A Thesis/Project/Dissertation Report

on

Blockchain Based Transparent Charity Application

Submitted in partial fulfillment of the

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GALGOTIAS UNIVERSITY, GREATER NOIDA

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CANDIDATE'S DECLARATION

I/We hereby certify that the work which is being presented in the thesis/project/dissertation, entitled **"** BLOCKCHAIN BASED TRANSPARENT CHARITY APPLICATION**"** in partial fulfillment of the requirements for the award of the B.Tech submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of month, Year to Month and Year, under the supervision of Name… Designation, Department of Computer Science and Engineering/Computer Application and Information and Science, of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

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CERTIFICATE

The Final Thesis/Project/ Dissertation Viva-Voce examination of Kumar Satyam (19SCSE1010255) Or Vishnu G (19SCSE1010461) has been held on December 2021 and his/her work is recommended for the award of B.Tech.

Signature of Examiner(s) **Signature of Supervisor(s)**

Signature of Project Coordinator **Signature of Dean**

Date: December, 2021
Place: Greater Noida

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Abstract

The proposed system is a decentralized authentic platform that aims to leverage blockchain along with other technologies to design a trusted framework which would enable charity donations to be as accountable, trustworthy and transparent. The paper explores the potential for deploying blockchain within existing organizations to support smooth conduction of charity funds from the donor to the actual needy person using a stable Ethereum based Blockchain oriented platform. In this fast developing world of modernization, some people are becoming too competitive to earn money while others have no clue about getting even a penny. But at the same time, there exist people who wish to contribute to the society out of altruism. There exist many online donation platforms in the world and yet issues concerning extra fees, accountability and processing delay still exist as well as these existing centralized systems for charities are so corrupt that people lose belief in these trustless systems and hence the charities become futile. This paper explores how the blockchain can be leveraged in the philanthropic sector, through charitable donation services via a web- based donor platform.

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Acronyms

NGO	Non – Governmental Organization
SPL	Solana Program Library
AJAX	Asynchronous JavaScript And XML
REST	Representational State Transfer
API	Application Programming Interface
FTP	File Transfer Protocol
EOS	Electro Optical System
PoW	Proof Of Work
LPoS	Leased Proof Of Work
DPoS	Delegated Proof Of Work
BFT	Byzantine Fault Tolerant
3NF	Third Normal Form

CHAPTER - 1

1.1 INTRODUCTION

Recently, many people have become involved in donation activity and people look for trust and security in the process of donation. To attain contributions from various donors from different parts of the world, charity puts the maximum effort to reach the maximum crowd. Blockchain is a technology that could have a huge impact on the charity sector, helping to manage and distribute funds securely and transparently. Many businesses and governments are already using blockchain innovations in wide areas. There are a lot of online portals to donate to these charities which seems to be truthless. Through blockchain, donations will be largely transparent. Blockchain technology allows us to make the transaction and donation of funds transparent. We are using cryptocurrency for charity work to make it more transparent through a decentralized system for those making a charitable donation, blockchain provides the ability to precisely track where your donation is going when they arrive and whose hands they ended up in. Enormous information contains delicate and private data, so as to secure this huge volume that put away at various product equipment, important to actualize confirmation to check client or framework personality .

1.2 PROBLEM STATEMENT

In existing charity applications everything is done manually, so it is very difficult to maintain the records. It's also very difficult to find the activities. It is a Long-time process. It takes more time to prepare various events within a short time. The biggest disadvantage of most NGOs there are exceptions is that they are not able to scale up their success. NGOs have many workers, and the effort they put in is considerable. But, when they succeed, it is often in a limited area. And, they cannot easily scale up.

1.3 OBJECTIVES

The main objective is to provide privacy, security, and transparency. The implementation of blockchain is a distributed decentralized network that provides immutability, privacy, security, and transparency. The proof of work is validating the transaction. All the transactions within the new block are then validated and therefore the new block is then added to the blockchain. Those who want to donate some money then they can donate using this system. The data is securely stored in the database and no one can do any changes in the database. In this system, users can donate some funds using proof of work. All transactions are recorded on the blockchain to realize the traceability of funds, which increases the transparency of governments. The lack of transparency in government activities could be solved technically with this blockchain charity system, which could increase the public's trust in government organizations

1.4 SCOPE

We are using blockchain for a charity donation to make it more transparent. So, there are four types of users such as government, NGO, retailer, and users. The user can donate some amount to the NGO and retailer. The Government can see donations for the proposal. The government can approve the lowest proposal. The government can see all users. NGO users can see if work tender is allocated to which retailer. NGO users can add a new work requirement. Retailer users can submit a proposal of work and can see the proposal status. Retailer users can see donations received for proposals.

CHAPTER - 2

2.1 RELATED WORK

Donors have distrust about how donated money is spent. Currently, blockchain technology Is being implemented in several sectors. This paper considers an overview of the implementation of the platform for tracking donations supported by blockchain technology. The System offers transparent accounting of operations donors, charitable foundations, and recipients supported blockchain technology; charitable platforms should provide transparent donation routes, enable public users and donors to trace and monitor where, when, and to whom went resources of charity funds. While some elements of the System borrow from existing cryptocurrency and blockchain technologies, we propose alternative incentives for distributed consensus that are better aligned with the applying and promote social good through the stakeholders. The progress of a charity organization informative System using SPL is usually made to make a charity organization informative System with a group of features which will select according to each charity organization's needs. The System that has been developed must be supported by learning strategies for users to be used optimally. With the growth of internet technologies in way of life, a web donation has turned to be a preferable path for several donors. The web has developed to be an important medium for diffusing charity information. The study proposes a trust formation model in online charity information, rooted within the information process theory. Charities are non-profitable organizations established worldwide to profit societies. Generous donors primarily fund them with no direct economic impact on the organizations. Eventually, small organizations like student unions also donate some money to charities for a specific purpose. Thus, the charities have the responsibility to distribute the money to the beneficiaries. The charities also frequently held some activities which vary from small to large, accidental to regular. a variety of them maintain a specific goal, like the donation for education purposes only.

2.2 BACKGROUND

2.2.1 Distributed ledger, Blockchain

Ledger is a collection of data, including in electronic form, structured and stored for the purposes of accounting, retrieval, processing and control. Distributed ledger a data structure, an uncommitted set of copies of which can come to a final consistent state (eventual consistency),using a given consensus algorithm. Blockchain technology is implements a distributed ledger. Blockchain is a network of participants (full nodes) each of them contains data. Inserting of new data occurs after achieving a consensus of network participants. Blockchain provides immutability, transparency and security of data. Through distributed and openness, blockchain provides security, immutability and transparency of data.

2.2.2 Cryptocurrency, tokens

Cryptocurrency is a type of digital currency, the emission and control of which are based on cryptographic methods Bitcoin cryptocurrency is the most famous implementation of Blockchain technology. Tokens (or crypto tokens) asset or utility that is created based on cryptocurrency.

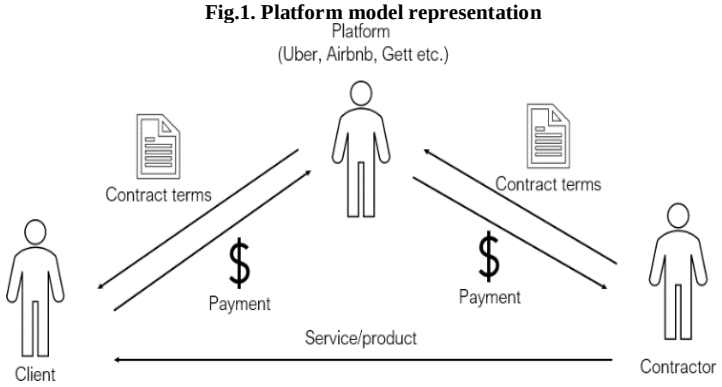
2.2.3 Smart contracts

The next stage of technology development was smart contracts (Ethereum, Hyperledger fabric). Smart contracts give opportunity to implement business logic in blockchain that will be observed. A smart contract can perform calculations, store information, and automatically send funds to other accounts .

2.2.4 Platform model

In the context of the development of information technology, we can observe the change of traditional approaches to doing business. In the last few years, the ability to transform existing business models has become increasingly important in order to succeed in industry.

Fig.1. Platform model representation



2.2.5 Platform economy

economic activities based on platforms, which are understood as online services that gives opportunity to provide transactions (as seen in Figure). A platform conducts all stages of a transaction from provision of communication between a contractor and a customer to receipt of payment.

2.3 PROPOSED CHARITY FUND RAISING SYSTEM

2.3.1 Objective

An objective of the proposed Charity Fund Raising System is to provide transparent, secure and trustful platform for charity donations by minimizing the frauds and middle-party interference between the transactions.

Transparency

Accountability is an obligation or willingness by a charity to explain its actions to its stakeholders. Transparency is an obligation by a charity to publish and make available critical data about the organization.

Trust: To establish trust between different phases in the charity organizations like donors and charity organization members.

Authenticity: By validating and authentication of different stakeholders and user increases the transparency and trust in the charity field.

Security: To provide safe and secure charity transactions by minimizing third party frauds and interference is the main objective of this proposed system.

Decentralization: Decentralization of system helps organization to maintain transactions untouched and unchanged by any other member who maintains security and transparency.

2.3.2 Background Techniques and Tools

In the proposed framework, we have implementing blockchain Hyperledger consortium for decentralization purpose.

2.3.2.1 Ethereum software

Ethereum which is completely open source is a public blockchain-based distributed computing platform and featuring smart contract functionality. Through its transaction-based state transitions it supports a modified version of consensus by Nakamoto. Ethereum platform generates a Blockchain whose token is Ether.

2.3.2.2 web3

web3.js is a collection of libraries which uses HTTP or IPC connection and make it possible to interact with a local or remote Ethereum node.

2.3.2.3 AJAX

Ajax is a set of web development techniques. It is used to create asynchronous web applications by using many web technologies on the client side. By using Ajax, web applications can asynchronously send and retrieve data from a server in the background without interfering behavior of the existing page.

2.4 DESIGN OF CHARITY APPLICATION

2.4.1 Charity System Mode

The charity system mode proposed is shown in Figure. There are four roles: donors, beneficiaries, charity organizations and cooperative stores. The charity organizations get the information of seek help and create charity projects through the platform. Donors learn about charity projects on the platform, then donate to beneficiaries or the charity organizations.

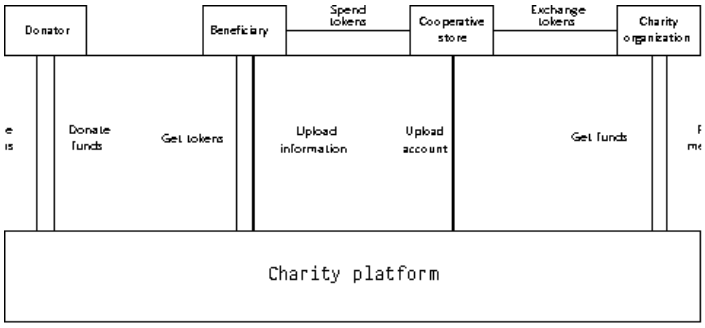


Fig.2. Charity Platform

Beneficiaries upload their information to the platform for help, they can get and spend tokens in cooperative stores. The transactions occurred in the stores will be uploaded to the charity platform.

The cooperative stores supply services or goods to the beneficiaries to obtain tokens. The tokens can be exchanged for real money by charity organizations. The flow of funds has been fully recorded on the blockchain, which allows transactions to be tracked and funds prevented from being abused.

2.4.2 Proposed Platform Architecture

We divide the platform into four layers, as shown in Figure. The application service layer encapsulates a variety of applications, including account registration, post charity information, donate funds, and inquire message, provides users with the functions of the platform directly. The smart contract layer includes various scripts and smart contracts. It encapsulates query methods, transactions process and other details. The blockchain service layer implements the functions of distributed accounting of the charity platform, including package block, get consensus on transaction, broadcast block, and synchronize data to a local database. The storage layer is used to store data, including blockchain storage and local storage.

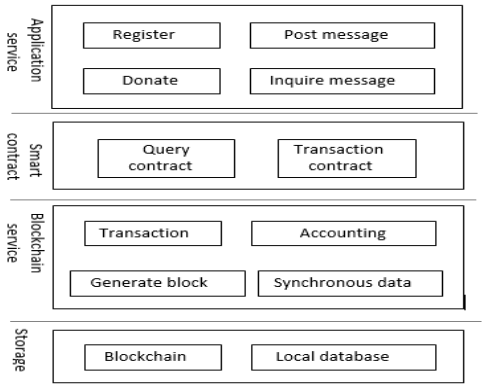


Fig.3. Proposed architecture

2.4.3 Platform uses process

- **Donor**

After successful login, the donor browses the charity projects and select one project to be donated. The system will check the balance of donor account. If the balance is insufficient, the user will be reminded to deposit. Donation can be completed only the balance is sufficient.

- **People in need**

The people who need help should fill in the rescue information which will be uploaded to the charity organization for review, and the approved projects will be posted on the charity platform. The beneficiary can check the account balance to know the project status, and then use the tokens in cooperative shops to obtain services or products.

- **Cooperative shops**

The shops provides the corresponding services or goods such as medicines or books to the beneficiaries to obtain tokens. They can exchange tokens for real money by charity organizations.

- **Charity organization**

The organization can get donation from the platform to help other people and apply money to the cooperative shops for token exchanging.

CHAPTER – 3

3.1 PLATFORM FUNCTIONALITY

The functionality of the platform was collected through cooperation with charitable foundation «Our children». The functionality of the platform is represented for two types of actors (Donor and Charitable foundation) (as seen in Figure.

The functionality for a donor:

- Get information about a donation via website. A donor can get information about his donation through a unique identifier. A donor will be provided with information on the flow of funds for different companies.

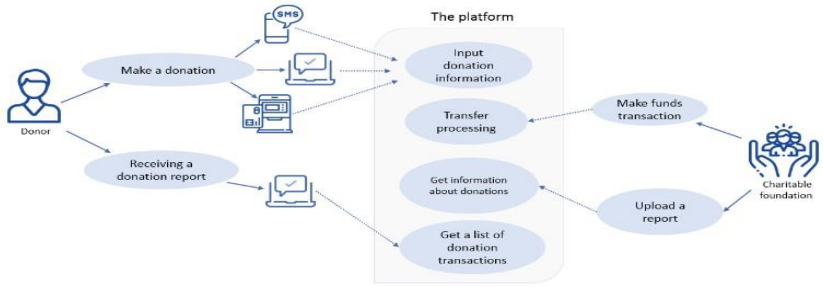


Fig.4. platform Functionality

The functionality for charitable foundation:

- Update information about donations. Foundations need to be able to record information about donations (manually or via REST request).
- Report export.
  Based on donations information a charity will be able to export the report to Ministry of justice and report for publication on the website.

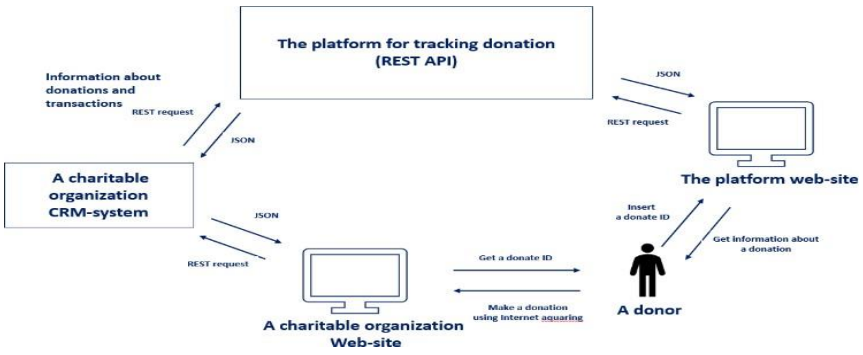


Fig.5. Platform integration with charity system

The integration of the platform with charitable Foundation systems takes place through the REST API which is provided (as seen in Figure). All donations and movements of charitable funds will have to be registered through the REST API.

3.2 ARCHITECTURE OF CHARITY FUND RAISING SYSTEM

All business logic is implemented on server-part (backend).Client's application interacts with backend via internet.

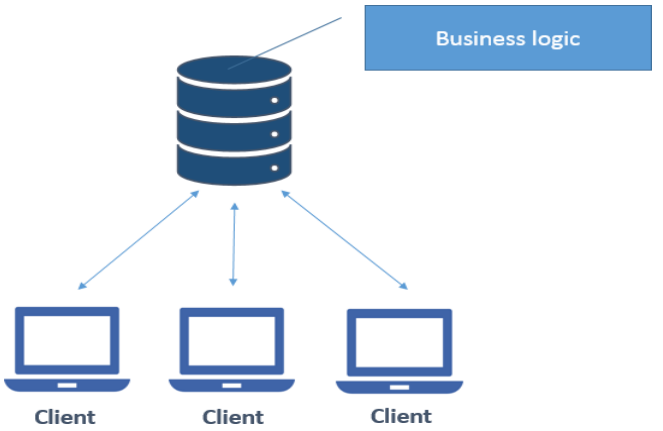


Fig.6. Client server architecture

Figure shows the architecture of a decentralized blockchain-based application. Examples of such applications can be Bitcoin. In this case, the data in the network is distributed, and all business logic is implemented in the blockchain.

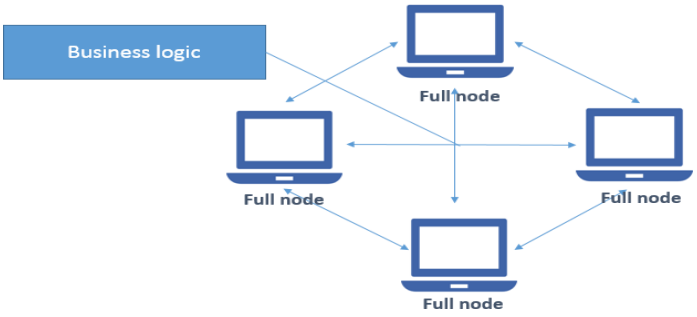
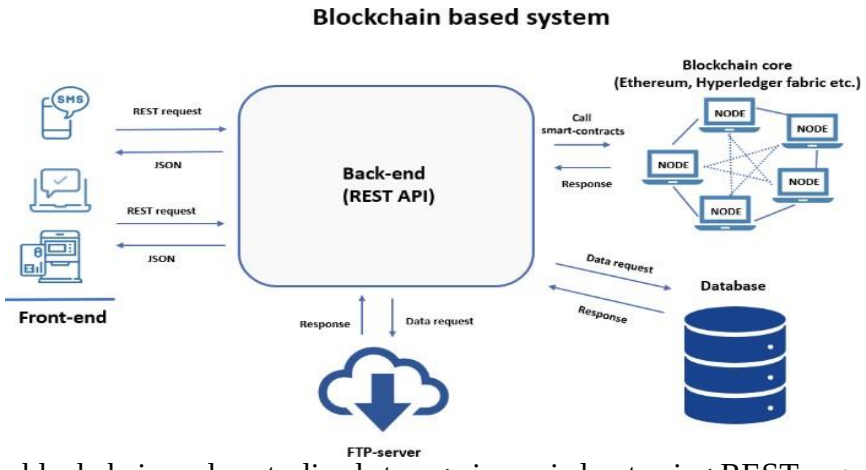


Fig.7. Architecture of decentralized applications based on blockchain

However, in the donation sector a huge amount of data is generated, it is information about donations, donors, transactions. At the moment, the writing of data to blockchain requires disk space at full nodes of a network and recording is not done very quickly. In our project with a large data flow, this causes problems.

Most blockchain-based projects are not fully decentralized. They are usually highly integrated with a typical client/server architecture (hybrid).

Figure shows the platform selected architecture. All minor application data is stored in a centralized storage outside the blockchain. The master data is stored in the blockchain. All entries in the decentralized storage are made using smart contracts. Transfer and receipt of



data from the blockchain and centralized storage is carried out using REST requests.

Fig.8. The architecture solution

The platform consists of the following parts:

- Server part;
- Smart contracts placed in the blockchain;
- Data base;
- File storage (FTP-server);
- Client part

The main advantages of the chosen architecture are as follows:

- Save disk space on blockchain;
- A trusted authority to access the data;
- Fast data processing speed;
- Ability to implement client application to other platforms (REST API).

3.3 DATABASE DESIGN WORKING

All charities prepare two types of reports. The first type of report for the Ministry of justice, the second which they upload to their website. Work with the preparation of reports takes a very long time because the reports have different structures. The database structure is satisfying for reporting for different charities.

The database is normalized to third normal form (3NF). Thus, it is possible to add new attributes without hard changes. In the database for each entity there is a flag that displays whether the hash of the entity is written to blockchain. When data is written to blockchain, the flag is changed to positive.

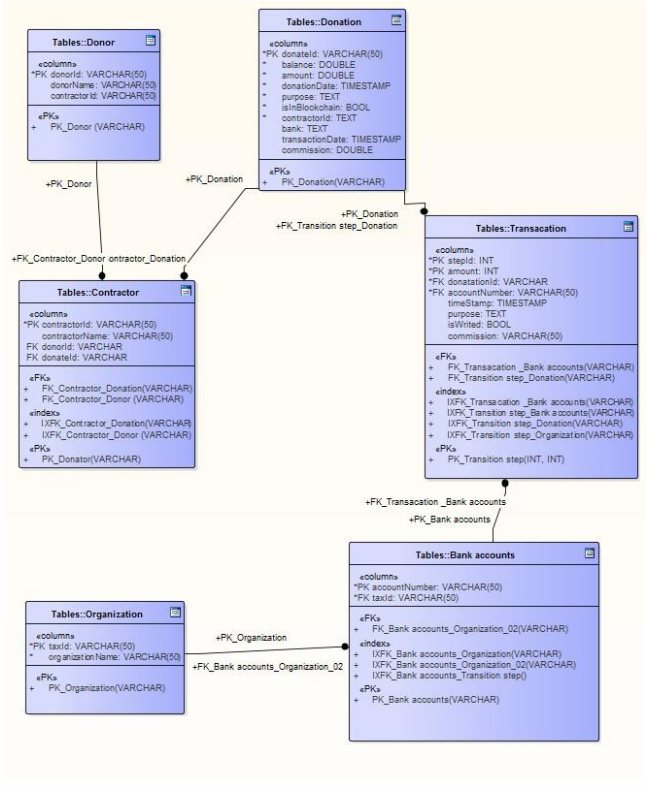


Fig.9. Database design

3.4 INSTRUCTIONS OF RUN THE APPLICATION

i. Create a Node app and install dependencies

```
npm init
```

after following the steps run

```
npm install web3@1.0.0-beta.26

npm install mocha@8.2.1

npm install solc@0.4.17

npm install truffle-hdwallet-provider

npm install ganache-cli@6.12.2
```

ii. Refer to the package.json file for full details on the installed packages.

iii. To run the Contract online, refer to the EthFiddle Link above.

iv. To compile the contract use

```
node compile.js
```

v. To run the test module, in your package.json under the "scripts" object, add

```
"test": "mocha --timeout 15000"
```

then run

---

npm run test

---

vi. To deploy the contract on the Rinkeby Test Network using Infura, follow the steps -

- Register on Infura - https://infura.io/register
- Follow all the steps there for account activation
- Install the MetaMask Browser extension - Link to MetaMask Chrome Extension
- Make an account and note down the 12 word mnemonic generated.
- Now, Go to Infura and get the link to the Test Ethereum Network.
- Now enter the 12 word mnemonic and the link in deploy.js over here
- Now run this command on the terminal -

---

node deploy.js

---

vii. This is final code of Solidity

```
pragma
solidity
^0.4.17;
```

```
contract Genuine_Charity_DApp{
  struct CharityOrg{
  string OrgName;
  address OrgAddress;
  string Desc;
}

struct Payment{
   string description;
   uint amount;
   address receiver;
   bool completed;
```

```
}

struct Product{
    string productId;
    string productName;
    uint price;
    address seller;
    bool ongoing;

       }

struct Beneficiary{
    string description;
    uint maxContr;
    address store;
    bool complete;
    uint approvalCount;
    mapping(address => bool) approvals;
    bool display;

}

struct Donator {

    string name;
    string message;
    uint projectID;
    uint value;
    // uint account_balance;
    address Address;

}
```

```
struct CoopStore{
  string StoreName;
  address StoreAddress;
  // uint account_balance;


}


// Beneficiary[] public CharityProjects;  //(should be a list of structs)
Duplicate, needs to be merged with the Beneficiary Upload info struct
Donator[] public donators;  //stores data of all donators
Beneficiary[] public beneficiaries;
// address public reciever;
uint public minContr;
CoopStore[] public CooperativeStores;
/* string[] public BeneficiaryInfo;  //(should be a list of structs) Duplicate,
needs to be merged with the Beneficiary Upload info struct */


mapping(address => bool) approvers;
uint public approversCount;
mapping (string => Product) products;
Product[] public allProducts;
Payment[] public payments;


Product [] product;




  //CHARITY ORG METHODS
  CharityOrg public c;


  function Genuine_Charity_DApp() public { //constructor
      c = CharityOrg("Genuine_Charity_Team",msg.sender,"Team of Genuine Charity
App");
      product[product.length++] = Product("0","Computer",10,msg.sender,true);
      product[product.length++] = Product("1","Laptop",20,msg.sender,true);
```

```
      product[product.length++] = Product("2","Food",5,msg.sender,true);
      product[product.length++] = Product("3","Books",3,msg.sender,true);
      product[product.length++] = Product("4","Bag",1,msg.sender,true);
      CoopStore memory co =
CoopStore("Genuine_Charity_Cooperative_Store",msg.sender);
      CooperativeStores.push(co);
    }


  function Post_Project(uint id) public {
    // CharityProjects.push(beneficiaries[id]);
    if (msg.sender == c.OrgAddress)
    {
    beneficiaries[id].display = true;
    }
  }


  function Send_Money_Beneficiary(uint id) public payable {
    if (msg.sender == c.OrgAddress)
    {
      // pay money to benficiary
      // Project goal to be implemented
      payments[id].receiver.transfer(payments[id].amount);
      payments[id].completed = true;
    }
  }


  function Remove_Project(uint id) public{ //remove project after the required
money is collected
    beneficiaries[id].display = false;
    // CharityProjects[id] = CharityProjects[CharityProjects.length - 1];
    // delete CharityProjects[CharityProjects.length - 1];
    // CharityProjects.length--;
    }


    // DONATOR METHODS


    function create_donator(string _name ,string _message) public returns (uint)
{
```

```
        //constructor
        Donator memory d = Donator({ name:_name, message:_message, projectID:1,
value:10, Address:msg.sender });
        donators.push(d);
        return donators.length-1;
    }


    function make_donations(uint id) public payable
    {
      c.OrgAddress.transfer(donators[id].value);
    }




    function selectCharityProject (uint id,uint _projectId,uint value) public{
      if(_projectId !=999)
      donators[id].projectID = _projectId;
      if(value > 0)
      donators[id].value = value;


    }


    // BENEFICIARY METHODS
    /* modifier restrict({
        require(msg.sender == reciever);
        _;
    }) */
    function donateVote() public payable{
        require(msg.value > minContr);


    approvers[msg.sender] = true;
    approversCount++;


    }
```

```
    function createRequest(string description, uint maxContr, address store)
public {
        Beneficiary memory newRequest = Beneficiary({
            description: description,
            maxContr: maxContr,
            store: store,
            complete: false,
            approvalCount: 0,
            display: false
            });


        beneficiaries.push(newRequest);
    }




    function approveRequest(uint index) public{
        Beneficiary storage request = beneficiaries[index];


        require(approvers[msg.sender]);
        require(!request.approvals[msg.sender]);


        request.approvals[msg.sender] = true;
        request.approvalCount++;
    }


    function transferToStore(uint index) public  {
        Beneficiary storage request = beneficiaries[index];
        require(request.approvalCount > approversCount/2);
        request.store.transfer(request.maxContr);
        request.complete = true;
    }


    function RequestMoneyAfterCompletion(uint index) public {
      Beneficiary storage request = beneficiaries[index];
        require(request.approvalCount > approversCount/2);
```

```
        Payment memory p =
Payment(request.description,request.maxContr,msg.sender,true);
        payments.push(p);
    }


    function addProduct(string memory _productId, string memory _productName,
uint _price) public {
       require(!products[_productId].ongoing);




        Product memory product1 = Product(_productId, _productName,_price,
msg.sender, true);
        products[_productId].productId= _productId;
        products[_productId].productName= _productName;
        products[_productId].price= _price;
        products[_productId].seller= msg.sender;
        products[_productId].ongoing = true;
        allProducts.push(product1);
      }




    // COOPERATIVE STORE METHODS
    /* CoopStore Cs; */
    /* modifier onlyBeneficiary() {
   require(msg.sender ==  Beneficiary, "Only Beneficiary!");
        _;
      } */









    function add_product(string id,string product_name,uint price) public{
      product[product.length++] =
Product(id,product_name,price,msg.sender,true);
```

```
    }



    // function receive_money(uint id) public payable {
    //     require(msg.value >=0.0001 ether);
    //     // CooperativeStores[id].account_balance+=msg.value;
    //     //return products bought by beneficiary.
    // }
    // function update_account() public {
    //     return account_balance;
    // }
}
```

CHAPTER – 4

4.1 BLOCKCHAIN PLATFORM ANALYSIS

Developers use ready-made tools - blockchain platforms, and do not create a blockchain from scratch. There are a huge number of platforms that can be used to implement projects based on blockchain, such as Ethereum, EOS, Waves, Tron, Hyperledger Fabric, Corda, Exonym and others. Most of them duplicate the functionality of each other, so developers have a problem of choosing a platform for their projects. We conducted a comparative analysis of blockchain platforms by main criteria (shown below, in Table).

Also, the choice of platform should be based on legal level. Will further smart contracts concluded on the chosen platform have legal force. As blockchain platform selected platform Ethereum. Currently undergoing official certification platform master chain. Master chain is a fork of Ethereum platform. Master chain uses Russian certified algorithms for cryptographic protection of information. In this way, the compatibility and authorization of the use of the platform at the state level will be ensured in the future.

TABLE.1. BLOCKCHAIN PLATFORMS AND WEIGHT OF THEIR CRITERIA

Platform	**Criterion**						
	Smart contracts/ chaincode	Commission	Private/ public	Tokens	Throughput (transactions per second)	Block size (KB)	Consensus protocol
Ethereum	+	+	Public	+	25	1024	PoW
Waves	+	+	Public	+	100	1024	LPoS
Tron	+	-	Public	+	700	4	DPoS
EOS	+	-	Public	+	3000	Dynamic	DPoS

Hyperledger fabric	+	-	Private	-	3000 - 20000	Customizable	BFT
Corda	+	-	Private	+	170	Customizable	BFT
Exonum	+	-	Private	+	5000	Customizable	BFT

a. PoW (Proof-of-work), LPoS (Leased Proof-of-Stake), DPoS (Delegated-Proof-of-Stake), BFT (Byzantine Fault Tolerant)

4.2 TOOLS OF IMPLEMENTATIONS

The project uses Ethereum test network – Ropsten. For communication with blockchain server part use a standard library -Web3.js. Smart contracts implemented on Solidity language.

Server part (REST API) implemented using platform Node.js and framework Express on programming language JavaScript. Node.js has high productivity, an active community and is supported by large companies .

MySQL is used as a centralized data storage (off-chain storage). Functions and procedures for quick interaction with the database have been developed.

Telegram bots was implemented to simulate process of donation and expenditure of funds on programming language Python.

4.3 PLATFORM USAGE PROCESS

- Donor After successful login, the donor browses the charity projects and select one project to be donated. The system will check the balance of donor account. If the balance is insufficient, the user will be reminded to deposit. Donation can be completed only the balance is sufficient.
- People in need The people who need help should fill in the rescue information which will be uploaded to the charity organization for review, and the approved projects will be posted on the charity platform. The beneficiary can check the account balance to know the project status, and then use the tokens in cooperative shops to obtain services or products.
- Cooperative shops The shops provides the corresponding services or goods such as medicines or books to the beneficiaries to obtain tokens. they can exchange tokens for real money by charity organizations.
- Charity organization The organization can get donation from the platform to help other people and apply money to the cooperative shops for token exchanging

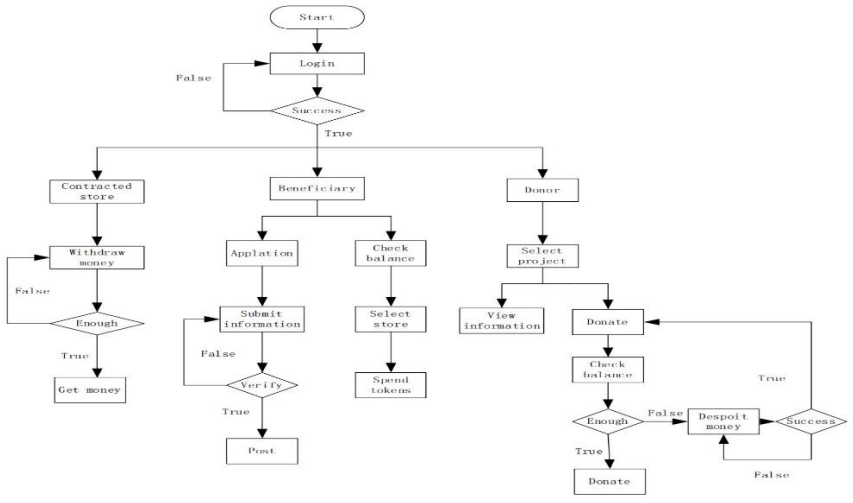


Fig.10. Class Diagram

4.4 DAPP MODEL

Following functions have been met:

i. Beneficiary initiates a charity project in the DApp.
ii. Beneficiary requests funds from the charity project initiated by himself.
iii. Donor donates to the charity projects which he chooses.
iv. Donor is able to vote on the funding request for the charity project already participated.
v. After the request for funds is approved, the funds are automatically transferred to the beneficiary's account.

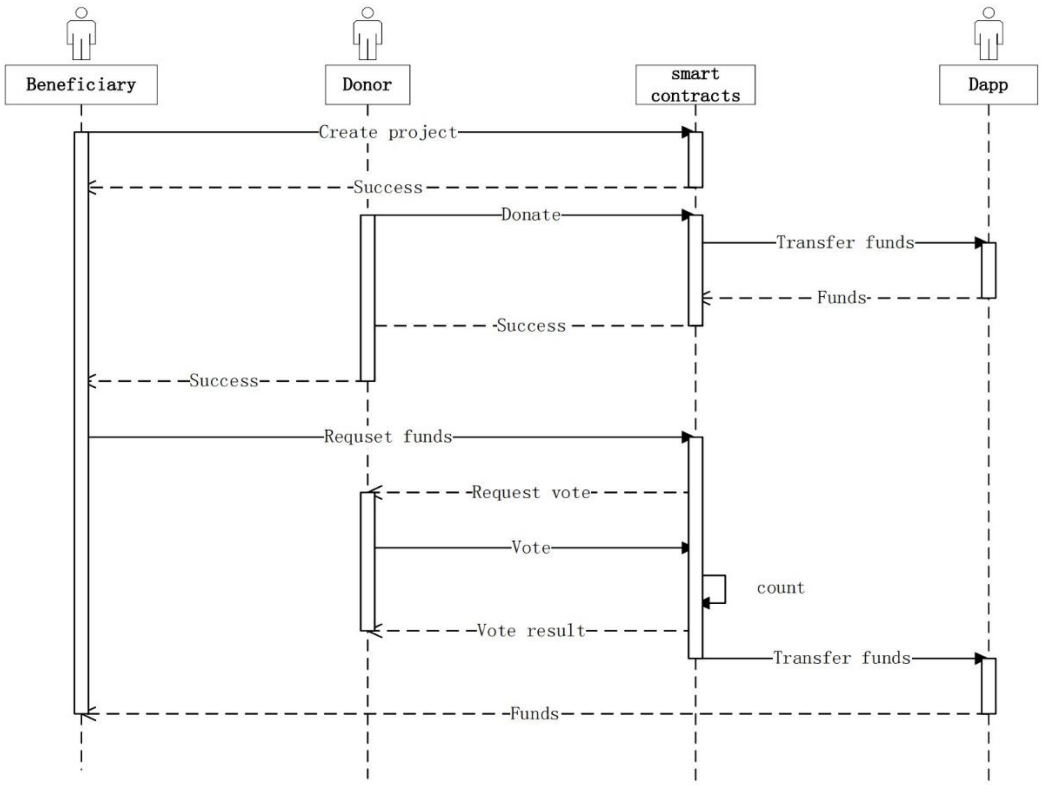


Fig.11. Sequence Diagram

CHAPTER – 5

5.1 CONCLUSION

We have proposed a system using Blockchain along with cryptocurrency for charity work to make it more transparent through a decentralized system. Urbanization has made a lot of people more concerned about others and this has made a lot of people altruistic. But at the same time there are also people who want to ultimately make illegal money in the process.

This system will provide both the requirements which are better authenticity and security. Also, it will provide with a trusted system and will make the entire process more transparent. This will help get rid of middlemen between donors and charity doers.

Because the system does not rely on an intermediary to transfer funds, the speed and cost for handling aid is reduced. The scope of the Blockchain technology is limited due to the unawareness of value of Cryptocurrency. In a scenario where the banking economy can be collapsed, Crypto-Currency will be the only viable option. System can be expanded at global environment. The philanthropic model could be applied in different situations e.g., when smartphones and Internet connectivity are unavailable. The decentralized and democratic structure of especially the open source blockchain platforms prove problematic due to the challenges involved in ensuring these updates are installed at each node. This, in turn, may lead to forking.

5.2 FUTURE

Blockchain technology has a great future worldwide. An incredible scope of blockchain technology has been observed in the financial field. Blockchain technology helps charities become more transparent. In the future, we may see accountability for the spending of donations tied to smart contracts, enabling donors to donate directly to those best in a position to help.

REFERENCE

[1] M. Crosby, P. Pattanayak, S. Verma, V, Kalyanaraman. Blockchain technology: Beyond bitcoin. Applied Innovation, 2(6-10): 71. 2016

[2] G. Zyskind, O. Nathan. Decentralizing privacy: Using blockchain to protect personal data. IEEE Security and Privacy Workshops, 180-184,
May 2015

[3] A. Greenberg, Crypto Currency. Forbes, August 2014

[4] Cryptocurrencies: A Brief Thematic Review. Wayback machine.
Economics of Networks Journal, August 2017

[5] S. Nakamoto. Bitcoin: A peer-to-peer electronic cash system, 2008

[6] R. Bunduchi, K. Symons, and C. Elsden," Adding value with blockchain: an explorative study in the charity retail sector",June 2018.

[7] P. Agarwal, S. Jalan, A. Mustafi," Decentralized and financial approach to effective charity ",2018 International Conference on Soft-computing and Network Security (ICSNS).

[8] Hadi Saleh, Sergey Avdoshin, Azamat Dzhonov," Platform for Tracking Donations of Charitable Foundations based on Blockchain Technology" Actual Problems of Systems and Software Engineering (APSSE), 2019.

[9] S. T. Aras, V. Kulkarni," Blockchain and Its Applications – A Detailed Survey ", International Journal of Computer Applications (0975 – 8887) Volume 180 – No.3, December 2017.