



**IJIRCCCE**

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 12, Issue 3, March 2024

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 8.379**



9940 572 462



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# Transplantation and Organ Donation Using Blockchain

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**ABSTRACT:** The proposed framework is an organ donation decentralized application utilizing blockchain innovation. Organ donation is the most compensating restorative consideration which has spared numerous lives. It would be a web application for patients to enroll their data in particularly remedial ID, blood group and organ type. The primary explanation of utilizing blockchain is for security purpose. Because of utilizing blockchain nobody can change the records of the records which are stored in the ledger.

**KEYWORDS:** Ganache, VSCode , Ethereum, truffle, contract

## I. INTRODUCTION

We propose a private Ethereum blockchain-based solution that ensures organ donation and transplantation management in a manner that is decentralized, secure, reliable, traceable, auditable, and trustworthy. In this project we develop smart contracts that register actors and ensure data provenance through producing events for all the necessary actions that occur during the organ donation and transplantation stages.

We compare our solution with the existing solutions to show its originality.

Our proposed solution is general and may be easily adjusted to meet the needs of a variety of related applications.

## II. LITERATURE SURVEY

Author(s)	Strategies	Advantages	Disadvantages
Kulshreshtha, Mithra and Amisha	Securing Organ Donation	Strengthening bonds	Infection Expensive procedures
Najveen and Sunil kumar	Organ Bank Based on Blockchain	Multiple Recipients Personal Contentment	Decreased Donors Availability Organ Rejection
Geng, Njilla and Huang	Smart Markers in Smart Contracts	Lower error rate Autonomy and Savings Accuracy Speed and Efficiency Backup	Immutability Third party Contractual Secrecy
Zirpe and Gurav	Management of Potential Organ Donor	Gifting life No Age Limitations	Surgical Complications (pain, infection, blood loss)

### III. METHODOLOGY AND APPROACH

The proposed system works based on the existing system's one of the major problem. In this system, the organ donor's details are stored even if the organ donor dies. If any of the person dies, their tissues such as bone, skin, heart valves, veins, tendons, ligaments and corneas can be donated within the first 24 hours of death. And even the organs that can be donated after death are heart, liver, kidneys, lungs, pancreas, and small intestines. These details can also be included into the database list. The block chain network is the backbone of our proposed solution. It serves as the basis for recording the Transactions and events permanently to ensure accountability and data provenance. The developed smart contracts must be deployed on the block chain to ensure they are accessible at all times. However, it would not be ideal to deploy them on the main network during the testing phase. The proposed system is built on a private block chain, to which validation nodes and only authorized participants are added. The implementation of our proposed solution is mainly twofold: organ donation and organ transplantation.

In this project we will be using VSCode and Ganache.

There are mainly 3 instructions that we use to connect code, transfer data and execute in blockchain.

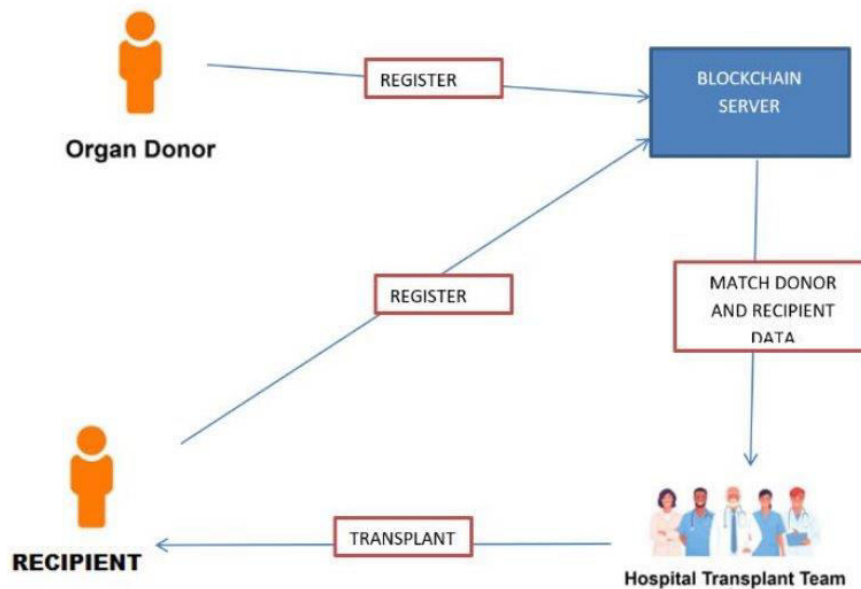
Truffle compile- to connect vscode's contracts into ganache

Truffle migrate- used to compile contracts and transfer data

Npm run dev: to run the code

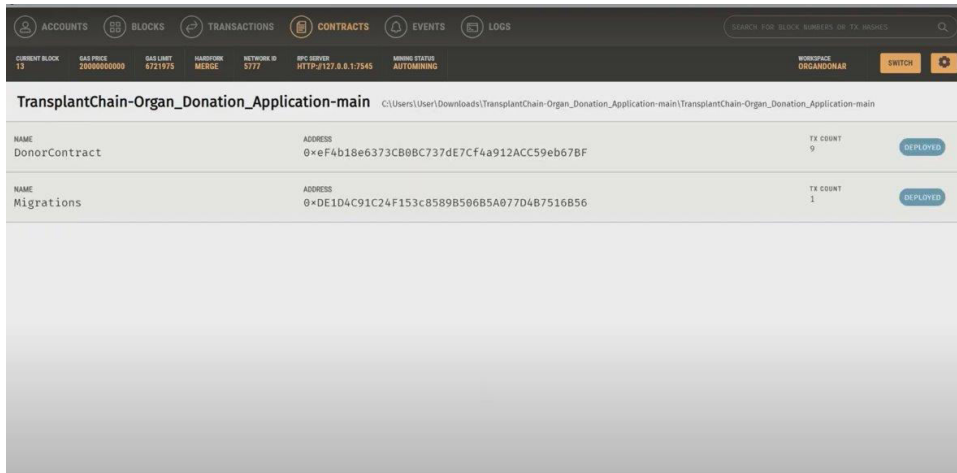
After executing these 3 steps perfectly you will obtain a local host address where users can input information.

At the user interface they should be able to add patient information and find matches along with lists of all patients and donors.

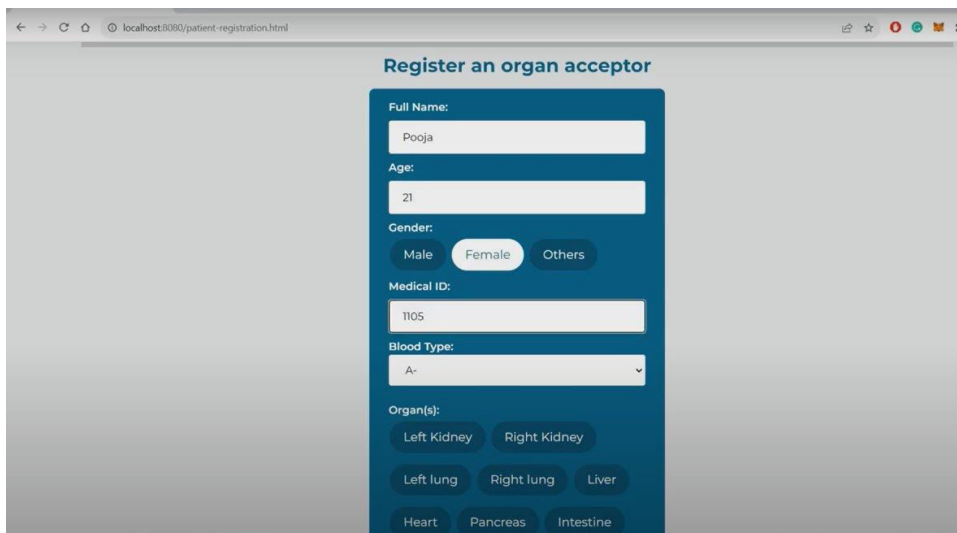


### IV. RESULTS

Here you can see two types of contracts. The first one is the donor contract where patients and donors information is taken. In the migration contract matches between donor and patient information is checked.



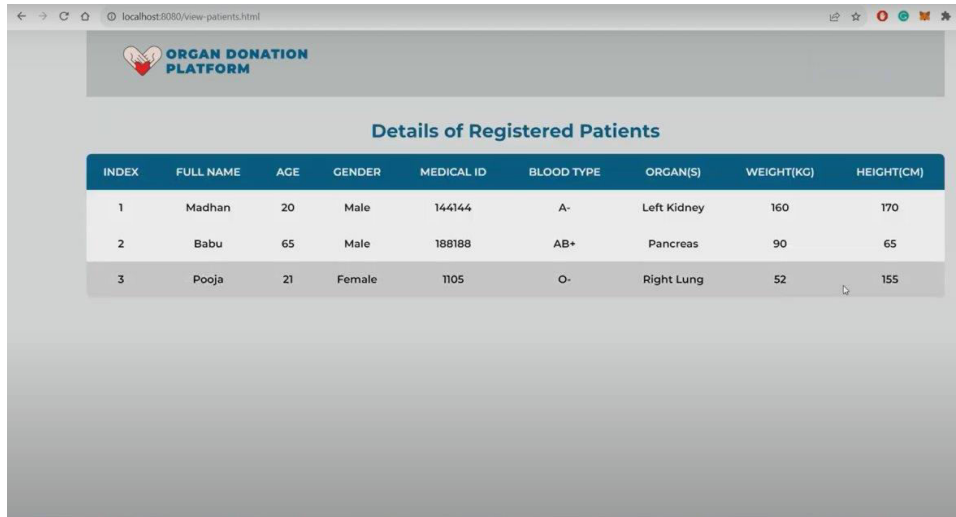
After opening the local host address various options are given which include entering donor and patient information, gathering all donor information and patient information separately and a place to find matches is also given. When opening for inserting information this is what it will look like.



This is what the list of donors or patients would look like

INDEX	FULL NAME	AGE	GENDER	MEDICAL ID	BLOOD TYPE	ORGAN(S)	WEIGHT(KG)	HEIGHT(CM)
1	Madhan	30	Male	155155	A-	Left Kidney	150	180
2	Madhan	41	Male	166166	A-	Right Kidney	180	180
3	Madhan	30	Male	101404	A-	Left Kidney	81	175
4	Ramesh	65	Male	177177	AB+	Pancreas	85	160
5	Babu	45	Male	199199	A-	Right Lung	100	165
6	Visva	22	Male	1106	O-	Right Lung	65	170

And this is what matches will look like.



The screenshot shows a web browser window with the URL localhost:8080/view-patients.html. The page title is "ORGAN DONATION PLATFORM" and the main heading is "Details of Registered Patients". Below the heading is a table with the following data:

INDEX	FULL NAME	AGE	GENDER	MEDICAL ID	BLOOD TYPE	ORGAN(S)	WEIGHT(KG)	HEIGHT(CM)
1	Madhan	20	Male	144144	A-	Left Kidney	160	170
2	Babu	65	Male	188188	AB+	Pancreas	90	65
3	Pooja	21	Female	1105	O-	Right Lung	52	155

## V. CONCLUSION

In conclusion, the proposed Decentralized Application (DApp) using Ethereum Blockchain technology offers a solution to the problems currently faced by the organ transplantation system. The lack of communication between donors and recipients, the prevalence of illegal organ trade, and the high cost of transplantation due to monopolies and urgent needs of recipients are some of the issues that the proposed DApp addresses.

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**INNO**  **SPACE**  
SJIF Scientific Journal Impact Factor  
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