VITALFLOW CONNECTING BLOOD DONORS AND BLOOD BANKS

Minor project-II report submitted
in partial fulfillment of the requirement for award of the degree of

Bachelor of Technology
in
Computer Science & Engineering

By

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S.Sai Deepak Reddy   (VTU19961)   (**21UECS0607**)
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Under the guidance of
Dr.K.Seetha Lakshmi, M.E., Ph.D.,
ASSOCIATE PROFESSOR

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SCHOOL OF COMPUTING

VEL TECH RANGARAJAN DR. SAGUNTHALA R&D INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University Estd u/s 3 of UGC Act, 1956)
Accredited by NAAC with A++ Grade
CHENNAI 600 062, TAMILNADU, INDIA

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CERTIFICATE

It is certified that the work contained in the project report titled "Vitalflow Connecting Blood Donors and Blood Banks" by "M.Sasidhar Reddy (21UECS0351), S.Sai Deepak Reddy (21UECS0607), G.Venkata Sai Krishna (21UECS0211) " has been carried out under my supervision and that this work has not been submitted elsewhere for a degree.

Signature of Supervisor

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Institute of Science & Technology

May, 2024

Signature of Professor In-charge

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May, 2024

DECLARATION

We declare that this written submission represents our ideas in our own words and where others ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

M.Sasidhar Reddy

Date: /   /

S.Sai Deepak Reddy

Date: /   /

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APPROVAL SHEET

This project report entitled "Vitalflow Connecting Blood Donors and Blood Banks" by M.Sasidhar Reddy (21UECS0351), S.Sai Deepak Reddy (21UECS0607), G.Venkata Sai Krishna (21UECS02117) is approved for the degree of B.Tech in Computer Science & Engineering.

Examiners   **Supervisor**

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Date: /   /
Place:

ACKNOWLEDGEMENT

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ABSTRACT

Vitalflow Connecting Blood Donors and Blood Banks website is here to make donating blood easy and better for everyone. It helps communities share and manage blood donations simply, focusing on being eco-friendly and working together. The website makes it easy to list and exchange blood donations, promoting responsible blood use and bringing communities closer. It has cool features like showing donors where their blood goes, booking appointments online, finding blood banks easily, and a friendly AI chatbot for answering questions. It's also safe with Google quick searches and secure storage. The website is designed to be easy to use, making donating blood an eco-friendly experience for everyone. Project also contributes to the friendly aspect of blood donation by emphasizing sustainable practices in its design and functionality. From reducing paper wastage through online appointment bookings to optimizing the overall donation process, the website aligns itself with environmentally conscious principles. By fostering a sense of community and responsibility, This platform aims to transform the act of donating blood into an enjoyable and eco-friendly experience for everyone involved. Vitalflow Connecting Blood Donors and Blood Banks is revolutionizing the blood donation experience with its user-friendly website, dedicated to making blood donation easy, efficient, and environmentally friendly. Security is paramount, and Vitalflow ensures the safety of user data through secure storage and Google quick searches. Donors can trust that their information is protected, allowing them to donate with peace of mind. Overall, Vitalflow Connecting Blood Donors and Blood Banks is more than just a website it's a community-driven initiative that promotes sustainability, transparency, and responsible blood donation practices.

Keywords:
Appointment Booking, Blood Bank Locator, Community, Eco-Friendly, Optimize donation process, Sustainable design, Fostering, Revolutionizing, Emphasizing.

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

ACRONYM	ABBREVIATION
AI	Artificial Intelligence
API	Application Programming Interface
CCBBMS	Computerized Central Blood Bank Management System
CSS	Cascading Style Sheets
EJS	Embedded Javascript
GIS	Geographic Information System
HTML	Hypertext Markup Language
JS	JavaScript
LTS	Long Term Support
LSTM	Long Short-term memory
ML	Machine Learning
PHP	Hypertext Preprocessor
SSC	Section Signature Conference
VSC	Visual Studio Code

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Chapter 1

INTRODUCTION

1.1 Introduction

Project Vitalflow Connecting Blood Donors and Blood Bank is an online platform that wants to solve the problem of not enough people knowing about blood donation options. Many potential donors miss chances to help because they don't know where local centers are. This project aims to make it easy by creating a website with details about nearby blood banks like where they are, when they're open. Website makes it simple for donors to connect with the right centers, creating a sense of community and urgency. It encourages people to join in, and make the blood donation experience better for everyone involved.

Function of Vitalflow Connecting Blood Donors and Blood Bank is to make giving blood easy and meaningful. It's not just a website with basic information about blood banks; it's a place that brings donors and centers together. The platform creates a friendly community, making the whole donation experience better. Connecting people and sharing real-time updates, ensures that everyone involved feels a sense of belonging and understands the impact they're making. It's not just about donating blood; it's about building connections and making a difference together.

1.2 Aim of the Project

Project improve healthcare by providing a secure online platform with functions such as secure appointment scheduling, location services, AI assistance, and a dynamic track bar. The primary goal is to simplify and enhance the blood donation process, fostering a community-driven, efficient, and compassionate approach to healthcare.

1.3 Project Domain

In the domain of public healthcare, our project, Vitalflow Connecting Blood Donors and Blood Bank stands as a testament to accessible and user-friendly solutions. The primary objective is to furnish users with a secure platform that simplifies the blood donation process. On the Blood Harmony website, users can seamlessly book time slots, ensuring a hassle-free and efficient experience.

To enhance user interaction, we've incorporated a personal AI bot. This virtual assistant is ready to clarify any doubts users may have while exploring the site or understanding the blood donation process. platform features a dynamic track bar, and a visual guide that keeps everyone in the loop about the different stages of the blood donation process. From the initial steps of processing the blood to the crucial testing phase, safe storage, and finally, efficient distribution. To make the entire experience even more user friendly, we've implemented a smart time slot system.

1.4 Scope of the Project

Project encompasses a healthcare project aimed at simplifying blood donation and making it stress-free for everyone. The secure website provides an easy-to-use platform where individuals can conveniently schedule a time for blood donation without any hassle. Additionally, the website offers a user-friendly interface to locate nearby blood banks, ensuring donors always know where to go. The inclusion of a helpful AI bot further enhances the user experience, providing assistance and information about the blood donation process.

Beyond its technological features, incorporates innovative elements such as a dynamic track bar that guides users through each step of the blood donation, Also emphasizing transparency and understanding. The project is designed with the user preference in mind, implementing a smart time slot system to eliminate long waiting lines. Whether choosing a donation time or locating the nearest blood bank, Website is committed to optimizing the donor experience. More than just a tech initiative, represents a meaningful intersection of technology and healthcare, innovation to positively impact people's lives and contribute to a better, healthier future.

Chapter 2

LITERATURE REVIEW

Diana Hawashin et al, (2012),[1] implemented a solution to enhance blood donation management systems by utilizing Ethereum blockchain technology, addressing current shortcomings such as traceability, security, and transparency. The approach taken involves decentralization to eliminate single points of failure and ensure privacy. Large data is stored off-chain using InterPlanetary File System (IPFS) for efficiency and data integrity. By leveraging smart contracts and decentralized storage, Aim is to create a transparent, secure, and auditable system.

K. Srivastava et al, (2013),[2] proposed that ReactJS is a valuable JavaScript library that facilitates the development of responsive websites. By offering built-in modules, ReactJS can elevate front-end development, enabling the creation of sophisticated elements with ease. React JS stands out as a leading framework for modern website development.

Lestari et al, (2020), [3] introduced several blood components at the Blood Transfusion Unit to improve health services in Indonesia including Whole Blood, Packet Red Cells, Liquid Plasma, Fresh Frozen Plasma, Thrombocyte Concentrate, Kriopresipitat and Washed Erythrocyte. To provide services to consumers, this unit faces problem in the form of unbalanced blood supply information and consumer demand. Consequently, management of this unit was difficult to manage the blood inventory. Aims of this study is to build an information system model using the system development life cycle approach to manage blood demand..

Mitesh Sarode et al, (2018), [4] proposed the intelligent blood management system has the potential to be a significant asset for blood banks and hospitals, streamlining the blood management process. The system offers real-time analytics for blood donations and requests, providing valuable insights. The unique color coding scheme, designed to identify blood pouches based on blood groups, simplifies the handling

of pouches, eliminating the need for sorting based on blood groups.

Mohamad Y. Esmail et al, (2016), [5] proposed about the Computerized Central Blood Bank Management System (CCBBMS), which efficiently manages blood bank operations, including donor records, blood data, testing outcomes, blood distribution to hospitals, and disposal of unusable blood. The initial phase involved collecting data by visiting Khartoum's national blood transfusion center, followed by data analysis and system design. The implementation utilized MySQL for database creation and PHP for system layout, integrating barcode and QR code technology. The user-evaluated prototype met requirements, allowing for potential expansion to encompass additional.

Nayan Das et al, (2019), [6] prepared a solution for the global blood shortage issue by leveraging smart technology to connect donors with recipients is commendable. The COVID-19 pandemic has indeed exacerbated the need for blood and plasma, particularly for vulnerable populations. Implementing a platform that utilizes advanced algorithms to match donors with recipients based on proximity and blood type compatibility could significantly enhance the efficiency of blood donation systems. By leveraging technology, such a platform could overcome geographical barriers and streamline the process of finding suitable donors, thereby saving more lives in critical situations

P.A.J. Sandaruwan et al, (2019), [7] introduced an advanced blood bank management platform featuring modules for demand forecasting, donation campaign suggestions, and supply chain security. The implementation integrates LSTM, k-means clustering, GIS, and blockchain. Real-data evaluation demonstrates effective balancing of blood supply and demand. LSTM accurately forecasts demand, aiding in campaign scheduling, while GIS, via Google Maps APIs, visualizes campaign locations. Blockchain ensures data confidentiality and integrity, utilizing smart contracts to define stakeholder agreements in healthcare systems.

S. A. Alshahrani's et al, (2017), [8] proposed Towards an Efficient and Secure Blood Bank Management System, presented at the 2020 IEEE International Conference on Informatics, IoT, and Enabling Technologies, highlights the urgent need for advanced blood bank management systems. The literature review emphasizes the

significance of integrating efficiency and security measures to streamline blood donation processes and ensure the safety of blood transfusion procedures, underscoring the role of technology in modern healthcare systems.

Ulfah et al, (2021), [9] stated that the Blood Transfusion Unit in Indonesia faces challenges in managing the supply and demand of various blood components, leading to difficulties in inventory management. To address this, the aim is to develop an information system model using the system development life cycle approach. This model will facilitate effective management of blood demand by implementing continuous review inventory policies, including safety stock, reorder point, and order quantity for each blood component. By enhancing inventory management, the study seeks to improve service levels for customers. Additionally, further research is suggested to explore blood inventory simulation and develop strategies for managing demand under different scenarios.

Yulius Harjoseputro's et al, (2022), [10] introduced Blood Transfusion Information System Design for Blood Transfusion Services Unit, provides insights into enhancing blood transfusion services through technological innovation. The literature review under- scores the importance of efficient information systems in ensuring safe and effective transfusions, advocating for the integration of such systems into healthcare practices.

Chapter 3

PROJECT DESCRIPTION

3.1 Existing System

In the typical blood bank traditionally involves manual processes and paperwork, relying on conventional methods for managing blood donation activities. In this system, individuals interested in donating blood typically walk into the blood bank without prior appointments, leading to potential inefficiencies and delays. The lack of an online platform means that donors have limited visibility into the available time slots, making it challenging to plan their donations according to their schedules.

Location information is typically communicated through static signage and offline resources, such as brochures or maps. Donors may need to rely on external sources or inquire within the blood bank to determine the exact location of the facility. This lack of real-time, digital location services can result in inconvenience and potential delays, especially during emergencies when quick access to blood is crucial.

3.2 Proposed System

The Proposed System, revolutionizes blood donation processes by introducing an advanced online platform with key features such as slot booking for donation appointments, real-time location services for blood banks, live tracking of donated blood, and an AI-powered personal assistant. Users can easily schedule appointments, locate nearby blood banks, and monitor the status of their donated blood in real-time. The AI assistant enhances user engagement by providing information and assistance throughout the donation process. Additionally, personalized profiles, reminders, and an emergency notification system contribute to a seamless and efficient blood donation experience. Vitalflow Connecting Blood Donors and Blood Bank aims to optimize blood bank operations, promote transparency, and encourage

regular donor participation, ultimately improving the accessibility and effectiveness of blood donation processes.

Overall, the existing system in a typical blood bank relies on traditional, manual methods for scheduling appointments, communicating location information, and tracking blood units. The absence of an integrated online platform limits the efficiency, transparency, and accessibility of blood donation processes, highlighting the need for a more modern and streamlined solution.

3.3 Feasibility Study

3.3.1 Economic Feasibility

Economic feasibility of the project is underpinned by its potential to optimize resource allocation, reduce operational costs, and enhance the overall efficiency of blood donation processes. The implementation of this advanced online platform offers cost-effective solutions through streamlined appointment scheduling, minimizing idle time at blood banks, and facilitating proactive donor engagement.

Integration of real-time location services and live tracking of donated blood units contributes to better inventory management, mitigating the risk of wastage and ensuring a judicious allocation of resources. Additionally, the AI-powered personal assistant not only enhances user experience but also automates certain aspects of donor interaction, potentially reducing administrative overheads. While initial development costs are inevitable, the long-term benefits, including increased donor participation, optimized operations, and improved transparency, position as an economically viable solution with the potential to yield significant returns on investment for blood banks and healthcare institutions.

3.3.2 Technical Feasibility

Vitalflow Connecting Blood Donors and Bank technical feasibility lies in its ability to use advanced technologies to build a strong and adaptable online platform for blood donation. We make sure to store and retrieve user information, appointment schedules, and real-time tracking details efficiently through secure and scalable databases. For finding blood banks, we use well-established mapping and

location technologies to accurately identify their locations, making the platform easy to use.

AI-powered personal assistant uses smart algorithms to understand and assist users through natural language processing and machine learning. The live tracking feature ensures accurate monitoring of donated blood by using reliable and real-time data transmission methods from the moment it's collected to its distribution. In simpler terms, uses smart technology to create an easy-to-use platform, securely managing information, and providing intelligent assistance for a smoother blood donation experience.

3.3.3 Social Feasibility

Social feasibility of Blood Monitoring is evident in its potential to positively impact the community and foster a culture of regular blood donation. Vitalflow promotes a sense of civic responsibility and community engagement by providing a user-friendly platform that encourages individuals to schedule appointments and actively participate in the donation process. The live tracking feature allows donors to see the direct impact of their contributions, fostering a sense of connection and accomplishment.

Also features like personalized profiles and reminders, caters to a diverse range of users, making blood donation more accessible and appealing to a broader demographic. The social impact extends beyond the immediate user base, influencing a positive change in societal attitudes towards blood donation and healthcare participation.

3.4 System Specification

3.4.1 Hardware Specification

- 12th Gen Intel Core i5-1235U

- 15/6inch (39.6 cm) FHD

- 8GB RAM, 512GB SSD

- Intel Iris Xe Graphics

3.4.2   Software Specification

- Node.js and npm LTS version

- Mango DB 6.2.1

3.4.3   Standards and Policies

Visual Studio Code (VS Code)

Visual Studio Code excels with its adaptability to various frameworks and technologies. It proves invaluable for front-end and back-end development, offering an array of extensions catering to different web development stacks.One of the standout features of VS Code is its integrated terminal, enabling users to execute commands and scripts seamlessly within the editor. Standard Used: ISO/IEC 27001

Chapter 4

METHODOLOGY
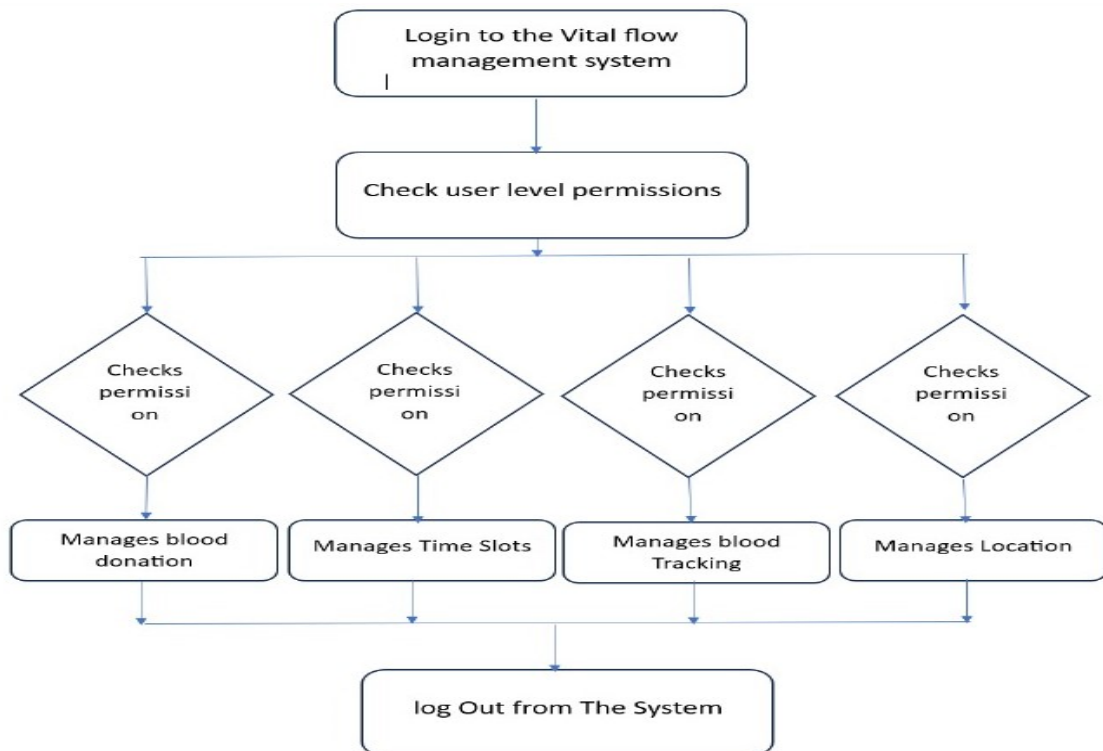
4.1 Architecture Diagram for Blood Flow

Figure 4.1: Architecture Diagram for Blood Flow

In the above figure 4.1 architecture diagram, Upon a user's login to the Vitalflow Connecting Blood Donors and Blood Bank website, the system assesses and verifies their permission levels, ensuring a secure and personalized experience. Once authenticated, users gain the capability to schedule a blood donation appointment, selecting from the available time slots tailored to their convenience, also providing AI assistance. the website provides users with comprehensive access to essential information regarding the locations of nearby blood banks. This feature enables users to easily locate and navigate to the most accessible blood donation centers. hospitals can effortlessly retrieve real-time information pertaining to the quantity of available blood units in each connected blood bank

4.2 Design Phase

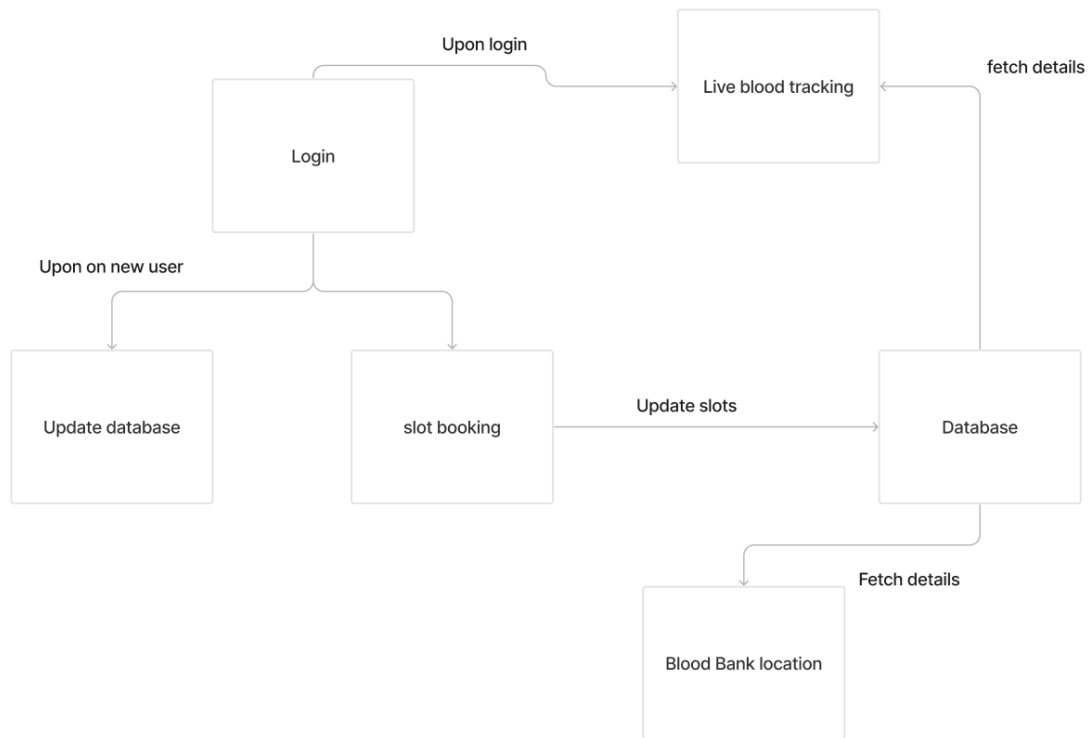### 4.2.1 Data Flow Diagram for Vital Flow

Figure 4.2: Data Flow Diagram for Vital Flow

In the above Figure 4.2 data flow diagram, user inputs such as usernames and passwords are systematically stored within a dedicated user database in the Vitalflow Connecting Blood Donors and Blood Bank system. This approach ensures a structured and organized repository for all user-related information, promoting efficiency and security. Subsequently, the user data collected during registration is seamlessly uploaded onto the Vitalflow Connecting Blood Donors and Blood Bank website. This process facilitates a smooth transition of information from the internal database to the user interface, enhancing user accessibility and interaction. By maintaining a well-organized internal database and establishing a seamless connection with the user interface, BY ensures the effective management and utilization of user data throughout the system.

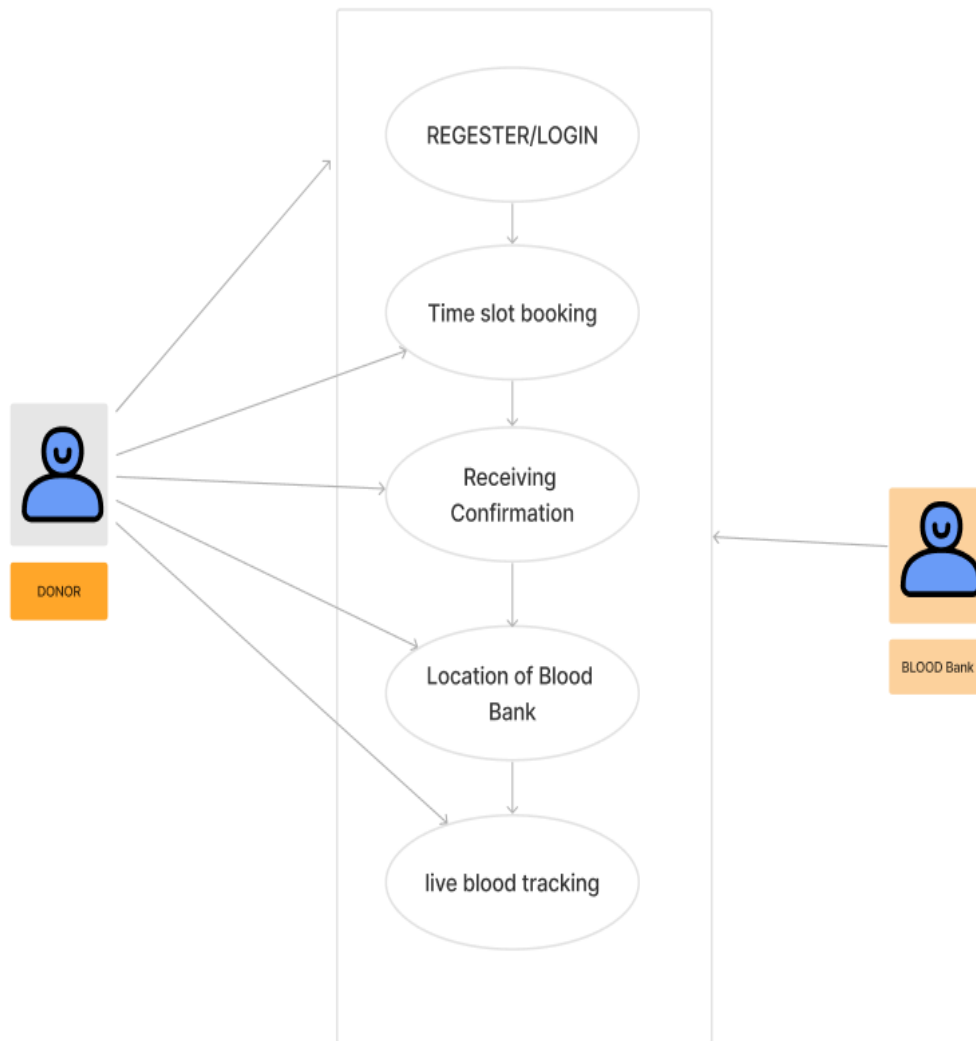### 4.2.2 Use Case Diagram connects Donor and Blood Bank

Figure 4.3: Use Case Diagram connects Donor and Blood Bank

In the above figure 4.3 use case diagram, the initial step involves the user logging in using their credentials, and granting access to the platform's functionalities. Following login, the user proceeds to search for an available time slot for blood donation. Upon executing the search, an available selection of suitable slots user can select the slot that is suitable to the user, the user con trak the give blood through the blood tracking function.
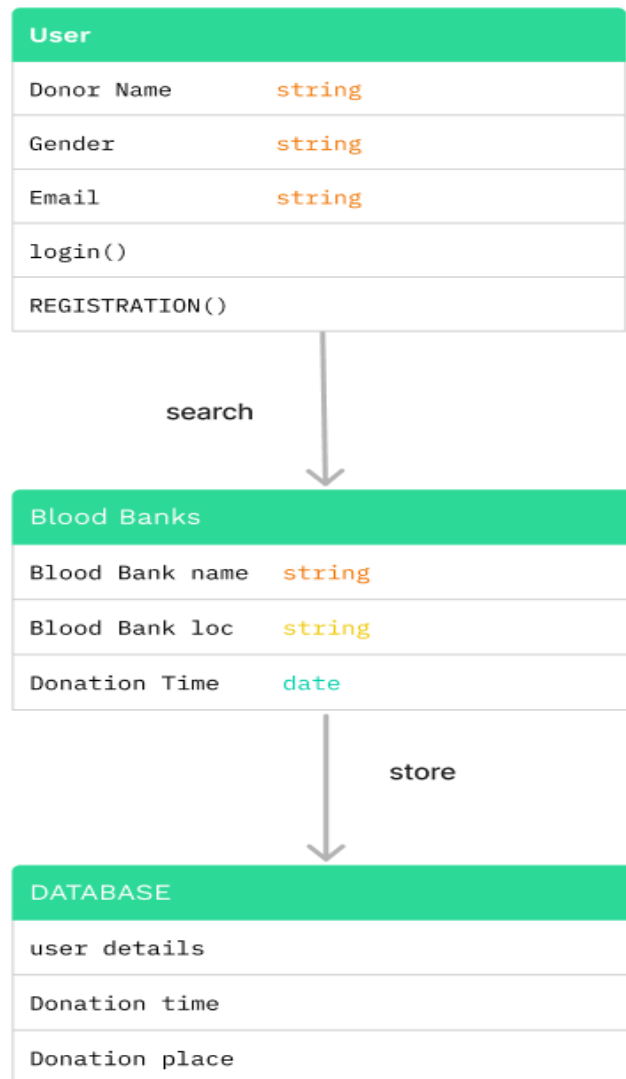
4.2.3 Class Diagram of Functions Provided

Figure 4.4: Class Diagram of Functions Provided

In the above figure 4.4 class diagram above, the system revolves around four key entities: User1, User2, Database. These entities play crucial roles in shaping the system's structure and functionality. User1, characterized by its association with a search relationship linked to the database, empowers users to seamlessly perform searches within the system. This functionality enhances the user experience by providing efficient and targeted access to information stored in the database.

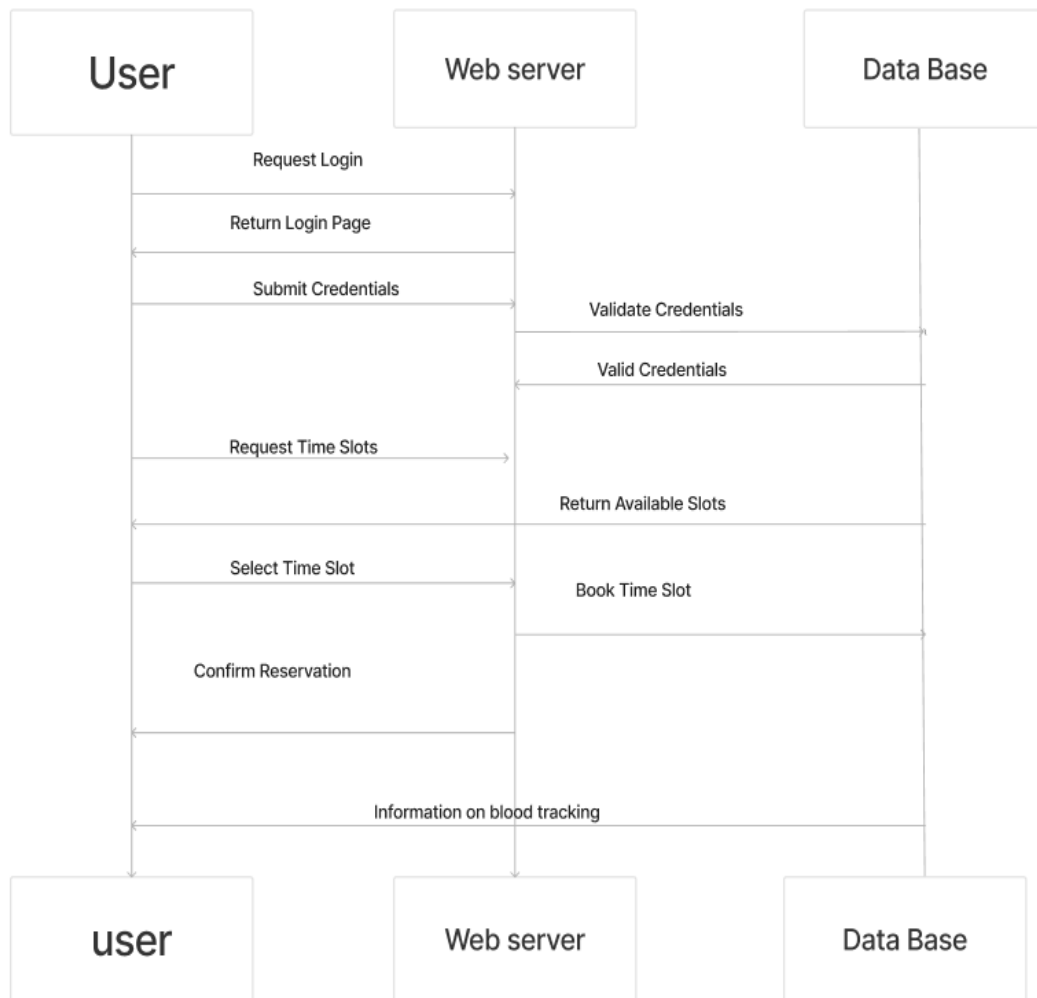### 4.2.4 Sequence Diagram Between Each Processes

Figure 4.5: Sequence Diagram Between Each Processes

In the above Figure 4.5 sequence diagram, the seamless exchange of information between the website and the database is fundamental for the functionalities of function slot booking and blood tracking. These two crucial features are designed to optimize the management and accessibility of blood-related services. The function slot booking mechanism involves users accessing the website to reserve specific time slots for blood-related functions, such as donation drives or medical appointments. When a user initiates the slot booking process, the website communicates with the database to check the availability of slots and update the reservation status.
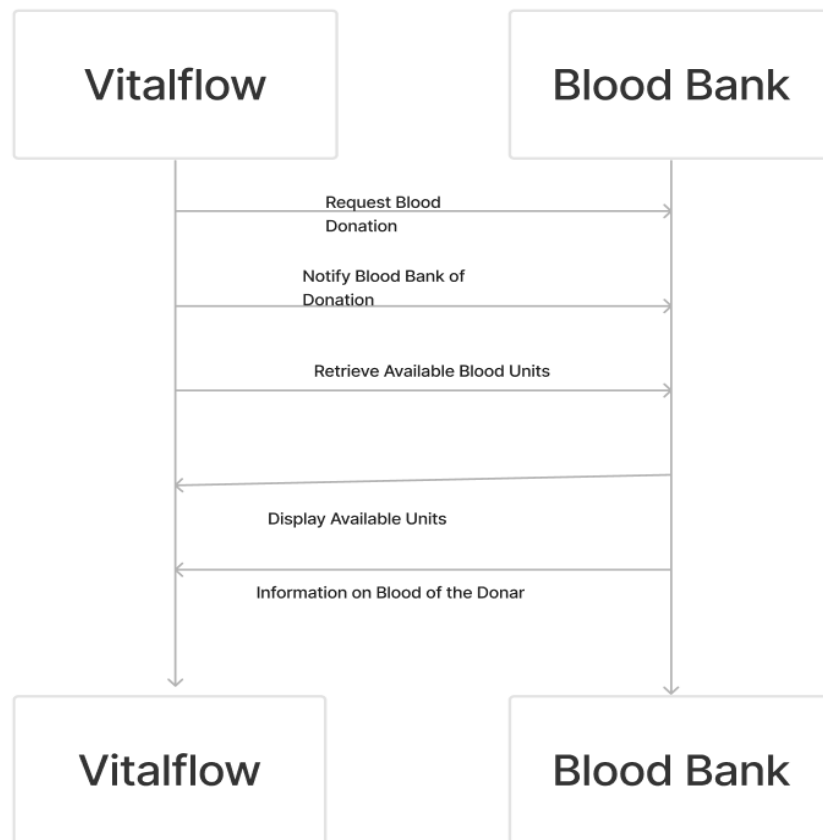
4.2.5 Collaboration Diagram for Vital Flow

Figure 4.6: Collabration Diagram For Vital Flow

In the above Figure 4.6 collaboration diagram, showcases the collaboration between Vitalflow Connecting Blood Donors and Blood Bank and blood banks it is a symbiotic partnership designed to enhance the efficiency and effectiveness of blood-related services. As a comprehensive system, works with blood banks to facilitate the collection, management, and distribution of blood resources in a coordinated and seamless manner.

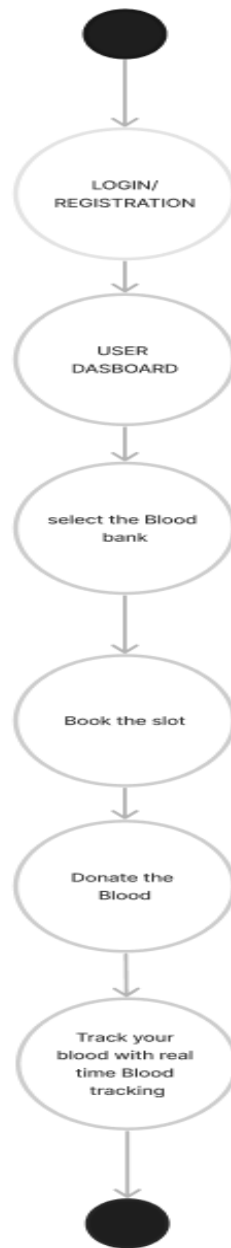### 4.2.6 Activity Diagram of Blood Tracking Web

Figure 4.7: Activity Diagram of Blood Tracking Web

In the above Figure 4.7 activity diagram showcases the user's sequential actions: Users can seamlessly schedule blood donation appointments through the user-friendly interface, ensuring a steady blood supply. The inclusion of blood bank mapping enhances accessibility, guiding users to the nearest donation centers. Moreover, It features an AI assistant, providing intelligent support for inquiries, emergency response coordination, and personalized assistance, further enhancing the efficiency and effectiveness of the entire blood management system. This comprehensive ap-

proach, blending technology and user-centric features, positions Vitalflow Connecting Blood Donors and Blood Bank as a versatile tools in the realm of blood services.

4.3 Algorithm & Pseudo Code

4.3.1 Web development Algorithm for Blood Bank

- People sign up by picking a username, password, and sharing some personal info.

- The system checks if the info is okay, like making sure the password is strong.

- It looks if the username hasn't been used by someone else.

- If the username is unique, a new profile with the info you shared is made.

- The system keeps this profile safe in its user database.

- People who signed up can book appointments by giving their user ID, date, and time they prefer.

- The system checks if the person is signed up and if the time they want is free.

- If everything's good, a new appointment is set up for them.

- The details of the appointment are stored in the system.

- Users can check where a specific unit of blood is in real time by giving its special ID.

- The system checks if the ID is correct. If it is, the system shows exactly where that unit of blood is right now.

4.3.2 Pseudo Code

```
1  class BloodHarmonySystem:
2  def __init__(self):
3      self.user_database = {}
4      self.appointment_schedule = {}
5      self.blood_tracking_system = {}
6
7  def user_registration(self, username, password, personal_details):
8      # Validation
9      if not self.is_valid_input(username, password):
10         return "Invalid input. Please provide a strong password."
```

```python
            # Check uniqueness of username
            if self.is_username_unique(username):
                # Create a new user profile
                user_profile = {"username": username, "password": password, "personal_details":
                    personal_details}
                # Store user profile in the database
                self.user_database[username] = user_profile
                return "Registration successful. Welcome to Blood Harmony!"
            else:
                return "Username already exists. Please choose a different username."

    def schedule_appointment(self, username, date, time):
        # Check if the user is registered
        if username in self.user_database:
            # Check appointment availability
            if self.is_appointment_available(date, time):
                # Create a new appointment
                appointment = {"user": username, "date": date, "time": time}
                # Store appointment details
                self.appointment_schedule[(date, time)] = appointment
                return "Appointment scheduled successfully."
            else:
                return "Appointment slot not available. Please choose another date or time."
        else:
            return "User not registered. Please register before scheduling an appointment."

    def track_blood_unit(self, blood_unit_id):
        # Check if the blood unit ID is valid
        if blood_unit_id in self.blood_tracking_system:
            # Retrieve tracking information
            tracking_info = self.blood_tracking_system[blood_unit_id]
            return f"Blood unit {blood_unit_id} is currently {tracking_info}."
        else:
            return "Invalid blood unit ID. Please provide a valid ID for tracking."

    def is_valid_input(self, username, password):
        # Placeholder for input validation (e.g., password strength)
        return len(password) >= 8

    def is_username_unique(self, username):
        # Check if the username is unique
        return username not in self.user_database

    def is_appointment_available(self, date, time):
        # Placeholder for appointment availability check
        return (date, time) not in self.appointment_schedule


# Example Usage
```

```
60  blood_harmony = BloodHarmonySystem()
61
62  # User Registration
63  print(blood_harmony.user_registration("john_doe", "secure_password", {"name": "John Doe", "
        blood_type": "O+"}))
64
65  # Schedule Appointment
66  print(blood_harmony.schedule_appointment("john_doe", "2024-01-10", "15:30"))
67
68  # Track Blood Unit
69  print(blood_harmony.track_blood_unit(123456))
```

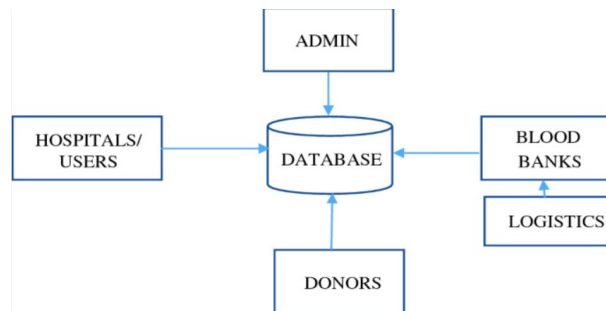## 4.4 Module Description

4.4.1 Managed Application Module

Figure 4.8: Managed Application Module

Vitalflow Connecting Blood Donors and Blood Bank project utilizes Express.js, a web application framework for Node.js, and Mongoose, a MongoDB object modeling tool, to seamlessly handle user registration data. To efficiently process form data from user registrations, the application incorporates the bodyparser middleware within the Express.js framework. Triggered by a POST request, the 'uploadToDB' function asynchronously creates a new user document in the MongoDB database. This function leverages the Mongoose model and processes parsed data from the user registration form. The implemented process ensures that crucial user information, including username, email, and password, is securely stored in the MongoDB database.
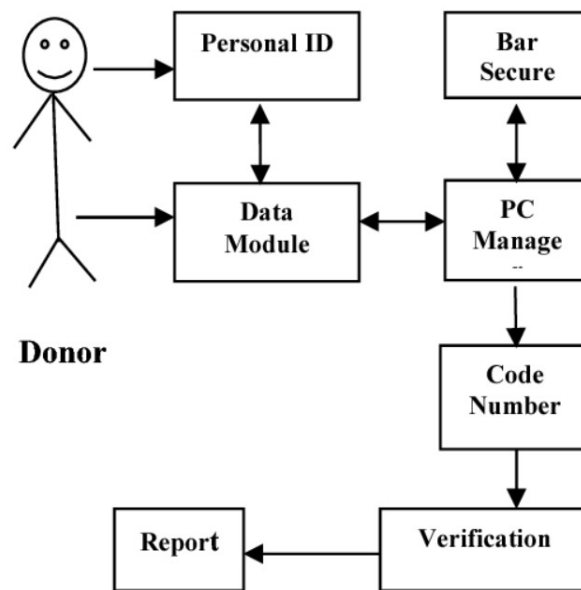
4.4.2   Form Algortithm

Figure 4.9: Form Algorithm

Project server is initialized using the Express framework, establishing a connection to a MongoDB database hosted on MongoDB Atlas through Mongoose The server defines a user schema with fields for username, email, and password. Key functions:'uploadtobd' and 'liginaunth', are implemented for registration and login The 'uploadtodb' function creates a new user document in the database The 'login-auth' function verifies user credentials during login and redirects to the "/home" route upon successful authentication Express routes are set up for different paths ("/home", "/register", "/login"), and the application renders corresponding EJS templates for user interfaces.

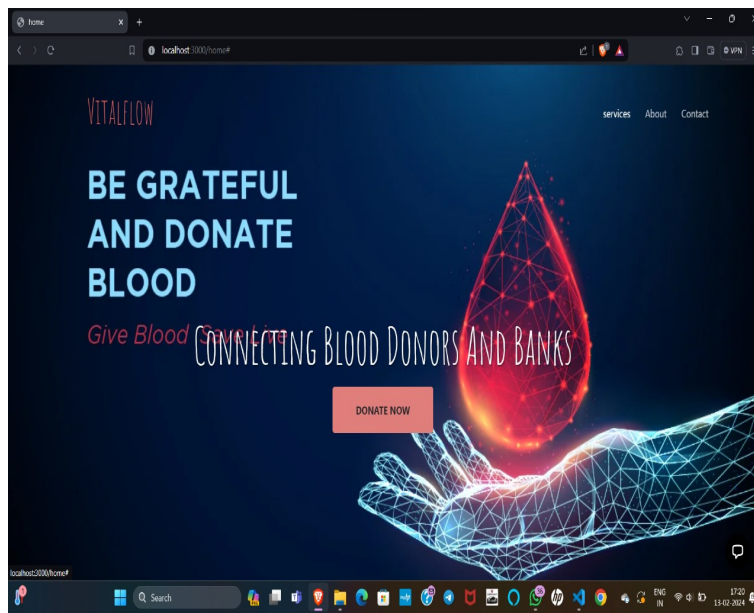### 4.4.3 User Interface for Blood Bank

Figure 4.10: User Interface For Blood Bank

Vitalflow Connecting Blood Donors and Blood Bank HTML structure for displaying blood bank locations is carefully designed, utilizing sections like "container-locations" and "main-container" and incorporating semantic tags to enhance accessibility The CSS stylesheet contributes to the visual appeal, implementing a responsive design that ensures a seamless user experience on diverse devices. the time slot booking feature, users encounter an intuitive interface with interactive elements, such as a date/time picker or calendar, facilitating easy selection of preferred time slots. The blood bank locations interface utilizes an intuitive design with a search bar for user convenience and an interactive map to visually represent the geographical distribution of blood banks.
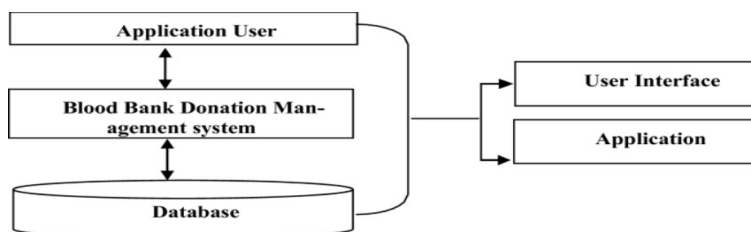
4.4.4 Command Trackbar

Figure 4.11: Command Taskbar

Blood Trackbar module offers precision control and realtime monitoring of blood metrics, including glucose levels and blood pressure. Its customizable interface, visual feedback, and integration compatibility make it ideal for healthcare software applications. Developers can seamlessly incorporate it to enhance blood monitoring and management for improved patient care.

4.5   Steps to Execute/Run/Implement the Project

4.5.1   Setting up the Environment

- Install the required programming languages and frameworks.

- Set up the development environment on your local machine.

- The project repository from the version control system

4.5.2   Installing Dependencies

- Identify project dependencies and requirements.

- Install necessary libraries, packages, or modules using the package manager.

- Ensure all external dependencies are correctly configured.

4.5.3   Configuring Database and Environment Variables

- Set up and configure the project's database.

- Create environment variables or configuration files for sensitive information.

- Test the connection to the database to ensure proper configuration.

4.5.4   Building the Project

- Run build scripts or commands to compile the project source code.

- Handle any build-time configurations or optimizations.

- Resolve any build errors or issues that may arise.

4.5.5 Running Tests

- Write and execute unit tests to ensure the functionality of individual components.

- Run integration tests to check the collaboration between different parts of the system.

- Resolve any failing tests and ensure a high test coverage.
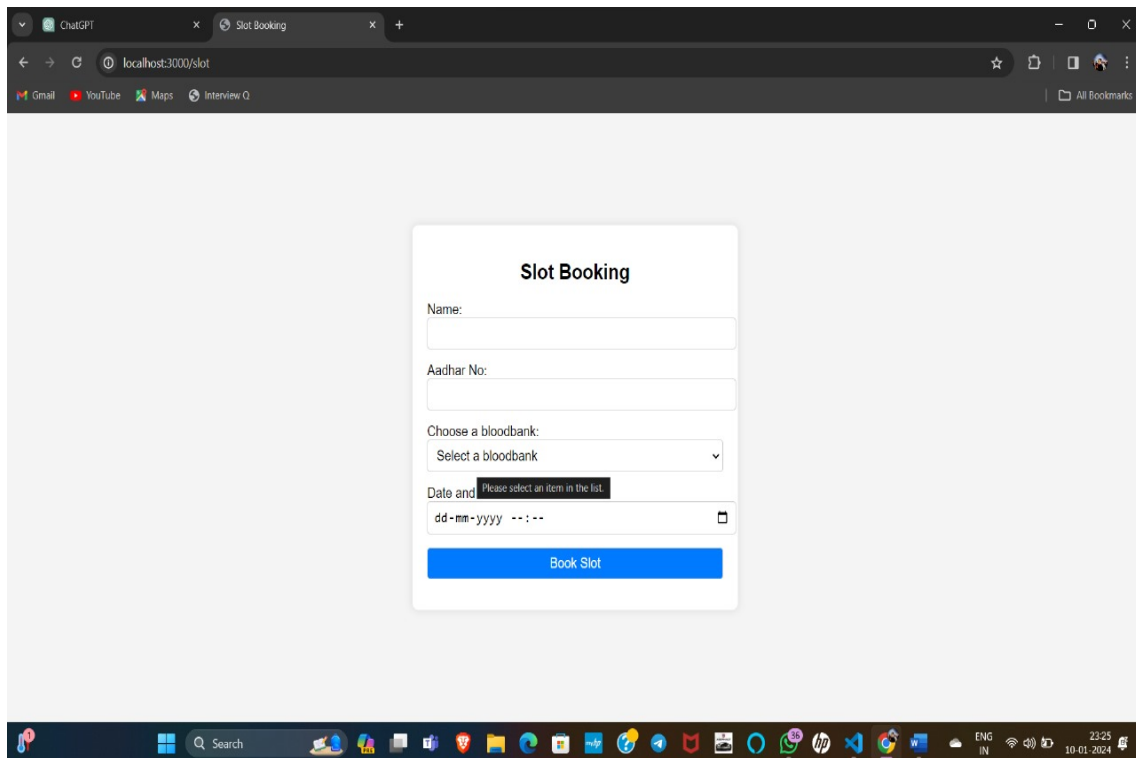
4.5.6 Launching the Application

- Start the application locally to ensure it runs without errors.

- Verify that the user interfaces are responsive and functional.

- Check the application logs for any runtime issues.

Chapter 5

IMPLEMENTATION AND TESTING

5.1 Input and Output

5.1.1 Slot Booking Design

Figure 5.1: Slot Booking Design

The above Figure 5.1, Is the Slot booking mechanism of the project vitalflow connecting blood donors and blood banks, Which user can book slots for blood donation.

5.1.2 Booking Details

Figure 5.2: Booking Details

The above Figure 5.2, is the Slot booked slots through the vitalflow connecting blood donors and blood banks, Blood banks has access to this page to get the possible donations.

5.2 Testing

5.2.1 User Registration Testing

- Test that the page component renders without errors.

- Test that the Home component on Registration term.

- If the result is positive then it shows should register a new user

5.2.2 User Login Authentication Test

- Test whether a user can login or not

5.2.3 Admin Panel Access Testing

- Test that the page component renders without errors.

- we can access the admin panel with the correct credentials

5.3 Types of Testing

5.3.1 Unit Testing

Input

```
describe('User Registration Test', () => {
  it('should register a new user', (done) => {
    request(app)
      .post('/regester/reg')
      .send({
        username: 'testuser',
        email: 'test@example.com',
        password: 'testpassword'
      })
      .expect(302) // Expected redirect status code
      .end((err, res) => {
        if (err) return done(err);
        done();
      });
  });
});
```

5.3.2 Integration Testing

Input

```
describe('User Login Authentication Test', () => {
  it('should authenticate and redirect to home on successful login', function(done){
    this.timeout(5000);
    request(app)
      .post('/login/auth')
      .send({
        username: 'testuser', // Use the username registered in the previous test
        password: 'testpassword' // Use the password set in the previous test
      })
      .expect(302) // Expected redirect status code
      .end((err, res) => {
```

```
12        if (err) return done(err);
13        done();
14      });
15    });
16
17    it('should redirect back to login page on failed login', function(done){
18      this.timeout(9000);
19      request(app)
20        .post('/login/auth')
21        .send({
22          username: 'wronguser',
23          password: 'wrongpassword'
24        })
25        .expect(302) // Expected redirect status code
26        .end((err, res) => {
27          if (err) return done(err);
28          done();
29        });
30    });
31  });
```

5.3.3 System Testing

Input

```
1  describe('Admin Panel Access Test', () => {
2    it('should access the admin panel with correct credentials', function(done){
3      request(app)
4        .get('/admin_panel')
5        .query({
6          username: 'admin', // Use the admin credentials
7          password: 'admin' // Use the admin credentials
8        })
9        .expect(200) // Assuming successful login returns status 200
10        .end((err, res) => {
11          if (err) return done(err);
12          // You can add further assertions here to check if the admin panel contains expected data.
13          done();
14        });
15    });
16
17    it('should redirect to admin login on incorrect credentials', (done) => {
18      request(app)
19        .get('/admin_panel')
20        .query({
21          username: 'wrongadmin',
22          password: 'wrongadminpassword'
```

```
23        })
24        .expect(302) // Expected redirect status code
25        .end((err, res) => {
26          if (err) return done(err);
27          done();
28        });
29    });
30 });
```
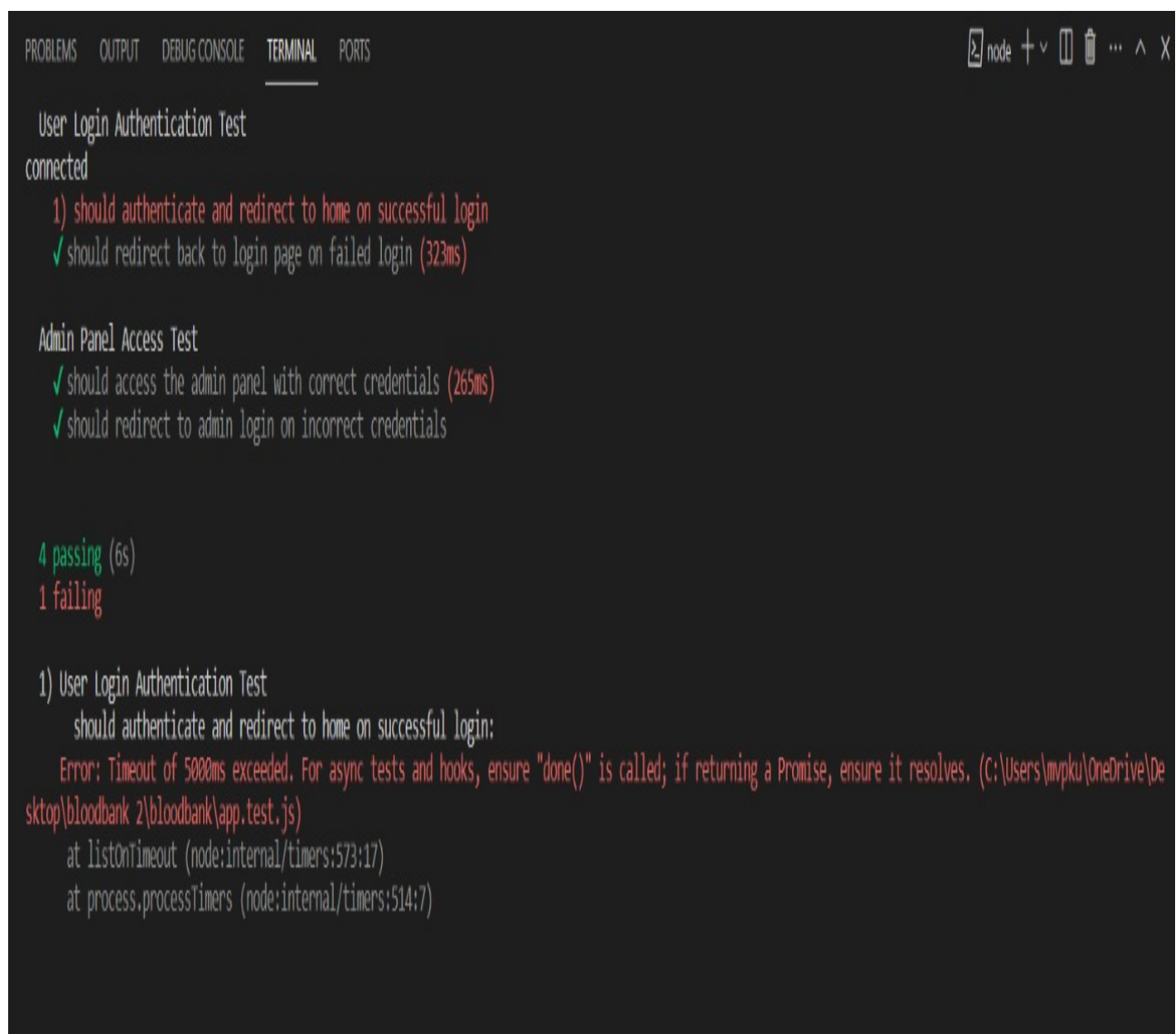
Test Result

Figure 5.3: User Login Authentication Test Image

The above Figure 5.3, Is the testing of the project Vitalflow connecting blood donors and blood bank, which system, Unit, Integration Testing result as follows.

Chapter 6

RESULTS AND DISCUSSIONS

6.1 Efficiency of the Proposed System

The proposed Vitalflow Connecting Blood Donors and Blood Bank system represents a significant leap forward in blood management efficiency compared to traditional approaches. Gone are the days of manual record-keeping and disjointed processes. Instead, this innovative system streamlines and automates critical aspects of blood-related services, ushering in a new era of efficiency and reliability.

Vitalflow Connecting Blood Donors and Blood Bank lies its centralized database, which enables real-time updates on blood inventory, donor information, and appointment schedules. This centralized approach eliminates the delays and inaccuracies inherent in manual record-keeping systems, ensuring that healthcare providers have access to the most up-to-date information when making critical decisions about patient care.

The traditional method of relying on phone calls or physical visits to book blood donation slots, Vitalflow Connecting Blood Donors and Blood Bank introduces a user-friendly interface for seamless slot booking. This not only simplifies the process for donors but also ensures a more organized and predictable schedule. By providing donors with an intuitive platform to schedule appointments, contributes to a steady and reliable blood supply, ultimately saving lives and improving patient outcomes.

6.2 Comparison of Existing and Proposed System

Existing system typically relies on manual record-keeping and disjointed processes, leading to delays, inaccuracies, and a lack of real-time information. In contrast, Blood Harmony introduces a centralized database that ensures up-to-the-minute updates on blood inventory, donor details, and appointment schedules. This

not only eliminates the pitfalls of manual record-keeping but also enhances the overall accuracy and responsiveness of the system. Geographic mapping is another area where the two systems diverge. The existing system may lack a comprehensive mapping feature, requiring donors to invest time in locating blood banks. In contrast, Vitalflow Connecting Blood Donors and Blood Bank mapping functionality optimizes the accessibility of blood banks, guiding users to the nearest centers efficiently.

6.3 Sample Code

```html
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <meta charset="UTF-8">
5      <meta name="viewport" content="width=device-width, initial-scale=1.0">
6      <title>home</title>
7      <link href="https://fonts.googleapis.com/css?family=Amatic+SC|Raleway" rel="stylesheet">
8    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/font-awesome/4.7.0/css/font-awesome.
          min.css">
9    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.1/dist/css/bootstrap.min.
          css" integrity="sha384-4bw+/aepP/YC94hEpVNVgiZdgIC5+VKNBQNGCHeKRQN+PtmoHDEXuppvnDJzQIu9"
          crossorigin="anonymous">
10
11   <style>
12      /General Styles/
13
14  * {
15    margin: 0;
16    padding: 0;
17    box-sizing: border-box;
18  }
19
20  html {
21    font-size: 16px;
22    font-family: "Raleway", sans-serif;
23    color: #555;
24  }
25
26  ul,
27  nav {
28    list-style: none;
29  }
30
31  a {
32    text-decoration: none;
33    opacity: 0.75;
34    color: #fff;
```

```css
35  }
36
37  a:hover {
38      opacity: 1;
39  }
40
41  a.btn {
42      border-radius: 4px;
43      text-transform: uppercase;
44      font-weight: bold;
45      text-align: center;
46      background-color: #e07e7b;
47      opacity: 1;
48      transition: all 400ms;
49  }
50
51  a.btn:hover {
52      background-color: #ce5856;
53  }
54
55  section {
56      display: flex;
57      flex-direction: column;
58      align-items: center;
59      padding: 100px 80px;
60  }
61
62  section:not(.hero):nth-child(even) {
63      background-color: #f5f5f5;
64  }
65
66  .grid {
67      width: 100%;
68      display: flex;
69      flex-wrap: wrap;
70      justify-content: center;
71  }
72
73  hr {
74      width: 250px;
75      height: 3px;
76      background-color: #e07e7b;
77      border: 0;
78      margin-bottom: 50px;
79  }
80
81  .image-1 {
82      background-image: url("https://api.parashospitals.com/uploads/2017/10/284485a9-371c-11e6-bb62
            -5929420c1ca6.jpg");
83      opacity: 0.8;
```

```css
84 }

85

86 .image-2 {
87   background-image: url("https://img.freepik.com/free-photo/coronavirus-blood-samples-arrangement-
         lab_23-2149107259.jpg");
88     opacity: 0.8;
89 }

90

91 .image-3 {
92   background-image: url("https://img.freepik.com/premium-photo/laboratory-medical-centrifuge-
         separation-blood-components_271024-312.jpg?w=2000");
93     opacity: 0.8;
94 }

95

96

97

98 section h3.title {
99   text-transform: capitalize;
100   font: bold 48px "Amatic SC", sans-serif;
101   margin-bottom: 30px;
102   text-align: center;
103 }

104

105 section p {
106   max-width: 775px;
107   line-height: 2;
108   padding: 0 20px;
109   margin-bottom: 30px;
110   text-align: center;
111 }

112

113 @media (max-width: 800px) {
114   section {
115     padding: 50px 20px;
116   }
117 }

118

119 /Header Styles/

120

121 header {
122   position: absolute;
123   width: 100%;
124   display: flex;
125   justify-content: space-between;
126   align-items: center;
127   padding: 35px 100px 0;
128   animation: 1s fadein 0.5s forwards;
129   opacity: 0;
130   color: #fff;
131   z-index: 2;
```

```css
132  }
133
134  @keyframes fadein {
135      100% {
136          opacity: 1;
137      }
138  }
139
140  header h2 {
141      font-family: "Amatic SC", sans-serif;
142          color: #ce5856;
143       font-size: 50px;
144       margin-left: 60px;
145  }
146
147  header nav {
148      display: flex;
149      margin-right: -15px;
150  }
151
152  header nav li {
153      margin: 0 15px;
154  }
155
156  @media (max-width: 800px) {
157      header {
158          padding: 20px 50px;
159          flex-direction: column;
160      }
161
162      header h2 {
163          margin-bottom: 15px;
164      }
165  }
166
167  /Hero Styles/
168
169  .hero {
170      position: relative;
171      justify-content: center;
172      text-align: center;
173      min-height: 100vh;
174      color: #fff;
175  }
176
177  .hero .background-image {
178      position: absolute;
179      top: 0;
180      left: 0;
181      width: 100%;
```

```css
182      height: 100%;
183      background-image: url("https://www.sriramakrishnahospital.com/wp-content/uploads/2021/06/Blood-
             Donation-1.jpg");
184      background-size: cover;
185      z-index: -1;
186      background-color: #80a3db;
187  }
188
189
190      padding: 50px;
191      flex-basis: 50%;
192      text-align: center;
193  }
194
195
196
197  footer ul li {
198      margin-left: 16px;
199  }
200
201  footer p {
202      text-transform: uppercase;
203      font-size: 14px;
204      opacity: 0.6;
205      align-self: center;
206  }
207
208  @media (max-width: 1100px) {
209      footer {
210          flex-direction: column;
211      }
212
213      footer p {
214          text-align: center;
215          margin-bottom: 20px;
216      }
217
218      footer ul li {
219          margin: 0 8px;
220      }
221  }
222  .bimg{
223      margin-top: 100px;
224      color: rgb(255, 9, 9);
225      font-family: Cambria, Cochin, Georgia, Times, 'Times New Roman', serif;
226      font-weight: bolder;
227      border: double 5px rgb(49, 174, 10);
228  }
229      </style>
230  </head>
```

```
231  <body>
232    <!-- Forked from a template on Tutorialzine: https://tutorialzine.com/2016/06/freebie-landing-page
             -template-with-flexbox -->
233    <header>
234      <h2>blood harmony</h2>
235      <nav>
236        <li><a href="#">services</a></li>
237        <li><a href="#">About</a></li>
238        <li><a href="#">Contact</a></li>
239      </nav>
240    </header>
241
242    <section class="hero">
243      <div class="background-image"></div>
244      <div class="hero-content-area">
245        <br>
246        <br>
247        <br>
248        <br>
249        <br>
250        <br>
251        <h1>stay fit , eat right and donate blood</h1>
252
253        <a href="/slot" class="btn">Donate Now</a>
254      </div>
255    </section>
256
257
258
259    <section class="packages">
260      <h3 class="title">Services We Offer</h3>
261      <p>We offer a variety of group (minimum 5 people) packages. Whether you've spent some summers
             together or this might be your first adventure, we've got the perfect vacation for you.</p>
262      <hr>
263
264      <ul class="grid">
265        <li>
266         <i><img
267          <h4>Blood camp locations</h4>
268          <p>Looking for the complete experience? Take a tour with one of our experts. They'll show
                 you secrets that you're likely to miss otherwise.</p>
269        </li>
270        <li>
271         <a href="/slot"> <i><img
272         </a> <h4>Time slots</h4>
273          <p>Want to experience nature's beauty without all of that annoying exercise? Take a photo
                 tour on one of our <em>Life is a party!</em> buses.</p>
274        </li>
275        <li>
276         <a href="/progressbar"> <i><img
```

35

```
        </a> <h4>Blood Tracking </h4>
          <p>If bicycles are more your speed, consider taking a tour through one of our mountain or
                city bike paths. We'll provide the bikes, and lunch too!</p>
        </li>
        <li>
          <br>
          <br>
          <br>
          <i><img src="https://cdn-icons-png.flaticon.com/128/1077/1077114.png" alt=""></i>
          <h4>volunteer </h4>
          <p>Got a competitive spirit? Sign up for one of our challenge-based marathons! Try to reach
                the summit before any other group.</p>
        </li>
      </ul>
    </section>



    <section class="contact">
      <h3 class="title">Learn more </h3>
      <p>Want to know about our upcoming events, or come to one of our mixers? Just sign up for our
            mailing list. No spam from us, we promise! Except for the spam we give you to keep up your
            energy while you're having fun with your friends. Have a blast! We have tons of that.</p>
      <hr>
      <form>
        <input type="email" placeholder="Email">
        <a href="#" class="btn">Subscribe now</a>
      </form>

    </section>
    <script>
    window.embeddedChatbotConfig = {
    chatbotId: "c8q5dDZWCda0k9xbLoDcK",
    domain: "www.chatbase.co"
    }
    </script>
    <script
    src="https://www.chatbase.co/embed.min.js"
    chatbotId="c8q5dDZWCda0k9xbLoDcK"
    domain="www.chatbase.co"
    defer>
    </script>
  </body>
```

Output

Figure 6.1: Website User Interface

In above figure 6.1, Represents the user interface of the project Vitalflow connecting blood donors and blood bank. This page serves as the main interface of the website.
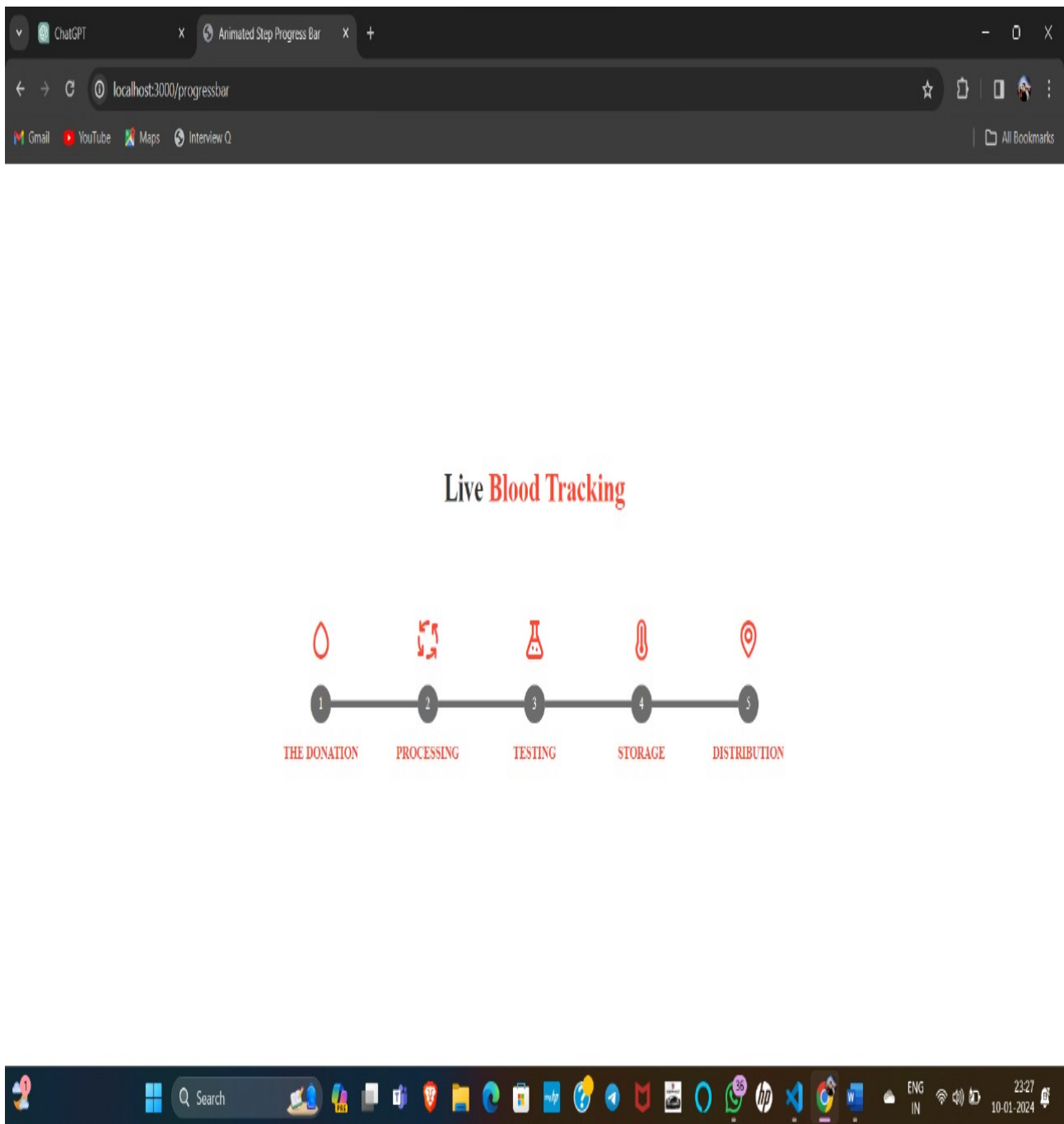
Figure 6.2: Blood Tracking

In above figure 6.2, Represents the feature of blood tracking. In which users can monitor the live location of their blood in real-time in the project Vitalflow connecting blood donors and blood bank website.

Chapter 7

CONCLUSION AND FUTURE ENHANCEMENTS

7.1 Conclusion

Project Vitalflow Connecting Blood Donors and Blood Bank has been designed to simplify blood donation. Through our user-friendly website, The platform allows you to effortlessly schedule a donation appointment at your convenience and provides clear directions to nearby blood banks, ensuring you always know where to go. The integrated innovative features like an intuitive track bar, guide you through each step of the donation process. With our smart time slot system, long waiting lines are a thing of the past; you can select the best time for you. Our location feature ensures you find the nearest blood bank effortlessly. Beyond technology, Vitalflow Connecting Blood Donors and Blood Bank is a commitment to positively impact healthcare by leveraging tech to aid people. Our platform isn't just about donating blood; it's about creating a friendly and accessible experience, supported by an AI bot ready to answer any queries.

These features are designed to make blood donation more accessible and user-friendly for everyone involved. By showing the use of technology and creating a user-friendly design, Project Vitalflow Connecting Blood Donors and Blood Bank aims to encourage more people to donate blood and make a positive impact on healthcare.

7.2 Future Enhancements

In the future, blood banks could undergo transformative advancements to further streamline and optimize their operations. The implementation of cutting-edge technologies like blockchain can revolutionize the traceability and management of

donated blood. Utilizing blockchain ensures transparent and immutable records of blood donations, enhancing the efficiency of tracking each unit from donation to transfusion, thereby improving safety and minimizing errors. Moreover, the integration of artificial intelligence (AI) and machine learning (ML) algorithms can significantly enhance predictive inventory management. These technologies can forecast demand patterns based on historical data, seasonal variations, and current events, ensuring adequate blood supply levels and minimizing wastage.

Improvements in blood donation works are happening One way is by making phone apps that give donors updates and remind them about donating. These apps can also make donors feel more connected to a community and encourage them to keep giving blood regularly. Another way is by working more closely with hospitals. By setting up easy ways for blood banks and hospitals to talk to each other online, it becomes faster to find the right blood types and amounts during emergencies.

There are also new tests that can check donated blood quickly and thoroughly. This helps make sure the blood is safe to use and lowers the chances of passing infections through transfusions. All these changes aim to make blood banking more efficient, safe, and easy to access. The goal is to have a strong and dependable supply of blood for people who need it. Using these new technologies like phone apps, faster testing, and better communication can make sure blood banks run smoothly and help save more lives.

Chapter 8

PLAGIARISM REPORT

Tool: smallseotools
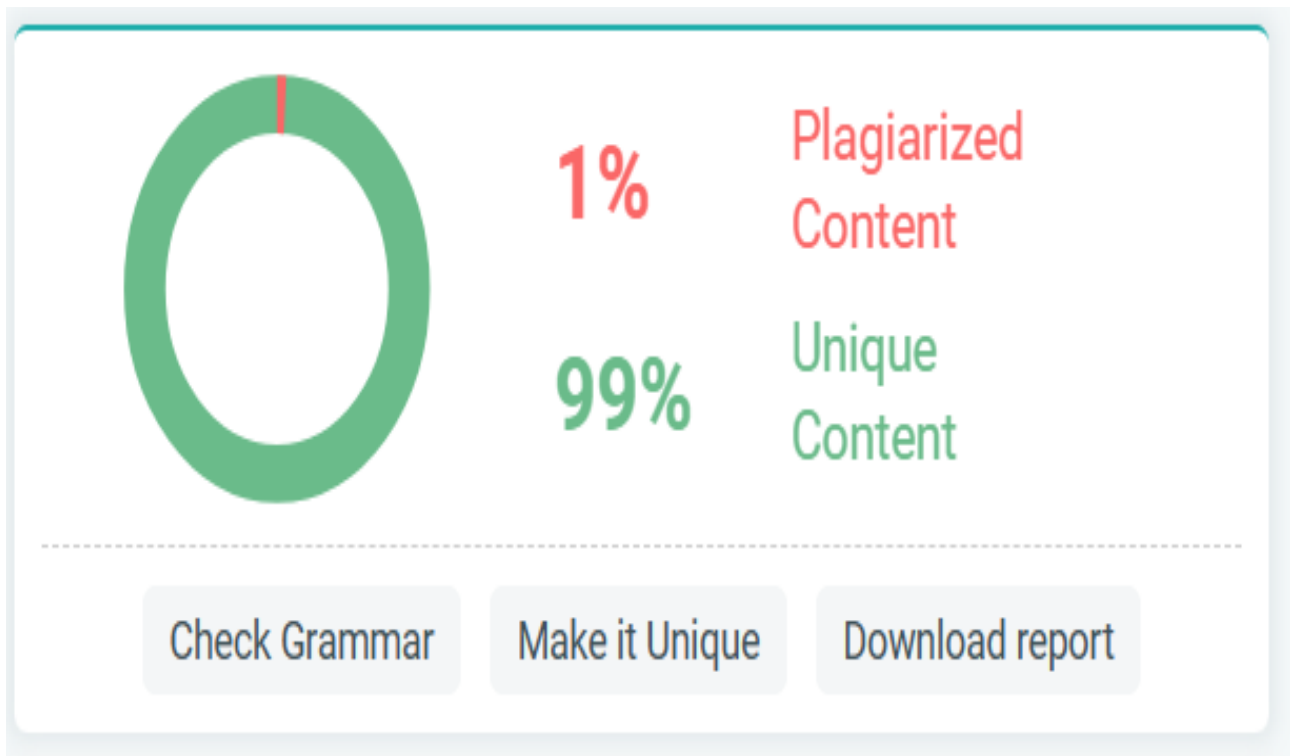
Figure 8.1: Plagiarism Report

In above figure 8.1, Is the plagiarism report of the project Vitalflow connecting blood donors and blood bank in smallseotools website.

Chapter 9

SOURCE CODE & POSTER PRESENTATION

9.1   Source Code

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <meta charset="UTF-8">
5      <meta name="viewport" content="width=device-width, initial-scale=1.0">
6      <title>Document</title>
7      <style>:root {
8          --background: #1a1a2e;
9          --color: #ffffff;
10         --primary-color: #0f3460;
11     }
12
13     * {
14         box-sizing: border-box;
15     }
16
17     html {
18         scroll-behavior: smooth;
19     }
20
21     body {
22         margin: 0;
23         box-sizing: border-box;
24         font-family: "poppins";
25         background: var(--background);
26         color: var(--color);
27         letter-spacing: 1px;
28         transition: background 0.2s ease;
29         -webkit-transition: background 0.2s ease;
30         -moz-transition: background 0.2s ease;
31         -ms-transition: background 0.2s ease;
32         -o-transition: background 0.2s ease;
33     }
34
35     a {
```

```
36        text-decoration: none;
37        color: var(--color);
38    }
39
40    h1 {
41        font-size: 2.5rem;
42    }
43
44    .container {
45        display: flex;
46        justify-content: center;
47        align-items: center;
48        height: 100vh;
49    }
50
51    .login-container form input:focus {
52        box-shadow: 0 0 16px 1px rgba(0, 0, 0, 0.2);
53        animation: wobble 0.3s ease-in;
54        -webkit-animation: wobble 0.3s ease-in;
55    }
56
57    .login-container form button {
58        background-color: var(--primary-color);
59        color: var(--color);
60        display: block;
61        padding: 13px;
62        border-radius: 5px;
63        outline: none;
64        font-size: 18px;
65        letter-spacing: 1.5px;
66        font-weight: bold;
67        width: 100%;
68        cursor: pointer;
69        margin-bottom: 2rem;
70        transition: all 0.1s ease-in-out;
71        border: none;
72        -webkit-border-radius: 5px;
73        -moz-border-radius: 5px;
74        -ms-border-radius: 5px;
75        -o-border-radius: 5px;
76        -webkit-transition: all 0.1s ease-in-out;
77        -moz-transition: all 0.1s ease-in-out;
78        -ms-transition: all 0.1s ease-in-out;
79        -o-transition: all 0.1s ease-in-out;
80    }
81
82    .login-container form button:hover {
83        box-shadow: 0 0 10px 1px rgba(0, 0, 0, 0.15);
84        transform: scale(1.02);
85        -webkit-transform: scale(1.02);
```

43

```
 86        -moz-transform: scale(1.02);
 87        -ms-transform: scale(1.02);
 88        -o-transform: scale(1.02);
 89    }
 90
 91    .circle {
 92        width: 8rem;
 93        height: 8rem;
 94        background: var(--primary-color);
 95        border-radius: 50%;
 96        -webkit-border-radius: 50%;
 97        -moz-border-radius: 50%;
 98        -ms-border-radius: 50%;
 99        -o-border-radius: 50%;
100        position: absolute;
101    }
102
103    .illustration {
104        position: absolute;
105        top: -14%;
106        right: -2px;
107        width: 90%;
108    }
109
110    .circle-one {
111        top: 0;
112        left: 0;
113        z-index: -1;
114        transform: translate(-45%, -45%);
115        -webkit-transform: translate(-45%, -45%);
116        -moz-transform: translate(-45%, -45%);
117        -ms-transform: translate(-45%, -45%);
118        -o-transform: translate(-45%, -45%);
119    }
120
121    .circle-two {
122        bottom: 0;
123        right: 0;
124        z-index: -1;
125        transform: translate(45%, 45%);
126        -webkit-transform: translate(45%, 45%);
127        -moz-transform: translate(45%, 45%);
128        -ms-transform: translate(45%, 45%);
129        -o-transform: translate(45%, 45%);
130    }
131
132    .register-forget {
133        margin: 1rem 0;
134        display: flex;
135        justify-content: space-between;
```

44

```
136        }
137        .opacity {
138            opacity: 0.6;
139        }
140
141        .theme-btn-container {
142            position: absolute;
143            left: 0;
144            bottom: 2rem;
145        }
146
147        .theme-btn {
148            cursor: pointer;
149            transition: all 0.3s ease-in;
150        }
151
152        .theme-btn:hover {
153            width: 40px !important;
154        }
155        </style>
156  </head>
157  <body>
158      <body>
159          <section class="container">
160              <div class="login-container">
161                  <div class="circle circle-one"></div>
162                  <div class="form-container">
163                      <img src="https://raw.githubusercontent.com/hicodersofficial/glassmorphism-login
                            -form/master/assets/illustration.png" alt="illustration" class="illustration
                            " />
164                      <h1 class="opacity">LOGIN</h1>
165                      <form action="/login/auth" method="post">
166                          <input type="text" placeholder="USERNAME" name="username"/>
167                          <input type="password" placeholder="PASSWORD" name="password" />
168                          <button class="opacity">SUBMIT</button>
169                      </form>
170                      <div class="register-forget opacity">
171                          <a href="/regester">REGISTER</a>
172                          <a href="">FORGOT PASSWORD</a>
173                      </div>
174                  </div>
175                  <div class="circle circle-two"></div>
176              </div>
177              <div class="theme-btn-container"></div>
178          </section>
179          <script>
180              const themes = [
181      {
182          background: "#1A1A2E",
183          color: "#FFFFFF",
```

```
184            primaryColor: "#0F3460"
185        },
186        {
187            background: "#461220",
188            color: "#FFFFFF",
189            primaryColor: "#E94560"
190        },
191        {
192            background: "#192A51",
193            color: "#FFFFFF",
194            primaryColor: "#967AA1"
195        },
196        {
197            background: "#231F20",
198            color: "#FFF",
199            primaryColor: "#BB4430"
200        }
201  ];
202
203  const setTheme = (theme) => {
204        const root = document.querySelector(":root");
205        root.style.setProperty("--background", theme.background);
206        root.style.setProperty("--color", theme.color);
207        root.style.setProperty("--primary-color", theme.primaryColor);
208        root.style.setProperty("--glass-color", theme.glassColor);
209  };
210
211  const displayThemeButtons = () => {
212        const btnContainer = document.querySelector(".theme-btn-container");
213        themes.forEach((theme) => {
214            const div = document.createElement("div");
215            div.className = "theme-btn";
216            div.style.cssText = background: ${theme.background}; width: 25px; height: 25px;
217            btnContainer.appendChild(div);
218            div.addEventListener("click", () => setTheme(theme));
219        });
220  };
221
222  displayThemeButtons();
223
224            </script>
225        </body>
226  </body>
227  </html>
```

9.2 Poster Presentation

Figure 9.1: Poster Presentation

In the above figure 9.1, Is the poster presentation of the project Vitalflow connecting blood donors and blood bank.

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