



Parshvanath Charitable Trust's
A. P. SHAH INSTITUTE OF TECHNOLOGY, THANE
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Department of Information Technology



Blockchain Based Blood Bank System

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1. Introduction

- **Blockchain Technology (BCT)** in **blood bank system** is to ensure that the patient gets safe **blood**.
- Problem Identified :
 - Existing blood management systems in India function as Information Management systems that lack dynamic updates of blood usage and detailed blood trail information, starting from donation to consumption.
- Solution Proposed :
 - This can be achieved by the different entities in the chain; verifying the quality / expiry of blood from the blockchain that provides the trust factor that is required. The donor details could also be verified by the collection centres to ensure unsafe donors are excluded. As a fallout , all the stakeholders will be able to know the availability of blood in different blood banks.

2. Objectives

- To Achieve Security and Traceability.

- Blockchain is a distributed ledger data structure so all the nodes will be having a copy of the blockchain. This architecture makes this system incredibly secure and tamper-proof because if anyone tampers with a single block then the whole chain will become invalid and we can verify from other nodes.

Tracing each blood unit in the blood donation process is possible using Blockchain

- To Achieve Transparency.

Being a decentralized platform, one of the most beneficial advantages of blockchain is transparency. All the nodes will have a copy of the blockchain which makes it easy to verify the donor history from each node in the blockchain •

- To Achieve Availability.

Along with the other things it is necessary that people should know the availability of blood bags. Lack of proper updates can be detrimental for patients. As blockchain is a decentralized and distributed platform it will be simple to check the availability of blood concerning blood banks

3. Scope

1. The proposed system, brings more transparency to the blood donation process by tracking the blood trail and also helps to curb unwarranted wastage of blood by providing a unified platform for the exchange of blood and its derivatives between blood banks.
2. For ease of use, a web application is also built for accessing the system.

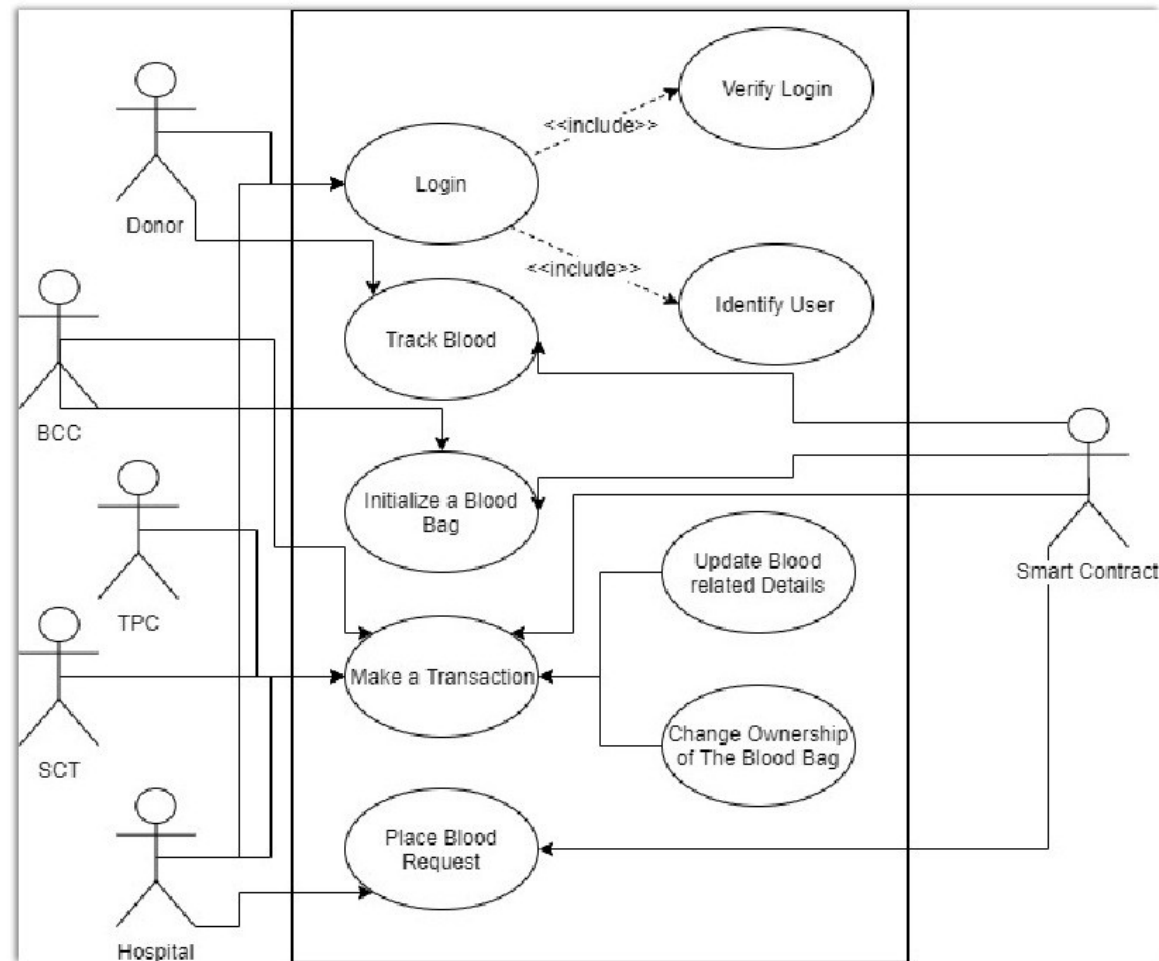
4. Technology Stack

1.-Ethereum Blockchain

2.-Solidity

3.-Nodejs, HTML , CSS

5. Block Diagram to propose project Idea



6. Demonstration (Desired)

Desired Small Scale Orchestration based on
Technology Stack

7.Literature Review

- In today's era of a globalized supply chain of goods and services, the supply chain has now involved various actors and entities from different parts of the globe who have never seen each other and may not trust the genuineness of either one or multiple parties/actors. With such complex issues in hand, the main concerns are the lack of transparency and traceability[1]
- This is where Blockchain technologies can help us create more efficient and effective supply chains with the above concerns minimized or even completely diminished in some cases. Blockchain Technology has been accepted and adopted in past years throughout the technological globe. A blockchain is a form of database storage that is non-centralized, reliable, and difficult to use for fraudulent purposes[2].
- Ethereum is explained as [3] a Next-Generation Smart Contract and Decentralized Application Platform that was created by a cryptocurrency researcher and programmer named Vitalik Buterin .It uses a Blockchain-based distributed computing platform with a Turing complete scripting language that enables the processing of smart-contracts on Blockchain.
- Blockchain is now used in healthcare industry to protect patient privacy, procure untampered history

8. References

- 1S. Zhu, H. Hu, Y. Li and W. Li, "Hybrid Blockchain Design for Privacy Preserving Crowdsourcing Platform," 2019 IEEE International Conference on Blockchain (Blockchain), 2019, pp. 26-33, doi: 10.1109/Blockchain.2019.00013.
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3. P. Tasatanattakool and C. Techapanupreeda, "Blockchain: Challenges and applications," 2018 International Conference on Information Networking (ICOIN), 2018, pp. 473-475, doi: 10.1109/ICOIN.2018.834316 S. Zhu, H. Hu, Y. Li and W. Li, "Hybrid Blockchain Design for Privacy Preserving Crowdsourcing Platform," 2019 IEEE International Conference on Blockchain (Blockchain), 2019, pp. 26-33, doi: 10.1109/Blockchain.2019.00013.
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6. P. Tasatanattakool and C. Techapanupreeda, "Blockchain: Challenges and applications," 2018 International Conference on Information Networking (ICOIN), 2018, pp. 473-475, doi: 10.1109/ICOIN.2018.8343163.

Thank You...!!