood Requests, Chat, Resources, and About. On the far right, there is a user profile icon for 'Nischal' and a notification bell icon with a '2' badge. The main content area has a title 'Record Blood Donation' in red. Below it, a message says 'Thank you for your generous donation! Please record your donation details below.' There are several input fields: 'Blood Type' (A+), 'Units Donated' (1), 'Donation Center' (test), and an 'Additional Notes' field containing 'Yes, it is eligible'. This notes field is highlighted with a red border. Below these fields is a checkbox labeled 'I confirm that all the information provided is accurate and I am feeling healthy today'. At the bottom is a large red button labeled 'Record Donation'.

Figure 8: Test case Donate blood

## 11.4. Sub Systems 2

### 11.4.1. Software Requirements Specifications (SRS)

The SRS for Backend Operations covers numerous various fields of the server-side architecture and ensures that every component of the architecture is in accordance with

the necessitated data processing, administration, and front-end integration. The backend is secure, scalable, and capable of connecting a wide range of users. It is designed for huge quantities of data with fast processing, which gives stable performance for operations such as donor and receiver communications, blood bank management, and donation program tracking.

#### **11.4.2. Backend Functionality**

The backend part of the system is written in Django, a Python framework. The backend is responsible for performing most of the server-side operations of the system for secure, efficient, and scalable handling of data as well as integration with the frontend. Information processing and handling data regarding donors and receivers and keeping track of donation activities and administration tasks efficiently is performed by the backend.

**Key tasks of the backend are:**

**CRUD Operations (Create, Read, Update, Delete):**

Donor and receiver data management, donation programs, and donation requests are required for this.

**User Authentication and Authorization:**

Secure user administration ensures that only authorized users (donors, receivers, and admin) have access to and can edit confidential information. Access is restricted to preserve the secrecy of the information of the users.

All the interactions, such as donor registrations, donation program schedules, and blood bank locations, are processed and saved in the database. These are:

Donor information in the donor database.

Donation programs in the donation programs database.

Blood bank information in the blood bank database.

#### **Donation Tracking:**

The backend system tracks the status of each donation, such as future donation programs, donor registrations, and blood availability at blood banks.

#### **API Development:**

RESTful APIs are used for facilitating smooth interactions between the backend and the frontend to ensure an unbroken user experience. The APIs facilitate functionality like registration with donor programs, blood requests, and updating donor information.

#### **Error Handling and Logging:**

The backend comprises robust error handling mechanisms to avoid any discontinuities in operation and sound bug tracking. Logs are kept to monitor the system performance and catch any potential defects.

## **12. Conclusion**

The Blood Donation System (BDS) aims to enhance the blood donation process with an effortless, trouble-free experience for donors, receivers, and admins. The system was created with the particular aim of simplifying the registration process, enabling proper communication between donors and receivers, and efficient management of donation programs. The interface was made self-explanatory so that it offers a tension-free experience to users, and the backend enables proper handling of data and management of all the stakeholders.

Through the process of creating the BDS, some helpful insights were gathered, and the following important conclusions were made:

#### **User Experience Optimization:**

**Findings:** Testing revealed that the interface was easy to use, allowing users to register easily, view upcoming donation programs, and request blood. Feedback from the users highlighted that requesting a donation was easy, and the communication aspects provided much-needed guidance.

**Conclusions:** The design of the user interface is crucial in providing a good experience. Through the focus on simplicity and use, we were able to increase user satisfaction, which in turn results in greater use of the system.

### **Effective Use of Technologies:**

Findings: Using the backend with Django and PostgreSQL as the database alongside the frontend using HTML, CSS, and JavaScript gave a responsive and scalable environment. The effectiveness of the system in processing donor and receiver information was a milestone.

Conclusions: The right selection of technologies is necessary to create a scalable, reliable, and safe blood donation system. Django and PostgreSQL were the technologies which were necessary to handle a huge amount of data without compromising on speed and reliability.

### **Scalability and Security**

Discoveries: The security features of the system, such as user authentication and data encryption, ensured the security and privacy of sensitive information. The system further accommodates scalable ease as users grow in numbers, ensuring sustainability in the long term.

Conclusions: Security and scalability are critical in any system that handles personal information, especially where health-related fields are concerned. The BDS was designed in adherence to these recommendations to ensure that it can accommodate an increasing number of users without jeopardizing the integrity of the data.

### **Integration of Frontend and Backend Systems**

Discoveries: APIs were employed to enable frontend and backend communication to ensure real-time data synchronization. This enabled users to sign up for donation programs, track donation history, and receive updates smoothly.

Conclusions: Integration of the frontend and backend systems should be done properly for efficient operation. Utilization of RESTful APIs allowed smooth data flow and update processes to make the system responsive and resilient.

### **Project Management and Development Methodology**

Discoveries: Incremental development was facilitated through the Scrum methodology so that features were shipped in phases and could be perfected as per the feedback of users. The practice also ensured the team remained agile and in compliance with timelines.

Conclusions: Scrum was an effective approach for this project, as it ensured continuous feedback and timely delivery of working features. This agile process is important in ensuring that the system evolves as per user specifications and market requirements.

In conclusion, the Blood Donation System (BDS) was developed successfully, accomplishing the mission and vision goals of having a secure, efficient, and user-friendly platform for blood donations. By using the latest web technologies, maintaining user experience focus, and using an agile development methodology, the BDS not only optimizes the donation process but also offers a scalable

and reliable system that can support future development. This case study shows how combining the latest technologies with effective project management techniques can lead to a highly effective and useful web service.

## 13. Critical Evaluation of the project

### 13.1. Final Report

Having read the final report for the Blood Donation System (BDS) with great detail, I am able to state categorically that it is a clearly worded and comprehensive report. The report clearly outlines the project scope and beautifully explains how every phase of development brings us to the realization of the established objectives. Literature review was extensive and provided a good foundation for the system development and design, referencing appropriate technologies, methods, and practices that were influential in guiding the project.

The justification for the methodologies and tools implemented was well justified, providing a good explanation for the choices made along the way in the development process. It had a clear understanding of why certain tools such as Django, PostgreSQL, HTML, CSS, and JavaScript were utilized in the project, making it scalable, secure, and user-friendly.

The inclusion of artifact designs, test processes, and the Gantt chart provided excellent insight into the project implementation timeline and organizational structure of the tasks. These elements facilitated visualization of the development process and highlighted key milestones, making it simple to monitor the progress of the project.

However, I believe that there could have been some places where the system could have been better. Firstly, incorporating more real data and user feedback would have provided a better assessment of how usable the system was and how it affected users. It would have been able to further build on the system with user experience in mind, making the site do what it is intended to do better.

### 13.2. Findings and process

During the development of the Blood Donation System (BDS), there were some key observations along the way. One of the most beneficial approaches was adopting the SCRUM methodology within the agile framework. This allowed for agility and incremental development, and the system could be altered as necessary based on user feedback and test results.

Early focus was on gathering the requirements and developing a donor- and recipient-friendly interface. With an iterative approach, the design and features of the system were refined continually based on feedback from early iterations. This kept the resulting system user-centric and met the important functions of simplifying blood donation and matching. Periodic testing and sprint iterations allowed for effective bug fixing, as well as quality checks, leading to a perfect end product.

### 13.3. System Evaluations

The Blood Donation System successfully achieved its primary goal of offering an uninterrupted platform for receivers and donors to interact, with functionalities such as user registration, blood donation requests, and live chat between donors and receivers. The system's user interface was simplified and streamlined, making it easy for users to navigate the system and conduct activities such as requesting blood or scheduling donation appointments.

Back-end, the system was coded keeping security and performance in mind, in a way that user details, blood donation history, and other sensitive information were processed securely. Using Django and PostgreSQL provided a stable environment for handling high volumes of data, as well as ensuring that the system remains responsive.

However, challenges were encountered in handling some aspects of the integration, such as keeping data updated between donor and receiver requests in an effective way and maintaining the system scalable when the number of users was increased. These were overcome through regular testing and the use of best coding practices to enhance the stability and security of the system. Enhancement can also be improved further to expand the functionality of the system, particularly in aspects of more intricate notification systems or automated matching.

### 13.4. Effective organization and use of sources

The project planning and management of the Blood Donation System were also effective. They utilized a Gantt chart, which was useful for displaying and monitoring the project's progress at each step. This ensured the project was on schedule and that each segment was completed when it should be.

The research phase utilized credible data from peer-reviewed journals, known sector reports, and other blood donor and healthcare systems' case studies. These provided valuable information on better practices and issues of other blood donor systems.

Effective project management and the application of system tools such as Git for tracing the changes were critical for all the pieces of the development process to function properly. Assistance from the IDE simplified coding, and this helped the employees work more, reducing the possibility of error in the code.

### 13.5. Self-reflection

The Blood Donation System project was of great assistance for work and development. I gained experience of agile practices and the SCRUM framework, which is widely used in the industry. I also gained hands-on experience with web development, particularly with creating user-friendly interfaces, backend development with Django, and testing the system.

Through this project, I realize the importance of being adaptable and continuing to learn. How I planned and organized the project taught me about time management, problem-solving, and stress handling. These will be useful for me in my work.

The Blood Donation app was difficult to develop but highly rewarding. I gained knowledge on how to develop actual apps and handle the issues of project management and software creation. The project consumed a lot of time, but ultimately it was completed successfully, which taught me valuable lessons for the future. This project altered my course as a programmer and prepared me for future large projects.

## 14. Evidence of project management

### 14.1. Logsheet-signed and scanned by supervisor

Faculty of Science and Engineering School of Mathematics and Computer Science		UNIVERSITY OF WOLVERHAMPTON	
PROJECT MANAGEMENT LOG			
First Name:	Nishal	Surname:	Baznet
Student Number:	2227079	Supervisor:	Utsav Dahal
Project Title:	Blood donation system Month: December		
What have you done since the last meeting			
<p>- Start Reports and projects.</p>			
What do you aim to complete before the next meeting			
<p>- Start my designs - Research</p>			
Supervisor comments			
<p>→ continue Research</p>			

We confirm that the information given in this form is true, complete and accurate.

Student Signature: Nishal

Date: 2024/10/12/09

Supervisor Signature: utsav

Date: \_\_\_\_\_

Figure 9: Logsheet 1

**Faculty of Science and Engineering  
School of Mathematics and Computer Science**



PROJECT MANAGEMENT LOG	
First Name: <i>Nischal Basnet</i>	Surname: <i>Basnet</i>
Student Number: <i>2227079</i>	Supervisor: <i>Utsav Dahal</i>
Project Title: <i>Online Blood donation</i>	Month: <i>December</i>
What have you done since the last meeting	
<p>- Research on new features and similar systems</p>	
What do you aim to complete before the next meeting	
<p>- literature review - report format - designs</p>	
Supervisor comments	

We confirm that the information given in this form is true, complete and accurate.

Student Signature: *[Signature]*

Date: *Dec 15, 2024*

Supervisor Signature: *[Signature]*

Date: *Dec 15, 2024*

Figure 10: Logsheets 2

**Faculty of Science and Engineering  
School of Mathematics and Computer Science**



**PROJECT MANAGEMENT LOG**

First Name:	Nischal	Surname:	Banshet	
Student Number:	2227079	Supervisor:	Utsav Daha	
Project Title:		Online Blood Donation.	Month:	January

What have you done since the last meeting

- Design
- Report / literature review

What do you aim to complete before the next meeting

- ~~start to code~~
- Code Set up
- Frontend.

Supervisor comments

We confirm that the information given in this form is true, complete and accurate.

Student Signature: Nishal

Date: Dec 22, 2024

Supervisor Signature: Utsav Daha

Date: \_\_\_\_\_

Figure 11: Logsheets3

**Faculty of Science and Engineering  
School of Mathematics and Computer Science**



**PROJECT MANAGEMENT LOG**

First Name: *Nischal* Surname: *Basnel*  
Student Number: *2227079* Supervisor: *Utsav Datal*  
Project Title: *Online Blood Donation* Month: *January*  
What have you done since the last meeting

- Code Setup
- Front end.

**What do you aim to complete before the next meeting**

- Work on Artifact

**Supervisor comments**

We confirm that the information given in this form is true, complete and accurate.

Student Signature: *Muj*

Date: *Jan 19, 2025*

Supervisor Signature: *Ozeb*

Date: \_\_\_\_\_

Figure 12: Logsheets4

PROJECT MANAGEMENT LOG	
First Name: <i>Nischal</i>	Surname: <i>Bansal</i>
Student Number: <i>2227079</i>	Supervisor: <i>Utsav Bansal</i>
Project Title: <i>Online Blood Donation</i>	Month: <i>January</i>
What have you done since the last meeting	
<p>- Frontend sign in, login, home</p>	
What do you aim to complete before the next meeting	
<p>- Artifact Complete</p>	
<p>- Continue on frontend</p>	
Supervisor comments	

We confirm that the information given in this form is true, complete and accurate.

Student Signature: *[Signature]*

Date: *Jan 26, 2025*

Supervisor Signature: *[Signature]*

Date: *Jan 26, 2025*

Figure 13: Logsheets 5

PROJECT MANAGEMENT LOG	
First Name: <i>Nishchal</i>	Surname: <i>Basnet</i>
Student Number: <i>2227079</i>	Supervisor: <i>Mr. Utsav Dahal</i>
Project Title: <i>Online Blood donation</i>	Month: <i>Feb</i>
What have you done since the last meeting	
<ul style="list-style-type: none"><li>- Home page, Dashboard</li><li>- login/signup backend connection</li></ul>	
What do you aim to complete before the next meeting	
<ul style="list-style-type: none"><li>- Features Backend connection</li><li>- Add map.</li></ul>	
Supervisor comments	

We confirm that the information given in this form is true, complete and accurate.

Student Signature: *[Signature]*

Date: *23 Feb, 2025*

Supervisor Signature: *[Signature]*

Date: *23 Feb, 2025*

Figure 14: Logsheets 6

Faculty of Science and Engineering  
School of Mathematics and Computer Science



PROJECT MANAGEMENT LOG

First Name:	Nischal	Surname:	Bosnet
Student Number:	2227079	Supervisor:	Mr. Utsav Dara
Project Title:	Online Blood Donation	Month:	February

What have you done since the last meeting

- Artifact complete
- All frontend code Admin, Doner, Receiver.

What do you aim to complete before the next meeting

- Dashboard Designs
- Backend connections .

Supervisor comments

We confirm that the information given in this form is true, complete and accurate.

Student Signature: Nischal

Date: 16<sup>th</sup> Feb 2025

Supervisor Signature: Utsav Dara

Date: 16<sup>th</sup> Feb 2025

Figure 15: Logsheets 7

PROJECT MANAGEMENT LOG	
First Name: <i>Nischal</i>	Surname: <i>Basnet</i>
Student Number: <i>2227079</i>	Supervisor: <i>Mr. Utsav Basnet</i>
Project Title: <i>Online Blood Donation</i>	Month: <i>March</i>
What have you done since the last meeting	
<ul style="list-style-type: none"><li>- testimonials and stats on admin DB.</li><li>- chat bot</li></ul>	
What do you aim to complete before the next meeting	
<ul style="list-style-type: none"><li>- Admin Dashboard Completion.</li><li>- Forget password</li></ul>	
Supervisor comments	

We confirm that the information given in this form is true, complete and accurate.

Student Signature: *[Signature]*

Date: *March 16, 2025*

Supervisor Signature: *[Signature]*

Date: *March 16, 2025*

Figure 16: Logsheet 8

Faculty of Science and Engineering  
School of Mathematics and Computer Science



PROJECT MANAGEMENT LOG	
First Name: <i>Nischal</i>	Surname: <i>Bansal</i>
Student Number: <i>2227079</i>	Supervisor: <i>Mr. Utsav Daha</i>
Project Title: <i>Online Blood Donation</i>	Month: <i>March</i>
What have you done since the last meeting	
<ul style="list-style-type: none"><li>- May integration</li><li>- Blood request and donate feed</li></ul>	
What do you aim to complete before the next meeting	
<ul style="list-style-type: none"><li>- testimonials and <del>status</del> stats which can be updated from admin panel manually.</li></ul>	
Supervisor comments	

We confirm that the information given in this form is true, complete and accurate.

Student Signature: *[Signature]*

Date: *2<sup>nd</sup> March 2025*

Supervisor Signature: *[Signature]*

Date: *2<sup>nd</sup> March 2025*

Figure 17: Logsheets 9

PROJECT MANAGEMENT LOG	
First Name: <i>Nischal</i>	Surname: <i>Banshet</i>
Student Number: <i>2227079</i>	Supervisor: <i>Mr. Utsav Dahal</i>
Project Title: <i>Online Blood Donation</i>	Month: <i>March</i>
What have you done since the last meeting	
<ul style="list-style-type: none"><li>- Admin Dashboard complete</li><li>- Forgot password complete.</li></ul>	
What do you aim to complete before the next meeting	
<ul style="list-style-type: none"><li>- Chat system between Donor and receiver.</li></ul>	
Supervisor comments	

We confirm that the information given in this form is true, complete and accurate.

Student Signature: *Nishal*

Date: *March 23, 2025*

Supervisor Signature: *Banshet*

Date: *March 23, 2025*

Figure 18: Logsheet 10

## 14.2. Gantt chart

**Step 1:** Planning (September 9 – November 2)

Nov 9–19: Determine the boundaries of the project.

Nov 19 – 26: Gather Needs

Nov 26- Dec 2: Create a Project Plan

**Phase 2:** Designing (December 20–26, January 26

20 Dec – 16 Jan: Design User Interface

Jan 16–26: Construction of the Database Plan

**Phase 3:** Construction (15th January – 15th April) Jan 15th – Mar 10th: Develop the Frontend Interface

March 10 - April 15: Develop Backend Features

**Phase 4:** Testing and Roll-out (April 15 – May)

April 15th to May

Prepare to deploy.

Spelling mistakes, grammatical errors,

Test System Functionality This schedule indicates the work and critical steps well, and the development process is smooth. Do inform me if any changes should be made.

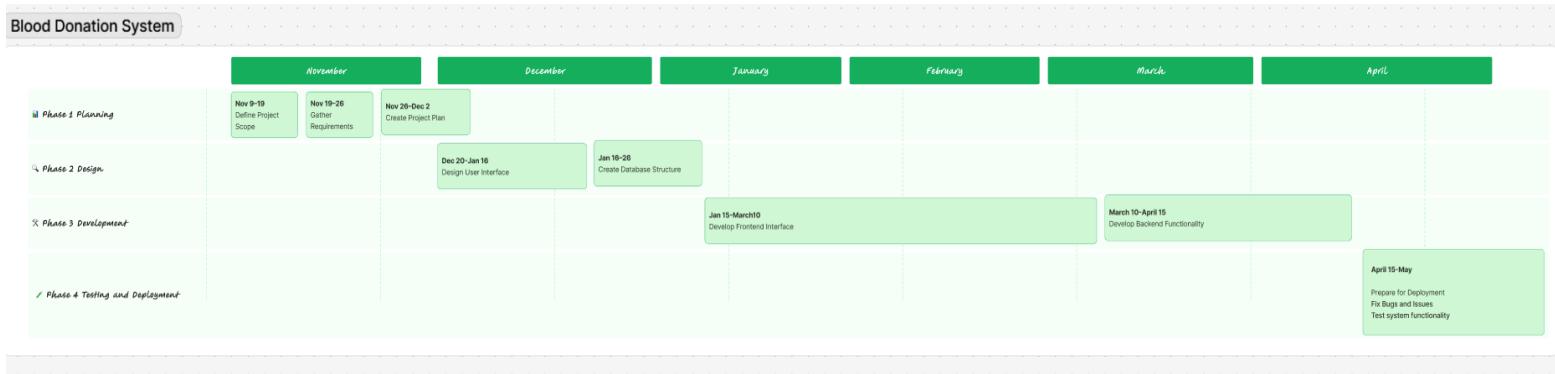


Figure 19: WBS

## 15. References

### Django Documentation

This is the detailed manual for creating web applications using Django.  
 Available at: [Django Documentation](#)

### W3Schools

Tutorials of front-end technologies such as HTML, CSS, and JavaScript, offering key techniques toward responsive and user-friendly design.  
 Available at: [W3Schools](#)

### World Health Organization (WHO), 2020 - Blood Safety and Availability

Guidelines regarding ethical and efficient practices in blood donation, related to your project.  
 Available at: [WHO Blood Safety](#)

### Mozilla Developer Network (MDN)

Rich source of learning JavaScript and doing the interactive web application.  
 Available at: [MDN Web Docs](#)

### Books and research publications.

Kumar, Sumanta, and Arpit Sharma. Database Management Systems. McGraw Hill, 2019

Beneficial for database designing and administration of PostgreSQL.

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Patel, D. and Ramesh, B. (2020). Creating Websites with Django. Packt Publishing

Covers creating web applications with Django.

World Health Organization. (2021). Information and Safety on Blood Donation. Retrieved from <https://www.who.int/>

Provides medical and ethical considerations for blood donation.

Johnson, M. and Lee, R. (2018). Issues with Health Apps on the Internet. Journal of Medical Information, 35(2), 120-135.

Assists in keeping donor and recipient data secure.

## Online Sources

Django Documentation. (2025). Official Django Documentation. Retrieved from <https://docs.djangoproject.com/>

Helps in understanding Django framework features.

PostgreSQL Documentation. (2025). PostgreSQL Official Documentation. Retrieved from <https://www.postgresql.org/docs/>

It encompasses database searches, security, and increased speeds.

WebSockets and Django Channels. (2025). Real Time Messaging with Django. Retrieved from <https://channels.readthedocs.io/en/stable/>

Tutorials for implementing WebSockets for chat systems.

## 16. Appendices

### Appendix A: Entity Relationship Diagram (ERD)

The ER diagram illustrates how significant components of the system are interconnected.

Givers, Receivers, and Managers

Blood Requests

Donations

Chat System

## **Appendix B: Database Structure**

Examples Table

Users Table: Maintaining donors and recipients (user\_id, name, blood group, contact info).

Donations Table: Tracking the donations of blood (donation\_id, donor\_id, date, location)

Messages Table: Stores the messages exchanged between donors and recipients (message\_id, sender\_id, recipient\_id, timestamp).

## **Appendix C: User Guide**

Getting Started

Registration and Login: The user can register as a Receiver and Donor and can login with their email address and password.

Searching for Blood: You can also search for individuals who donate blood and request them to donate.

Real-Time Chat: Once the request is accepted, the receiver and the donor can exchange messages with each other.

Donation Plan: Managers can initiate and organize blood donations.

## **Appendix D: System Setup Details**

Backend Configuration: Infrastructure: Django (Python)

Database: PostgreSQL

Hosting: Deploy using AWS or Digital Ocean.

Front settings

Framework: HTML, CSS, JavaScript

Development Tools: IDE: Visual Studio Code Version Control: GitHub Repository