DECENTRALISED BLOOD DONATION NETWORK-ENHANCING TRANSPARENCY AND EFFICIENCY IN BLOOD DONATION

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ABSTRACT

Blood donation is a critical act of humanity that saves lives by providing blood for transfusions to those in need due to injury or illness. The process is vital for maintaining an adequate supply of blood for medical procedures, emergencies, and various medical conditions. A successful blood donation requires healthy donors whose blood type matches the recipient's needs, ensuring safe transfusions without adverse reactions. Regular blood donation can help prevent blood-related diseases and maintain overall health. Despite the importance of blood donation, there is often a shortage of blood supply, highlighting the need for more donors to come forward.
Keyword: - *Donor-Recipient matching ,Fostering trust ,Fully decentralized , Privacy and Security*

1. INTRODUCTION

Blood donation is a critical act of humanity that saves lives by providing blood for transfusions to those in need due to injury or illness. The process is vital for maintaining an adequate supply of blood for medical procedures, emergencies, and various medical conditions. A successful blood donation requires healthy donors whose blood type matches the recipient's needs, ensuring safe transfusions without adverse reactions. Regular blood donation can help prevent blood-related diseases and maintain overall health. Despite the importance of blood donation, there is often a shortage of blood supply, highlighting the need for more donors to come forward.

2. MODULES

- SET UP YOUR DEVELOPMENT ENVIRONMENT
- CREATE SMART CONTRACTS
- DEVELOPE FRONT END INTERFACES
- BLOOD DONATION REGISTRATION MODULE
- MATCHING ALGORITHM MODULE
- SMART CONTRACT MODULE

2.1 Set Up Your Development Environment
- Install a code editor
- Install Node .js and .npm
- Set up Ganache for local block chain development
- Install the Truffle Suite for Solidity development
- Install Web3.js for interacting with the block chain

2.2 Create Smart Contracts
- Define smart contracts for user registration, blood donation, matching algorithm, blood delivery, medical records management, etc., using Solidity.

- Implement functions and events in the smart contracts to handle various aspects of the blood donation process.

2.3 Develope Front End Interfaces
- Create HTML/CSS templates for user registration, blood donation, matching algorithm, blood delivery, medical records management, etc.
- Use JavaScript to interact with the smart contracts through Web3.js.
- Integrate Smart Contracts with Front End:
- Use Web3.js to connect the frontend interfaces with the smart contracts on the block chain.
- Implement functions to call smart contract methods and handle events.

2.4 Blood Donation Registration Module

- Enables donors to register their intent to donate blood.
- Records donor information and blood availability on the block chain.

2.5 Matching Algorithm Module

- Implements an algorithm to match donors with compatible recipients based on various factors (blood type, urgency, etc.).
- Ensures fairness and transparency in the matching process.

2.6 Smart Contract Module
- Utilizes smart contracts to automate and enforce rules for blood donation.
- Includes functions for blood donation registration, recipient matching, blood delivery confirmation, etc.
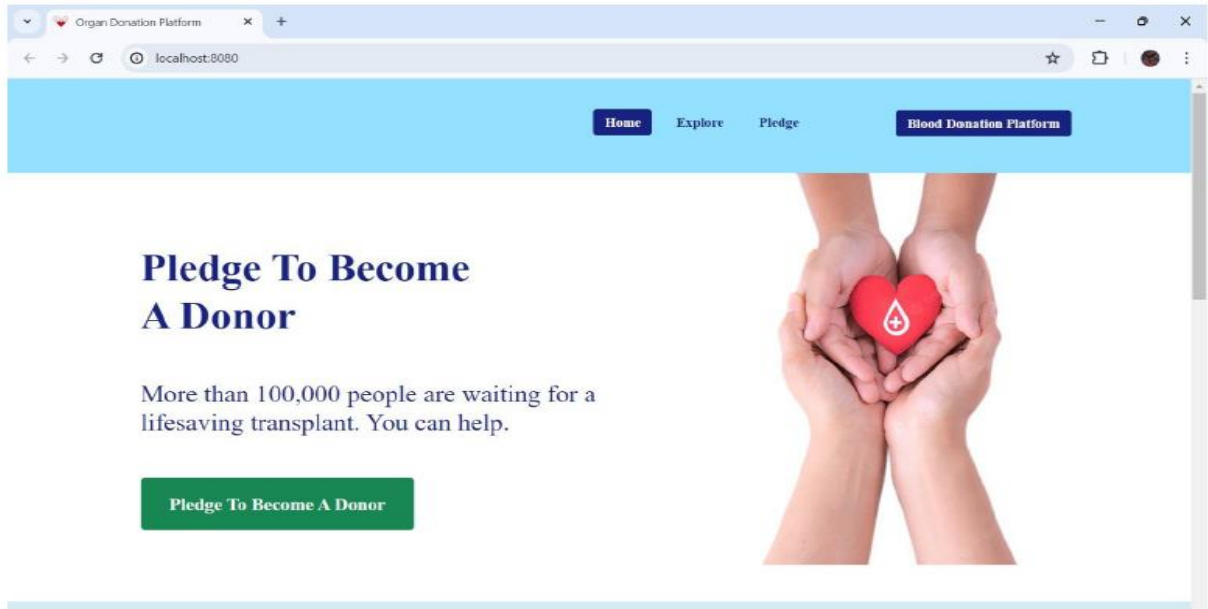
3.SYSTEM ARCHITECTURE
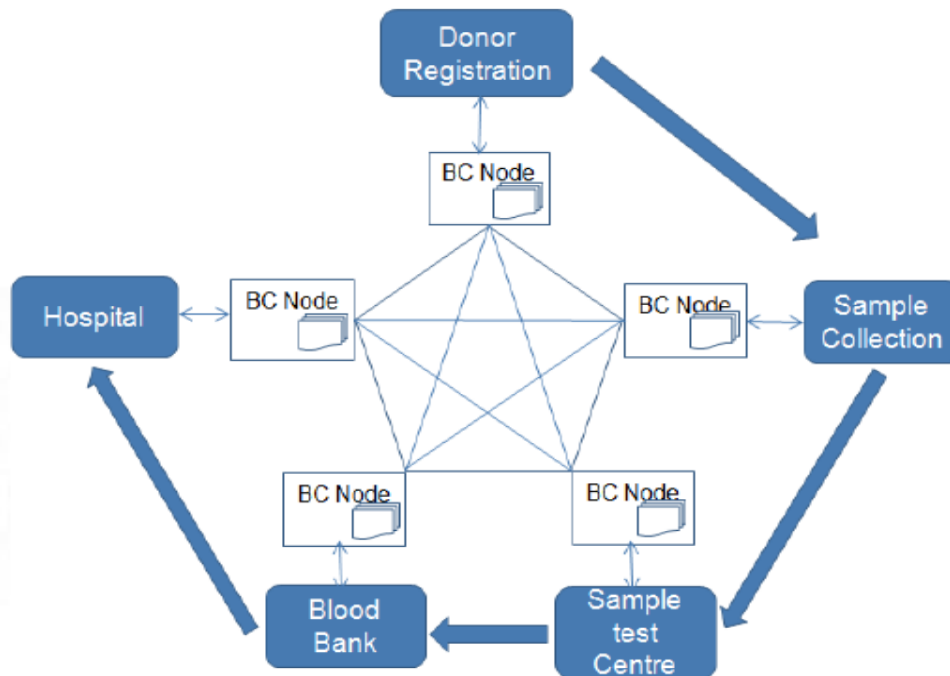
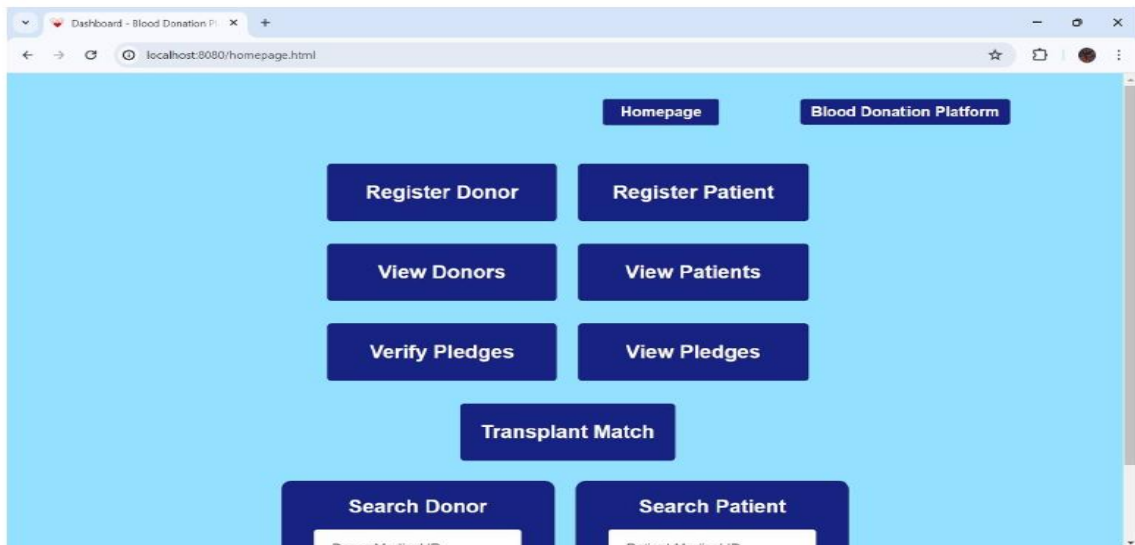**4.RESULTS**

Fig-1

Fig-2

Fig-3

Fig-3

Fig-4

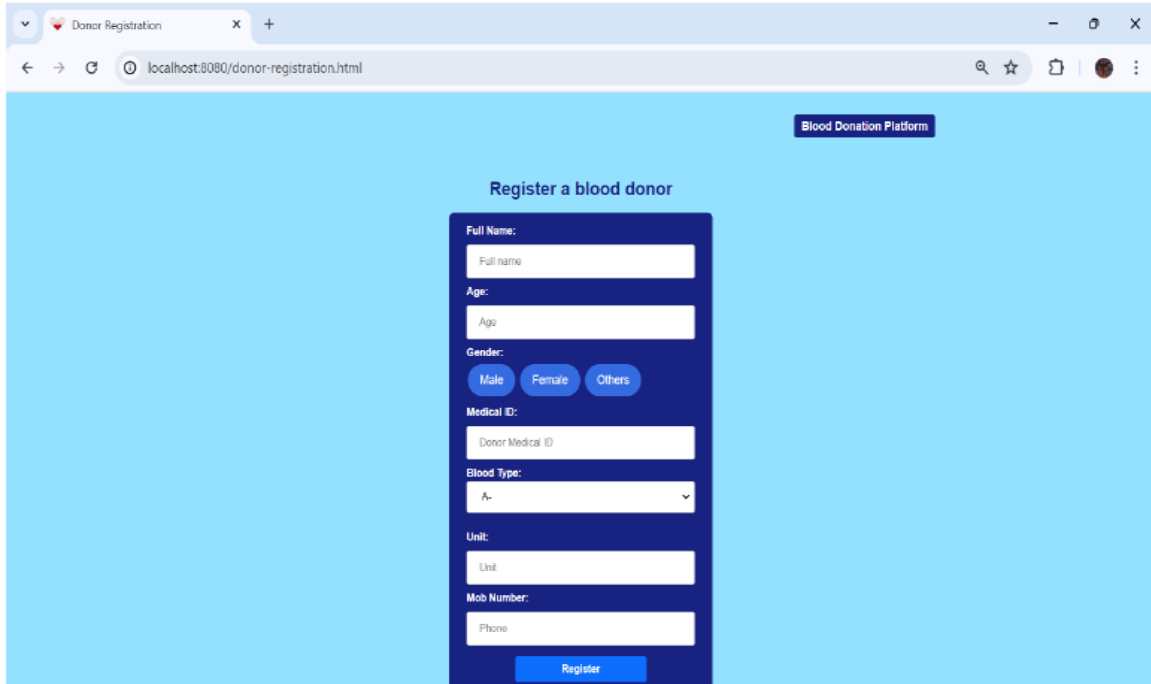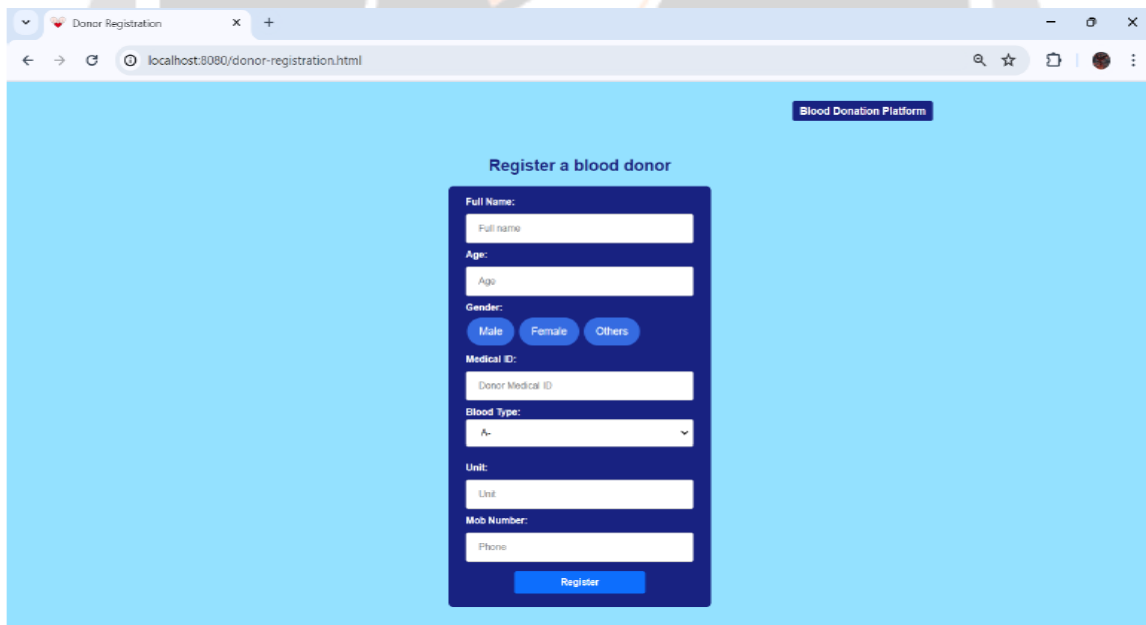## 5.CONCLUSIONS

In conclusion, a blockchain-based blood donation and transplantation system offers a promising solution to the challenges faced by traditional systems. By leveraging blockchain technology, the proposed system aims to enhance transparency, security, and efficiency in blood donation and transplantation processes. It provides a decentralized platform for managing blood-related information, ensuring its integrity and accessibility to authorized parties. The advantages of the proposed system include strengthened medical decision-making, tamper-proof records, and enhanced control over data management. By utilizing smart contracts, patients can control access to their medical records, enhancing privacy and security.To implement the proposed system, developers would require a set of development tools including code editors, Node.js, and blockchain tools such as Ganache, Truffle Suite, and Solidity. Front-end development would involve HTML/CSS and JavaScript.Overall, a blockchain-based blood donation and transplantation system has the potential to revolutionize the current blood donation landscape, offering a secure and transparent platform for managing blood-related information and improving patient outcomes.

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